Interpersonal Anger:

The theory and measurement of a new psychological construct

Sarven S. McLinton

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Summary

There has been a call for the development of bold new instruments in Psychology to measure specific aspects of the human anger experience, and move beyond the limitations of commonly used anger instruments with poor conceptual development and psychometric properties. Anger cannot be viewed as devoid of environmental and individual factors, yet current anger scales cannot easily account for such aspects of the anger experience. It is reasonable to suggest that the level and propensity for an individual to feel anger when provoked by the actions of another can be influenced by their relationship and the socio-cultural environment. The aim of this PhD research was to develop a new instrument for measuring anger that accounts for these factors and enables the study of how these factors may influence anger experience in interpersonal situations. This McLinton Interpersonal Domain-specific Anger Instrument (MIDAI) is intended for use in researching the nature of anger directed at others in one's social environment. The MIDAI was created using the renowned Delphi method for instrument development, and refined through a variety of psychometric techniques. To investigate cross-cultural differences in anger, particularly toward others in the work environment, random stratified community samples were obtained in both Australia (Western) and Japan (Eastern). International data shows support for a valid and reliable instrument. Interpersonal anger measured by the MIDAI also exhibits strong relationships with aggressive expression, as well as stress from Effort-Reward Imbalance at work. MIDAI research demonstrates how the negative outcomes of work stress may contaminate other areas of life through its disruptive influence on interpersonal relationships. Furthermore, the link between work stress and interpersonal anger is also observed in two very different cultures, suggesting the existence of an underlying global phenomenon.

The following are the published works that have arisen from the PhD:

McLinton, S. S., & Dollard, M. F. (2010). Work stress and driving anger in Japan. *Accident Analysis and Prevention, 42*(1), 174-181.

McLinton, S. S., & Dollard, M. F. (2011). 'Hating the boss' – How we look at others in anger: Development of the McLinton Interpersonal Domain-specific Anger Instrument (MIDAI). *Journal of Psychopathology and Behavioral Assessment,* in press.

McLinton, S. S., & Dollard, M. F. (2012). Interpersonal anger – A cross-cultural investigation on targets of anger using the McLinton Interpersonal Domain-specific Anger Instrument (MIDAI) in Australia and Japan. *Journal of Cross-Cultural Psychology*, in review.

McLinton, S. S., & Dollard, M. F. (2012). Interpersonal anger theory: Testing the McLinton Interpersonal Domain-specific Anger Instrument (MIDAI) with Effort-Reward Imbalance and anger expression. *Journal of Experimental Social Psychology,* in review.

Preface

The present work constitutes assessable material for the author's PhD by research. It contains no material which has been accepted for the award of any other degree or diploma in any tertiary institution and, to the best of my knowledge and belief, the thesis contains no material previously published or written by another person, except where due reference is made in the text. This PhD was commenced in 2007 and is the culmination of over four years of full-time research at the University of South Australia under the supervision of Professor Maureen Dollard. The idea was developed in light of a recent call for new measures of anger to take the place of existing instruments with limited psychometric properties and testing poorly developed constructs, and also to further investigate specific aspects of the human anger experience. Interest in developing a new instrument to fill a niche as well as facilitate cross-cultural research was prompted by my honours study of anger in Japan.

I would like to extend my thanks to all the organisations and people who made this research possible. First, to the Centre for Applied Psychological Research (CAPR) for providing a support network and the means by which to complete my PhD, and by extension the University of South Australia (UniSA) for the funding which also included sponsored travel for data collection. Thank you to my supervisor, Professor Maureen Dollard, for her expert input and advice. To my Japanese friends who helped me transition to living in Japan for data collection and also pilot my Japanese instrument for feedback and revision before community sampling. Special thanks to my parents who have always believed in me every step of the way over the last decade of my University study. Finally, to all my friends across the world who have stuck with me throughout this experience - you know who you are.

お疲れ様でした！

Sarven S. McLinton, B.Psych(Hons)

PhD Candidate

Portfolio Description

This is presented in the form of a portfolio, a hybrid of both published material (and material currently in review) and unpublished literature review, method and discussion that links the papers together in a coherent whole. The portfolio begins with a literature review of the worldwide workplace and how stress at work resulting from a perceived imbalance in efforts invested by the employee and rewards that they receive (Effort-Reward Imbalance) can lead to negative outcomes including the little researched behavioural outcome of interest in this present study – anger. Next is a literature review of anger including its negative outcomes in life, how it differs from overt aggression and anger expression, and why it is such an important area of research in itself. It hones in on shortcomings of existing research being focussed only on general anger and not targeting specific aspects of the human anger experience, and uncovers a window for researchers to start generating new measures with better psychometric properties and more valid conceptual development than have commonly used measures in the last half century. This leads to the last major section of the literature review, which discusses the new construct Interpersonal Anger and the theory development behind it, which is our answer to the call for new measures and fills a gap in the research. Aims in developing a new instrument to measure Interpersonal Anger are presented at the end of the literature review.

A method chapter is included, which describes the method of instrument development (Delphi) and the process of piloting this, and then subsequent community samples, cross-cultural validation samples, and longitudinal data collection. This method section is designed to present a coherent whole to link the later publications together, and also to give the reader an idea of the large scope of the PhD research which is not achieved by simply reading the publications alone (which required significant reduction in volume for parsimony). A brief analysis strategy section is also included to link the published work together. After this method, instead of a results section, three publications are included in back to back chapters. The results displayed therein are descriptive enough and parsimonious to be sufficient for the reader to comprehend the later portfolio discussion. These three publications also demonstrate the primary author's peer reviewed work, desire to contribute significant new knowledge to the field of psychology, and validate the author as an autonomous and collaborative researcher with a goal for lifelong learning. Publication 1 is in second review before publication, whilst publications 2 and 3 are in first review, and all are expected to be in press

next year. Publication 4 is also included, but due to contextual reasons is presented after the discussion section.

The portfolio discussion chapter follows the first three publications and wraps up the bulk of the portfolio for the reader, going beyond the reduced amount of information that could be presented in published work. Beyond an evaluation of results, the discussion also includes limitations of the project, future research or changes if it were to be conducted over again, and the numerous practical and theoretical implications of the research. The conclusion of the portfolio is followed by a number of appendices which, whilst not essential in reader understanding of the PhD, were deemed necessary for inclusion for interested readers. These include; Appendix 8.1, a fourth publication (McLinton & Dollard, 2010) which helped open the way for the development of Interpersonal Anger and set the stage for the premise of the PhD; Appendix 8.2, the final MIDAI scale questionnaires both in English and Japanese; Appendix 8.3, additional tables from the results that were not included in published material but may be of interest to the reader, and; Appendix 8.4, the original questionnaire that was employed in the Australian and Japanese community samples to pilot the measure.

Of final note regarding the structure of the portfolio, it was decided not to include just a single self-reflective piece at the end, but rather splice these at the end of each significant section throughout the portfolio. This was done because self-reflection is far more relevant when paired directly after formal discussion of those challenges described in the portfolio, and logistically it gives the reader immediate insight into what was going through the mind of the primary author during that segment of the PhD. Each self-reflective piece is separated distinctly from the formal PhD portfolio material by italicised text to make it clear for the reader, and if desired, the reader can make the choice to either read the portfolio in chronological order, or read only the official scientific material and then return to read the easily identifiable self-reflective material afterward. The present work aims to promote the development of the seven Research Degree Graduate Qualities (RDQ) in the following manner; 1) *Research based knowledge*; 2) *Lifelong learning*; 3) *Effective problem solving*; 4) *Autonomous and collaborative researcher*; 5) *Ethical action and social responsibility*; 6) *Effective communication*, and; 7) *International perspectives.*

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1. Literature Review

For a long time anger has received research interest in psychology in the hope of alleviating its negative outcomes or identifying its causal factors. However, anger research often employs out-dated instruments which have now become an institution despite their poor conceptual development and psychometric properties. In a recent review of all anger literature, a call was made for the development of new anger instruments that do not simply measure a uni-dimensional or general anger, but rather more specific aspects of the human anger experience. This doctoral research portfolio represents an important step in filling this dearth of research by developing a new theory of the human anger experience – Interpersonal Anger Theory. Publications included herein represent new contributions to psychology knowledge, including a new measure of Interpersonal Anger that was developed using a world-wide expert panel and validated in different countries for cross-cultural perspectives on the human anger experience. The results of this doctoral research present practical implications in how anger is measured in clinical or real-life settings including Interpersonal Anger as a precursor to outward anger expression toward other people, such as in domestic violence or abuse in the family domain, and bullying, harassment, and victimisation in the work domain. This work domain also represents a significant aspect of the research and how it applies to workers in both Eastern and Western work cultures. It is evident that stress in the workplace is not only a significant problem but is also on the rise due to worldwide economic changes. A significant aspect of the present research consists of how this stress in the workplace results in a spillover effect into other domains, including Interpersonal Anger in the home environment or the concept of 'bringing stress home'. Further elucidating the nature of both work stress and anger will help not only reduce the costs to the individual but also to society and economic productivity.

1.1 The Worldwide Workplace

1.1.1 The Changing Global Work Condition

Since the early 2000's, worldwide changes have been observed at work, including an increase in work intensity and of perceptions of work difficulty, along with the decline of autonomy that is pushing the modern worker to their limits (Clark, 2005; Clarkberg & Moen, 2001; Gallie, 2005; Green & McIntosh, 2001). There has also been a rise in the number of dual income families with longer work weeks and less time at home to balance work and life (Clarkberg & Moen, 2001). In Australia, economic policies have influenced a trend for managers to push their employees for greater efficiency but without supplying a similar increase in associated job resources (Lonne, 2003).

Most notably, the nature of the contemporary workplace has seen changes in the last few decades, like the recent shift toward the service and Information Technology (IT) industries, and a decline in popularity of the manufacturing and industry sectors (Nakao, Tamiya, & Yano, 2005). The frequency of organisational downsizing has also seen an increase, along with the use of technology to replace the human worker (Sauter & Murphy, 1995). The worldwide move toward a more contingent workforce is evident in the increasing numbers of part-time and contract workers, now with three in four workplaces employing contingent workers, which has in turn changed the dynamics of contemporary workplace stress (HR Focus, 2005; Rassuli, 2005). It has also been acknowledged that the psychological and cognitive demands of the modern workplace have increased, as compared to 25 years ago (Princeton Survey Research Associates, 1997). Added to this are the obvious results of the recent economic downturn. These new dimensions of the workplace environment have been associated with the increase in general levels of work stress.

1.1.2 The Growth of Work Stress and Related Outcomes in Australia and the West

Over the last few decades the world has seen the introduction of new management models that have revolutionised the modern workplace, but conversely a number of such models have increased worker susceptibility to stress (Wood, 1989). Despite a decrease in all other compensation claims in Australia, work stress induced claims in the 2007-08 period were

34% higher than ten years prior (Productivity Commission, 2010). For decades researchers have recognised the importance of the work stress issue, and have acknowledged that it is on the rise (Knudsen, 2006; Wainwright & Calnan, 2002). Concern has been focussed on the notable detrimental outcomes of stress in the workplace, both on an individual and organisational level. Employees who experience high level work stress have been known to suffer from physical ailments such as headaches, sleep problems, increased rates of cardiovascular disease, and generally poorer health (Kageyama, Nishikido, Kobayashi, & Kawagoe, 2001; Li, Yang, & Cho, 2006; Shima & Satoh, 2006). Mental health can also be jeopardised by work stress, leading to such negative effects as depression, negative self-perception, and overall dissatisfaction with work, not to mention psychosomatic disorders (Golden & Wiens-Tuers, 2006). Detriments to the organisation and employers range from reduced productivity to increased rates of sickness absence and turnover, which ultimately affects the company's success (Dollard & Winefield, 1998; Karasek & Theorell, 1990; Krantz & Lundberg, 2006; Peter & Siegrist, 1997).

Certain job characteristics have been shown to be accompanied by greater levels of stress, such as those in the service professions actively involved in dealing with human relations on a daily basis (Marmot, Siegrist, Theorell, & Feeney, 1999; Sauter & Murphy, 1995). Characteristics such as this have been classified as workplace psychosocial factors: job characteristics that may influence an employee's risk of experiencing work stress (MacKay, Cousins, Kelly, Lees, & McCraig, 2004). Other possible risk factors on the job include workload, long work hours, complexity, role clarity, opportunity to employ skills, and available peer or supervisor support (Kecklund, 2005; Kompier & Taris, 2005).

Furthermore, researchers are becoming increasingly aware of the strong relationship between work stress and health complaints, including an increased prevalence of headaches, nausea, muscle pains and risk of more serious outcomes such as cardiovascular and coronary artery disease (Li et al., 2006; Shima & Satoh, 2006). In fact, job strain is one of the strongest predictors that has consistently been shown to lead to these types of heart problems (Schnall & Landsbergis, 1994). In fact, there exists significant support for stress at work as a causal factor in high blood pressure (Schnall, Pieper, Schwartz, Karasek, Schlussel, Devereux et al., 1990; Schnall, Schwartz, Landsbergis, Warren, & Pickering, 1992; Schnall, Schwartz, Landsbergis, Warren, & Pickering, 1998; Theorell, Perski, Åkerstedt, Sigala, Ahlberg-Hulten, Svensson et al., 1988; Kawakami, Haratani, & Araki, 1998), which is also compounded by

employment category, particularly lower socio-economic status roles (Marmot, Hamilton, Shipley, & Rose, 1978; Syme, Oakes, Friedman, et al., 1974).

1.1.3 The Japanese Workplace

Unlike the west, the Japanese workplace has drawn research interest for very different reasons and its divergent work environment makes Japan a prime country for comparison in the present study. Since the 1970's the Japanese practices of management, employee dedication to the company, and cultural disposition toward 'workaholism' have been under scrutiny. Japanese employees consistently display very high levels of job loyalty and productivity, and low levels of turnover, absenteeism and work stoppage (Meek, 2004). In fact, most take only half of their paid holiday allowances, one of the lowest incidences in the world (Kato, 1995). Yet despite the trend indicating a highly satisfying workplace, the International Survey Research company (ISR: International Survey Research, 1995) found that from over 36 countries and 3.5 million people, the Japanese rated last in their overall satisfaction with work. Japan's toxic work conditions have been the subject of a large body of research over the past two decades (for review, see Kanai, 2009). Since the collapse of Japan's economy in 1991, the country has experienced a prolonged economic recession (Kanai, 2009; Kawakami & Haratani, 1999), which has changed the policies of life-long employment and seniority-based wage and promotion systems, leading to poorer job security (Tsutsumi, Kayaba, Theorell, & Siegrist, 2001; Tsutsumi, Ishitake, Peter, Siegrist, & Matoba, 2001). Job stability and tenure are decreasing in Japan, whilst the demand for service work and the cognitive requirements for many jobs are on the rise (Ebbesen, 1990; Goto, 2006; Yukihiro, 1999). Workers have seen unprecedented levels of unemployment due to organisational restructuring, major downsizing and outsourcing, the result of wide-scale restructuring in an effort to deal with the situation (Kobayashi, 1997; Tsutsumi, Kayaba, Theorell, & Siegrist, 2001; Ministry of Health Labor and Welfare, 2007). Not only are stress levels significantly higher from year to year, but the degree of assistance received from Japanese superiors has seen a recent decline (Shima & Satoh, 2006). The whole of Japan still sees the lasting effects of the burst of their economic bubble in the late 80's and early 90's (Knapp, 2002). As growth stagnates and prices fall, the structural weakness of the economy manifests in the modern workplace, leading to increased pressure on employees. With the implementation of western styles of employment, there has been a significant change from Japan's traditional seniority-based

wage systems to merit-based pay (Clegg & Kono, 2002; Kanai 2009). The incidence of temporary, contract and contingent workers are also increasing, which has led to a change in the dynamic of work stress (Ishida, 2005; Takeshi, 2005), and life-long employment has made way for drastic changes including a significant increase in temporary contracts, part-time and lease employment (Goto, 2006). Furthermore, Japan's workplace demographics show a workforce that is aging more rapidly than the rest of the world, leading to an increase in susceptibility to heart disease and proneness to stress in the workplace (McCreedy, 2003).

Further, workplace intimidation and lack of support from superiors are among some of the social factors contributing to Japan's high work stress, poor health outcomes and prevalence of work-induced suicide (Meek, 2004; Nakao, Tamiya, & Yano, 2005). In fact, compared to the USA, Japanese workers exhibit significantly higher levels of psychological and physical strain (Liu, Spector, & Shi, 2007), and depression (Iwata, Okuyama, Kawakami, & Saito, 1989). Statistics indicate that American, British and Japanese employees work similar average hours, but in Japan 'service overtime' (a more palatable term for unpaid overtime) adds another 350 hours per year, on top of which is an average commuting time of two hours a day (Drinkwater, 1992; Kato, 1995). Beyond this, management positions are characterised by over 600 additional hours per year on top of service overtime, and over 28% of male employees work for an average of 12 hours every day (Chunichi Shinbun, 2006). Despite a recent push by the Japanese government to reduce work hours and bring the average closer to western countries like the US and UK, the people who were working overtime are actually working even more (Kanai, 2009). Essentially, the national average has been brought down by a reduction in hours for older and younger people whilst the employees in their early 40's take the burden.

1.1.4 Stress and other Outcomes in Japanese Workplaces

The extensive negative changes in the Japanese work environment have taken their toll on workers, with an unprecedented level of overworking (Kanai, 2009), hypertension (Tsutsumi, Kayaba, Tsutsumi, & Igarashi, 2001), fatigue (Kumashiro & Nagae, 1984), anxiety (Irie, Miyata, Nagata, Mishima, Ikeda, & Hirayama, 1997), psychological strain (Liu, Spector, & Shi, 2007), dissatisfaction with work (deFrank, Ivancevich, & Schweiger, 1988), and depression (Iwata, Okuyama, Kawakami, & Saito, 1989), with a staggering 63% of workers

reporting symptoms of depression (Iwata et al., 1989; Japan Ministry of Labour (1998). Japanese researchers have demonstrated a strong relationship between work stress and health complaints, including headaches, nausea, muscle pains and more serious outcomes such as cardiovascular and coronary artery disease (Li, Yang, & Cho, 2006; Shima & Satoh, 2006). Japanese employees with higher job demands were significantly more likely to have cardiovascular disease (Kayaba, Yazawa, Natsume, Yaginuma, Hosaka, Hosoda et al., 1990). In fact, the relationship between work stress and cardiovascular problems has been observed consistently in both Eastern (Kawakami, Haratani, & Araki, 1998) as well as Western cultures (Schnall & Landsbergis, 1994), suggesting there may exist a more fundamental process rather than just an isolated socio-cultural phenomenon (Kawakami et al., 1998).

After the economic meltdown in the early 90's overworking employees became commonplace in Japan as supervisors demanded longer hours and more days (without extra pay) just to save their companies. Within only a couple of years the result was immediately apparent in the rising incidences of death from acute heart failure after prolonged high blood pressure, arteriosclerosis or cerebral haemorrhage alerting people to the existence of *karoshi*, or 'death by overwork' (Brown, 1993; Haratani, 1998). The number of claims for *karoshi* are actually relatively high but have a very low approval rate in Japan, and it results in an estimated 10,000 lives lost each year (Kanai, 2006; Kawahito, 1998). An average of two in three victims of *karoshi* were working 60+ hours per week before their death, including 50 hours of overtime each month (Uehata, 1991). This combined with other work factors such as workload, commute time, and presenteeism, were deemed responsible for the deaths. Another Japanese specific term generated after the realisation of a national phenomenon was *karojisatsu*, or 'suicide by overwork' (Amagasa, Nakayama, & Takahashi, 2005), a condition that had reached such an epidemic level that families of suicide victims who caused delays in train systems by throwing themselves on the rails were fined as a deterrent for other workers contemplating suicide. This law still exists today. In fact, the number of confirmed cases of overwork leading to death or disablement (not including suicide or mental disorders) as observed in approved worker's accident compensation claims in 2006 was nearly ten-times the rate in the early 90's (Ministry of Health Labor and Welfare, 2007). It is undeniable that this accumulating evidence justifies Japan's reputation as one of most stressful places to work in the world.

1.1.5 Workplace Hierarchy in Japan

A notable difference between Japanese and Western workplaces is the emphasis paid on the strict hierarchical structure of the work environment, or *'jo-ge kankei'*, which is based on unspoken rules for how to interact with superiors and the strict delineation of one's own social rank and responsibilities (Matsumoto, 2000). This often leads to many hours of unpaid overtime, not to mention the stress and tension experienced when in the presence of superiors in such a strongly hierarchical culture (Hadley, 1999). Japan's habit for drinking is a significant aspect of the cultural identity, particularly for male employees, and the pressure to drink with the group after long days at work is strongly tied to the hierarchy and obedience (Izuno, Miyakawa, Tsunoda, Parrish, Kono, Ogata et al., 1992). Those who do not feel the pressure to drink from *jo-ge kankei* may instead do so to maintain in-group harmony, and it has even been suggested to be an emotion-focussed coping strategy.

Beyond the seemingly innocuous pressure to drink, the strict hierarchical structure of the Japanese workplace opens the way for *ijime* or 'workplace bullying' (Meek, 2004; Treml, 2001), where superiors feel a sense of entitlement to demonstrate their higher rank over others and engage in unfair treatment of subordinates. Since bullying requires that the victim and antagonist are of different strength (Lindström, Elo, Skogstad, Dallner, Gamberale, Hottinen et al., 2000), the clearly delineated social hierarchy of Japan's *jo-ge kankei* make it a prime environment for abuse of authority. Surveys indicate that the occurrence of *ijime* is a commonly experienced and widely accepted aspect of working life in Japan, and is a major factor in the high suicide rate in men and women of working age (Giorgi, Asakura, & Ando, 2008; Tanaka, 2001). Japanese people are more prone to tolerating workplace bullying because they hold the view that it will 'work out' if they are simply patient and cultivate the spirit of *gaman*, or 'enduring personal hardship' (Giorgi, 2010).

Japanese society has developed in the face of much adversity, and the ability to endure through hardship is regarded as a positive character trait despite the disproportionately serious nature of the situation and the relative ease with which it could be changed. Furthermore, Japanese workers are less likely to challenge injustice as their culture is defined by stronger conformity to implicit rules and tradition, and less likely to protest victimisation if it is not the 'done thing' in the group culture (Giorgi, Asakura, & Ando, 2008). Japanese tradition engenders identification with the group culture and strong loyalty to the in-group (Giorgi & Majer, 2009). They are less likely to request support from others in the workplace for fear that

their actions could disrupt the in-group harmony (Taylor, Sherman, Kim, Jarcho, Takagi, & Dunagan, 2004). Further, the nature of bullying in Japan, which is a collectivist culture, involves 'one against many' (see Munakata, Mutou, Hattori, Minami, Fujita, & Kikuchi, 1998), so social support for the victim is hard to find. In other countries, bullying, mistreatment, inequality and abuse of power have all been shown to lead to anger (Einarsen & Mikkelsen, 2003; Neuman & Baron, 1998). From the evidence presented, the Japanese working environment is an important setting in which to investigate the nature of the human anger experience.

1.1.6 Differences in Workplace Culture: A Comparison of Japan and Australia

In comparing work stress and anger on the job, it seems fitting to study both East and West due to their vast difference in workplace environments, particularly on two of Hofstede's major cultural dimensions; individualism and power distance (Hofstede, Hofstede, & Mikanov, 2010). Two countries that epitomise the difference between western individualism and eastern collectivism are Australia and Japan. Unlike Australia, Japan has had an ethnic homogeneity, which results in a strong group culture and national identity (George, 1992; Ouchi, 1981). Studies have been conducted in the past using national ideology for cultural comparison (for an example of common classification of national ideology, see Ralston, Holt, Terpstra, & Kai-Cheng, 1997). In such studies comparing Japanese workers (collectivist) to western employees in the USA (individualist), Japanese people consistently reported significantly higher levels of psychological distress and lower job satisfaction (Lincoln & Kalleberg 1990; deFrank, Ivancevich, Schweiger 1988). Japanese managers have been found to hold tradition in higher stead than westerners (USA), and thus have a lower openness-to-change (Ralston, Holt, Terpstra, & Kai-Cheng, 1997). In general, Australians report lower levels of work problems compared with Japan, and it has been surmised that differences in these can in part be due to the cultural differences in approach to work and life (Ralston et al., 1997). The views of stress and coping strategies can also be influenced by cultural values (Bhagat & Steers, 2009). For example, collectivist cultures are less likely to perceive negative acts as harmful compared with individualistic cultures (Giorgi, 2008). Although in general Asian cultures tend to identify strongly with an in-group as it is a common collectivist principle, differences within Eastern countries still exist. For example, Chinese people see family and friends as the in-group, whilst Japanese people see the in-group as their work

company (Hall & Xu, 1990). This leads Japanese to have a relatively low benevolence for people outside the company since their workplace becomes the point of reference for an in-group or 'work family' (Ralston et al., 1997). Despite this apparent favour of the 'work family', Japan's strict hierarchical work environment (*jo-ge kankei*) still delineates clear lines of relative social status which greatly influence social communication. This alone makes a potential comparison of Australia and Japan in cross-cultural work and anger research an interesting endeavour.

1.1.7 The Relationship Between Work Stress and Individual Factors

It is important to note that the characteristics of the job are not the sole factor in determining risk of work stress, since interaction with individual characteristics is an important aspect to consider. Personality and dispositional factors have been seen to influence one's perception of and motivation at work, and also to determine how effectively stress is dealt with (Osipow, Doty, & Spokane, 1985; Parkes, 1994). For example, workers attributed with the Type A personality may encounter problems in the work environment and when coping with stress. The archetypal Type A employee is prone to hostility in the workplace and in general life situations, due to their competitive nature and strong motivation to achieve (Wickström, Pentti, Hyytiänen, & Uutela, 1989). Their emphasis on 'time urgency' can also lead to the disproportionate experience of stress regarding deadlines and appointments. Control is essential to their working environment, and in the event that the individual's required level of control is not met, stress will ensue (Jiang, Yan, & Danhu, 2004). Other research has indicated individuals with Type A personality patterns tend to have a longer history of stressful life events, along with higher rates of tension, depressive affect and anger (Dimsdale, Hackett, Block, & Hutter, 1978). Research in Japan also indicates that Japanese workers attributed with Type A characteristics experience increased levels of stress concerning role overload, and experience more conflict in the workplace (Iwata, Suzuki, Saito, & Abe, 1992). Further, Cooper (1998) suggests that every workplace develops a particular subculture with its own norms and principles, which can in turn play a part in personality and behaviour change in employees. Cultural dimensions like power distance also play a significant role in how these individual workplace dynamics evolve (Hofstede et al., 2010), thus the work stress experience differs between countries based on aspects of national ideology.

1.1.8 Contemporary Models of Work Stress – Effort-Reward Imbalance (ERI)

Work stress models have been developed to explain and predict the nature of strain on the job. Numerous different models exist, such as the Person-Environment Fit Model (PE-Fit; French, 1973) and Job Demand-Control (JD-C; Karasek, 1979) models, which have encouraged a great deal of research in the area, but do not explain the full extent of the work stress experience (Hoffman & Woehr, 2006; Mansell & Brough, 2005), such as the influence of financial motivations and job security (Aust, Peter, & Siegrist, 1997; Siegrist, 1998; Siegrist, 2001). A recent work stress model developed by Siegrist (1996) has been acclaimed for addressing the limitations of its predecessors. The Effort-Reward Imbalance (ERI) model attempts to explain the possible outcomes of work stress beyond a simple work environment versus coping strategy relationship. Rather, it states that work plays a key role in self-concept, esteem, efficacy, worth and a feeling of belonging, as well as offering the opportunity for achievement and recognition (Siegrist, 1998). ERI theory proposes that employees undertake psychological and physical labour to further the company goals. In exchange they expect to be reciprocated by the organisation financially and psychologically through support and respect from colleagues or supervisors, job security and the opportunity for advancement. An imbalance in this reciprocal effort to reward relationship is a violation of the worker's expectations and results in negative consequences (Peter & Siegrist, 1999). The model integrates the concept of individual differences in coping by stating that the employee is considered to employ effort in two forms; 'extrinsic' and 'intrinsic' effort. The former is effort elicited from the individual by the environment, usually originating from the direct demands and obligations entailed within the job, whilst the latter represents the individual's personal motivations and coping mechanisms (Siegrist, 1996). A diagram of the ERI model is presented overleaf.

The foundation of this model lies in the *social injustice theory*, wherein commonly held societal norms that are violated, result in feelings of injustice and thus ERI stress at work (Siegrist, 1998; Peter & Siegrist, 1999). Siegrist (1996) proposes that work represents a key factor in the development and maintenance of one's self-concept and identity. Under this premise, a rewarding work environment can fulfill emotional needs and lead to healthy outcomes such as feelings of belonging, achievement and a more robust development of self-worth, self-esteem and self-efficacy (Eccles & Wigfield, 2002; Prodgers, 1999). An environment that fails to reward the individual for expended efforts is violating the reciprocal

relationship. Thus, the basis of the ERI model is the intuitive understanding of a psychological contract, wherein the individual is rewarded by the organisation and society for his psychological and physical expenditure (Siegrist, 1996). This situation of 'high effort to low reward' can result in a variety of negative outcomes, including negative affective adjustments like frustration, depression, bitterness and demoralisation (Kuper, Singh-Manoux, Siegrist, & Marmot, 2002). This state of emotional distress can also be coupled with a feeling of undue struggling. Another poor work situation is the apathy that arises from a 'low effort to low reward', known as a passive condition. No real expenditure is made from the individual, and thus the rewards are insignificant, with outcomes often including boredom, depression and avoidance behaviour such as absence from work or sick leave (Godin & Kittel, 2004; Sanderson & Andrews, 2006).

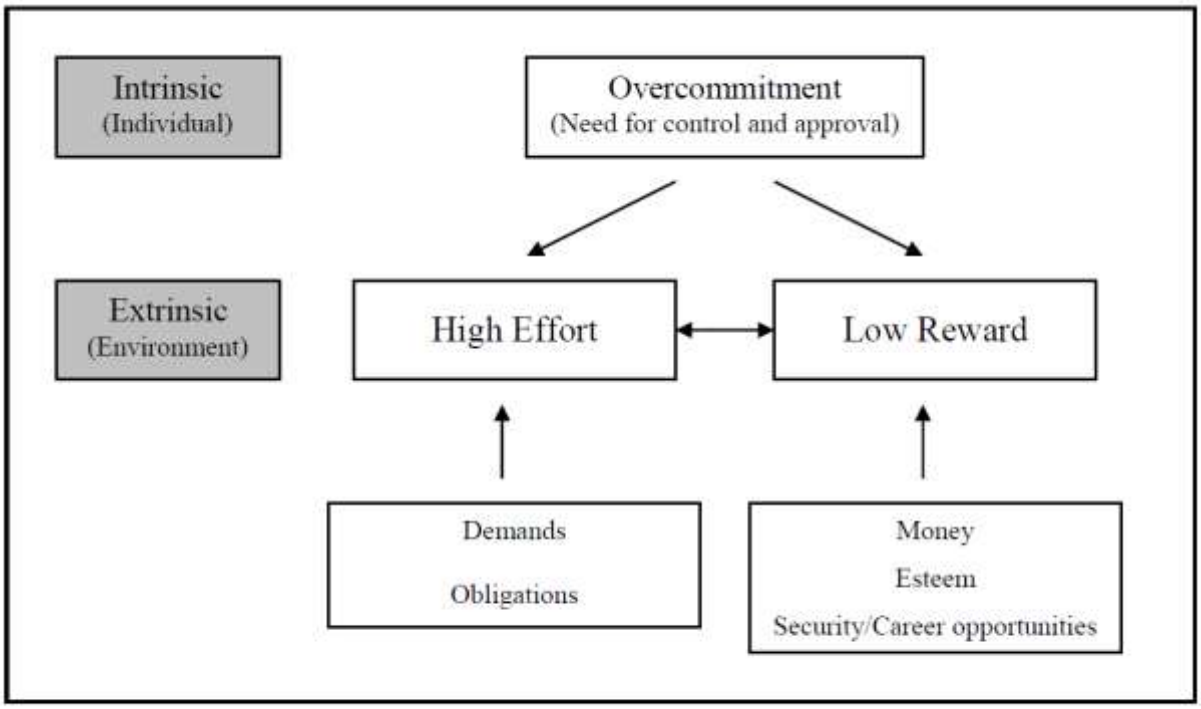

Figure 1. The effort-reward imbalance model at work (Siegrist, 1998, p.193).

The ERI model clearly defines the elements of the work environment that play a role in work stress, whilst taking into consideration the influence of individual contributions to the job. Furthermore, it also factors in the impact of labour market characteristics, including job security, promotion prospects and financial incentives (Siegrist, 1996). As such, the ERI model provides an avenue for the cohesive analysis of the contemporary workplace. In fact,

the model is in such widespread use that recently even a Japanese version of the ERI questionnaire has been investigated, and factor analysis has shown the model's structure to be cross-culturally robust (Tsutsumi, Ishitake, Peter, Siegrist, & Matoba, 2001). However, aside from this, research on work stress in the context of ERI in Japan consists of exclusively occupational samples, making the collection and analysis of a random community sample a priority (Tsutsumi, Kayaba, Nagami, Miki, Kawano, Ohya et al., 2002).

A previous study conducted by the primary author using effort to reward ratios showed that 70% of a Japanese working sample reported ERI greater than one, indicating that more effort was expended than rewards received (McLinton & Dollard, 2010). This ratio was significantly higher than in a comparison sample of Australian workers with ERI greater than one for just 40% of the sample (Hoggan & Dollard, 2007). This significantly large proportion of the Japanese working sample at risk of ERI shows that the nature of reciprocal rewards to effort invested in Japan warrants further investigation.

In terms of a mean ratio of ERI (with greater than one indicating an imbalance), previous studies in Western samples; UK, France, Germany, Sweden, Belgium and Australia have found the mean ERI to vary between .54 and 1.08 (Godin & Kittel, 2004; Goldberg, Chastang, Leclerc, Zins, Bonenfant, Bugel et al., 2001; Hoggan & Dollard, 2007; Johnston, Beedie, & Jones, 2006; Siegrist, Starke, Chandola, Godin, Marmot, Niedhammer et al., 2004; Smith, Roman, Dollard, Winefield, & Siegrist, 2005). Although a previous Japanese study by Tsutsumi and colleagues (2001) found an ERI ratio of only .65, their sample of 105 male dental technicians was not particularly representative of Japanese workers. Only one other study employing the ERI instrument has been conducted in an Asian country, with a Chinese sample of hospital-based physicians exhibiting a mean ERI of only .63 (Jian, Wenjie, & Sung-il, 2006). Again, this shows that ERI has only been tested in Asian countries within occupational samples, which may not be as diverse and generalisable as for example a random community based sample.

The present authors conducted a study of ERI in a random stratified Japanese community sample and found the mean ERI of the working community to be much higher than previous occupational samples, at an unprecedented 1.12, indicating a significant imbalance in rewards received by the average worker relative to their efforts invested (McLinton & Dollard, 2010).

1.1.9 Outcomes of Effort-Reward Imbalance

Outcomes of Effort-Reward Imbalance range from mental and physical at the individual level, to workplace outcomes at the organisational, and to the under-researched area of persistent behavioural outcomes. First, imbalance in rewards for efforts invested has significant and immediate mental health consequences, with ERI being shown to result in feelings of frustration, bitterness and demoralization (Kuper, Singh-Manoux, Siegrist, & Marmot, 2002), to negative self-perception, psychosomatic disorders and overall dissatisfaction with work (Golden & Wiens-Tuers, 2006), emotional exhaustion, to even depression and other negative affective changes (Tsutsumi, Kayaba, Theorell, Siegrist 2001; Pikhart, Bobak, Pajak, Malyutina, Kubinova, & Topor, 2004; Sanderson & Andrews, 2006).

In contrast, physical outcomes of effort-reward imbalance are among the most commonly studied negative results, with the most extensively supported being the relationship between ERI and coronary health such as cardiovascular disease (CVD: for a review, see van Vegchel, de Jonge, Bosma, & Schaufeli, 2005). Beyond CVD, links have also been shown with other physical outcomes including musculoskeletal conditions (Marmot, Siegrist, Theorell, & Feeney, 1999; Schnall, Belkic, Landsbergis, & Baker, 2000; Siegrist, 2001), muscular pains or tension, and general health and wellbeing (Peter, Hammarström, Hallqvist, Siegrist, & Theorell, 2006; Theorell, 1999).

ERI also has significant detriments to the organisation and employers, ranging from reduced productivity and performance (Krantz & Lundberg, 2006; Peter & Siegrist, 1997), to increased rates of sickness absence, turnover, and increased risk of accidents, which ultimately affects the company's success (Kawakami & Haratani, 1999; Rantanen, 1999; Holmes, 2001). Only recently have studies been conducted into the possible behavioural outcomes of Effort-Reward Imbalance. Two studies have observed that ERI can be associated with increased consumption of substances, from cigarette smoking (Peter, Siegrist, Stork, Mann, & Labrot, 1991) to alcohol (Puls, Wienold, & Blank, 1998). A separate study conducted by Head, Stansfeld, and Siegrist (2004) indicates that since alcohol may be consumed to deal with the problems of workplace related psychological stress, alcohol dependence is a possible outcome. Interestingly, whilst numerous studies have demonstrated the deleterious effects of ERI, only one such study has linked such outcomes in a Japanese sample (Irie, Tsutsumi, Shioji, & Kobayashi, 2004). In fact, Kawakami and Haratani (1999) have shown that most other studies investigating work stress in Japan have been conducted

with other poorer quality measures which have too few items, poor psychometric properties, or little established validation research.

The underlying rationale for stress originating from ERI has been attributed to a feeling of social injustice, so a possible outcome is also anger. Research by Smith and colleagues was the first to explore this area, finding evidence that indicates ERI may be related to anger (Smith, Roman, Dollard, Winefield, & Siegrist, 2005). In particular they found that ERI was associated with an individual's level of state anger, which in turn played a mediating role in the relationship between ERI and cardiovascular disease. Subsequently Hoggan and Dollard (2007) confirmed an indirect relationship between ERI through the mediating influence of trait anger on the outcome of driving anger which is said to be the internal anger trait propensity that precedes 'road rage'. It is logical that trait measures of anger and other stable personality characteristics are related to high stress jobs because work is often a chronic ongoing condition that does not vary on a daily basis, so it is related to the more enduring outcomes that are captured in traits (Dollard & Winefield, 1998; Mikkelsen, Saksvik, Eriksen, & Ursin, 1999).

A recent study by the primary author also sought to investigate whether Hoggan's (2007) link between ERI and trait and driving anger outcomes in Australia was a consistent phenomenon across cultures, and it was found that the relationship also existed in a Japanese sample (McLinton & Dollard, 2010). This relationship was found in both Australian and Japanese community samples, so it is expected that ERI may have a significant relationship with other anger constructs too.

1.1.10 Anger in the Workplace

The workplace has been referred to as a highly competitive and aggressive environment, where productivity is key and emotions are just an afterthought (Carpenter & Seki, 2006; Kuruvilla & Frenkel, 2001). Hassles and aggravations are commonplace, from noisy chatting or bad habits of colleagues to disagreements, overt conflict, and any number of other frustrating events that can compound an employee's feelings of anger (Marshall, 2005). Neuman and Baron (1998) suggest that any one or a combination of stressful social, situational and personal factors can lead to workplace anger. Social influences include

mistreatment, inequality and abuse of power. Beyond these, situational factors cover a variety of generally unsatisfying work conditions, whilst personal determinants can range from temporary emotional states like negative affect, to more pervasive factors like proclivity toward over-commitment or Type A behaviours. When all constructive means to deal with the stressors have been exhausted, and the individual believes there is no other possible solution, regression to anger and hostility (both overt and covert) are common coping mechanisms (Atlas & Porzio, 1994). Another speculation is that stressful situations generate a negative affect, wherein the propensity to become aggressive or release anger is significantly higher (Felson, 1992). The relationship between stress and anger has been substantiated by a number of studies (Clay, Anderson, & Dixon, 1993; Fitzgerald, Haythornthwaite, Suchday, & Ewart, 2003; Hoggan & Dollard, 2007; Siew, Bishop, Enkelmann, Tong, Yong, & Ang, 2005; Smith et al., 2005). It has been observed that long term exposure to a stressful work environment can shape a worker's behaviour patterns and personality development to the extent that individual traits such as 'trait anger' may become more pronounced (Dollard & Winefield, 1998). Recent studies have substantiated this proposal, finding not only correlations involving workplace stressors and trait anger, but also that work stress can be a predictor of trait anger (Fox, Spector, & Miles, 2001; Smith et al., 2005). Anger is an important area of study for occupational research as it presents negative consequences in the workplace, including reduced levels of engagement and cognitive performance, increased frequency of counterproductive behaviour, errors in judgment and risk taking (Idris & Dollard, 2011; Mann, 1992; West, Elander, & French, 1993).

In any study of anger however, we cannot assume that the human anger experience is consistent across all cultures. Whilst many studies have investigated the nature of stress and managing anxiety and depression in the Japanese workplace, research has yet to be conducted in Japan into the actual nature of the anger experience itself. Recently, anger management plans have been implemented in Japan in order to reduce overtly expressed anger in the workplace (Jones, Tanigawa, & Weiss, 2003; Kawakami & Haratani, 1999), but research into further understanding the internal experience of the phenomenon is lacking. This is a surprise for a country with such a reputation of stressors and frustrations in the work domain, as it would present an interesting potential environment for research. Despite negative working conditions, Japanese people are unlikely to show their anger and frustration due to the cultural norm referred to as *'gaman'* or 'endurance', to persevere in the face of adversity. So whilst we know that Japan represents a more stressful overall environment, and that anger

expression in the collectivist culture is less prevalent, what about unexpressed anger? Although we see overt aggression and hostility less, does that mean that fundamentally Japanese people are feeling less anger inside? Or do they feel greater levels of anger toward other people in their social environment but simply not express it as readily? Another interesting suggestion is that the major trigger for anger appears to be the violation of the intuitively expected ethical standards of work, including discrimination, harassment and unfair treatment (Aquino, Douglas, & Martinko, 2004). In Japan, segmentation within the hierarchical relationship is distinctly divided; the abuse of power and privileges is a very common occurrence, leading to high levels of stress in subordinates (Matsumoto, 2000). Would subordinates feel a different level of anger when entrenched in this strong hierarchical relationship, compared with those in cultures without these conditions? Or would they experience perhaps a socio-cultural sense of learned helplessness? The nature of the internal experience of anger in Japan certainly presents an interesting and hitherto under-researched area of psychology.

1.1.11 Spillover of Effort-Reward Imbalance into other Domains of Life

Spillover refers to how the stress experienced at work results in negative outcomes that contaminate other areas of life outside of the work domain. There is evidence that the effects of same-day job stressors may spillover to increased anger expression at home (Bolger, Delongis, Kessler, & Wethington, 1989; Repetti, 1994; Schulz, Cowan, Cowan, & Brennan, 2004; Story & Repetti, 2006). In fact, a recent study of daily occupational stressors found that on the same day of a negative interpersonal event in the workplace, upon returning home husbands and wives reported raised anger levels and expression (Story & Repetti, 2006). This factor was compounded in the event of a couple in a high conflict relationship. Even more extreme is data that indicates over 40% of policemen working in stressful and violent environments also engaged in violent behaviour toward their spouse (Johnson, 1991; Johnson, Todd, & Subramanian, 2005). According to the *negative mood spillover model*, job stressors generate negative feelings such as frustration and irritability, which then endure even after returning home, increasing the probability of negative social interactions like marital conflict and aggression (Story & Repetti, 2006). Further, it has been shown that stressors at work on an interpersonal level lead to spillover; in particular the frustrating interpersonal interaction with others during the work day leads to the expression of anger toward their spouses (Bakker,

Demerouti, & Dollard, 2008). A stressful day at work has been shown to result in an increased propensity for hostile interactions with one's partner due to the higher emotional arousal, leading to arguments (Matthews, Conger, & Wickrama, 1996). This can result in both an increase in critical judgments and anger toward their spouse when wives bring this spillover back (Schulz et al., 2004), tension and arguments for men (Bolger et al., 1989), and even in men yelling and punishing children after poor interpersonal interactions at work (Repetti, 1994). Evidence suggests that specific spillover from the workplace to the family domain has been found in both fathers and mothers in slightly different ways. Fathers appear more susceptible to the effects of negative spillover into the family environment after work (Larson & Richards, 1994). Mothers are more likely to feel positive feelings during work hours, theorised to be due to the perceived break from comparatively more stressful household environment with the typical responsibilities of a mother (Hochschild, 1997). In comparison, it is harder for women to carry through the positive spillover of a good work day to the home environment when confronted with the 'six-o'clock crash' wherein they return from work to the high demands and responsibilities of the family environment (Larson & Richards, 1994; Hochschild, 1997). This is evidenced not only in self-report diary studies, but even external evaluation, such as wives who report their husbands as more angry following a day that had a heavy workload (Story & Repetti, 2006).

Beyond just same-day job stressors, there exists strong evidence to suggest that long term negative emotions in the workplace environment persistently spillover into the family domain for both working men and women (Matjasko & Feldman, 2006; Larson & Richards, 1994). This underlines the significant influence that work can have over other areas of life, particularly family life and the commonly known concept of 'taking one's work home' with them. The influence of not only distress caused by work conditions (hours, schedule, task complexity) but also psychosocial factors (perceived job security and social relationships with other employees) have been shown to induce a spillover effect into home life with anger, aggression, and even domestic violence (Spitze, 1998; Perry-Jenkins, Repetti, & Crouter, 2000; Johnson et al., 2005). The anger may not be expressed in the workplace for numerous reasons, including the conscious or unconscious desire to avoid negative consequences (Averill, 1983), the workplace requirement to manage emotions which is commonly referred to as emotional labour (Dollard, Dormann, Boyd, Winefield, & Winefield, 2003), or the reduced expression when in the presence of others of higher social rank which is often the case in the workplace (Allan & Gilbert, 2001). These 'bottled up' angry feelings are then

carried back home. Even work stress from longer work hours has been linked to this negative work-family spillover (Schor, 1991). Studies mentioned earlier have pioneered the use of Effort-Reward Imbalance to measure work stress in research on spillover, and have found this effect to exist with anger outcomes, for example in the driving domain (Hoggan & Dollard, 2007; McLinton & Dollard, 2010; Smith, Roman, Dollard, Winefield, & Siegrist, 2005). The present research will extend on this by further examining the link between ERI and anger, specifically the spillover of ERI to a new anger construct in the family domain in both Australia and Japan. Exploration into the nature of domain spillover from work stress in Japan is still in its infancy (for example, see Shimada, Shimazu, Bakker, Demerouti, & Kawakami, 2010), indicating that the issue has only been recently recognised despite the fact that Japan is widely acknowledged for its workplace problems, high levels of stress and negative outcomes (Meek, 2004; Nakao et al., 2005).

It should also be noted that the Work and Stress Research Group (WSRG) in the Centre for Applied Psychological Research (CAPR) at the University of South Australia has taken particular interest in the areas of stress and anger, and in particular how stress at work can spillover into other domains. The primary author's first publication elucidated the existence of a spillover effect from ERI at work to anger outcomes outside of work in a Japanese sample, findings which were the primary motivations for the present study (and further three publications included herein) to investigate spillover, new anger constructs, and comparing the stress and anger experience between Japan and Australia (see 5.1).

1.1.12 Section Summary

The worldwide workplace has experienced numerous negative changes with the recent economic situation, and these have been seen as a catalyst for the recent increase in work-related stress. The growing intensity of work stress appears to be a global problem, thus it has captured the interest of international research. The importance of researching stress at work and its influence over workplace health has been highlighted by its numerous negative outcomes, both psychological and physical. Japan is famous for its complicated working conditions and the toll these take on the employee, making it a good Eastern candidate for

international comparison of work and stress. Further, strong cultural differences exist between Japan and Australia, most notably the clearly defined social hierarchy system (*jo-ge kankei*), which can be seen clearly in the workplace in how superiors pressure their employees. The Effort-Reward Imbalance (ERI) model of work stress accounts for the reciprocal relationship in the fair exchange of effort invested on the job for rewards received including income and recognition. Limited research has been conducted with cross-cultural comparisons of ERI and anger measures between Eastern and Western countries, and despite Japan's notoriously poor working conditions, research into ERI in Japan outside of limited occupational samples is nonexistent. ERI stress can have numerous outcomes, and literature predominantly measures the physical such as cardiovascular disease, however an under investigated area is the possibility of anger as an outcome. Anger is not only an important area of research for the benefit of the individual, but for occupational research too, due to negative consequences for the company and fellow workers. Beyond just the work environment, stress can spillover into the home domain too. The negative mood spillover model suggests that when experiencing stressors in the workplace like workload or interpersonal interactions, feelings of tension and frustration may be generated in the individual which are then carried back home after work to be released toward close others.

1.1.13 Personal Reflection

RDQ 1 – Research based knowledge: *In my honours study I had the opportunity to investigate the nature of anger and work stress in Japan, and also to facilitate cross-cultural comparison with Australia. The PhD has offered me a chance to further research these two areas of personal interest. Study of the spillover effect of anger into domains outside the workplace has been trending in the last decade or so, which led to one of the foci of my PhD, and the possibility that I might contribute to the body of knowledge with a fresh point of view.*

RDQ 7 – International perspectives: *I was made aware of the importance of stress at work during my honours research, particularly the pressures of employees in Japanese companies whilst I was living in Japan. Ever since then the socio-cultural differences in the dynamics of the workplace between Japan and Australia have been a key interest of mine. In my previous*

research I highlighted the fact that a significant proportion of the Japanese workforce is at risk of Effort-Reward Imbalance, and thus I had a vested interest in further studying this finding in the PhD, particularly because research employing the ERI in Japan in random community samples rather than limited occupational samples is non-existent aside from my own. Thus my aim in the present work was to not only incorporate existing literature from international research, but also endeavour to fill the dearth of knowledge concerning ERI and anger in an Asian context.

1.2 The Study of Anger

1.2.1 General Background of Anger

The research of anger is not a new concept, and humanity has been fascinated with the nature of the anger experience and how to control it for as long as the last two millennia. Even in Ancient Rome and the writings of Lucius Seneca, the tutor of Nero, can be seen the desire to control man's anger (Seneca, 44; 1817). Long since have people recognised the importance of anger, and it has drawn research interest as one of the many suggested catalysts for aggressive behaviours such as violence, domestic abuse, victimisation, sex crimes, and school or workplace bullying (Geen, 2001). The foundation of overt aggression is said to lie within the internal experience of anger (Geen, 2001), and the aforementioned are all examples of overtly expressed anger. Thus, for each instance of overt aggression there are numerous accounts of unexpressed anger.

Anger can be experienced on a daily basis, and is often a means of dealing with frustration, which when elicited by the environment can be a natural and healthy response often serving a purpose (Spielberger, 1996). It is an emotional condition instigated by both internal and external incidents, and it can vary anywhere between slight annoyance and extreme rage (Spielberger, Sydeman, Owen, & Marsh, 1999). Anger has been referred to as a natural and evolutionarily advantageous mechanism in humans that triggers physiological changes to assist in survival, such as the release of adrenalin in order to deal with or ward off an external threat (Goos & Silverman, 2002), concealing vulnerability, and bolstering resilience during tough challenges (Novaco, 2007). However, other times it can be expressed in exaggerated and potentially harmful aggressive behaviour or interpersonal conflict, both verbal and physical (Geen, 2001). Within contemporary societal constraints, uncontrolled aggressive behaviour is not adaptive, and it is common to withhold the overt expression of anger even without being aware of it in order to avoid socially determined negative consequences (Averill, 1983; Beatty & McCroskey, 1997) or expected hostile retaliation (Deffenbacher, Oetting, Lynch, & Morris, 1996). Even though society condemns overt aggression, anger expression may be an adaptable method of releasing pent up frustrations, and in fact, retaining anger internally without release can detrimentally affect cognitive faculties and reduce task performance (Geen, 2001). Unexpressed anger can become amplified to the point of hindering an individual's goals, such as encouraging self-defeating

behaviours (Baumeister & Scher, 1988) and interpersonal conflict (Sereno, 1987), or deteriorating an individual's quality of life. An example of this is through an increased risk of high blood pressure (Hogan & Linden, 2004), and cardiovascular disease (Smith, Roman, Dollard, Winefield, & Siegrist, 2005).

Recently, anger is more commonly being referred to as a 'syndrome', comprised not only of feelings but also thoughts and physiological reactions (Berkowitz & Harmon-Jones, 2004). The anger experience is not always a universal phenomenon, with both experience and expression being influenced by cultural differences (Russell, 1991) and education (Schieman, 2000), not to mention physical characteristics like age (Gross, Carstensen, Pasupathi, Tsai, Skorpen, & Hsu, 1997) and gender (Thomas, 2005). Spielberger (1996) postulates that the concept of anger can be divided into two constructs in his State-Trait Anger theory, making it easily operationalised. 'State anger' encompasses an individual's variable experience of anger at a given time, whilst 'trait anger' denotes a pervasive pattern of angry feelings woven into the stable structure of an individual's personality. The latter determines one's propensity to feel anger, and in turn influences the regularity and strength of the emotion. Trait anger has also been shown to influence the frequency and duration of state anger episodes, and it has been observed that individuals high in trait anger deal poorly with state anger, and suffer more damaging outcomes (Spielberger, Sydeman, Owen, & Marsh, 1999). Similar effects have been observed in individuals characterised by a Type A personality pattern, possibly linking their propensity toward aggression to individuals with high trait anger (Neuman & Baron, 1998; van Vegchel, de Jonge, Bosma, & Schaufeli, 2005). Of interest to research is the trait dimension, because states are transient, whilst persistent individual predispositions to anger are more likely to have long-term negative consequences to the individual and the people in their social environment.

1.2.2 The Difference between Anger and Aggression (Anger Expression)

In daily vernacular the terms 'anger' and 'aggression' may be used interchangeably. Although they are indeed related, a clear distinction must be made between these two constructs in the field of psychology. In brief, anger concerns the internal process dealing with thoughts and feelings revolving around concepts such as frustration and irritation (Geen, 2001). Aggression on the other hand concerns the external expression of these aforementioned internal processes,

encompassing behaviours with the intent to physically or emotionally harm or threat to harm an unwilling party (Taft, Tones, Panuzio, Murphy, O'Farrell, Monson et al., 2006; Baron & Richardson, 1994). While aggression is often a short-lived release of frustrations in the form of a verbal retort, violent attack, property destruction and the like, anger is a more complex emotional and cognitive state that can persist for a longer duration, perhaps becoming chronic when in the presence of a perpetual stressor (Frijda, 1994). The link between anger and aggression has been extensively supported in research, and anger is often viewed as the emotional precursor to aggression (for examples and review, see Anderson & Bushman, 2002; Averill, 1983; Frijda, 1986; Kinney, Smith, & Donzella, 2001; Smits & DeBoeck, 2007). This is why anger has received interest in research despite it not having an overtly measureable effect that is as obvious and immediate as aggression. This difference has led to the desire to study anger as the fundamental cause of the aggressive behaviour, rather than the 'band-aid' solution of investigating aggression as the end result that has justified the dominant research interest in anger (Novaco, 2007).

1.2.3 The Importance of Investigating Anger over Aggression

The internal experience of anger is just as important an area of research as aggression and anger expression. Whilst the focus of media attention is drawn to the most extreme examples of aggression such as physical assault, for each incidence of explicit violence there are many other situations where people harbour excess levels of anger (Hoggan & Dollard, 2007). Although overt aggression and its consequences are easily observable, the internal experience of anger is in fact highly stressful. Even without expression the simple rumination of angry thoughts has been shown to have a negative influence over daily tasks and social interactions (Frijda, 1994). This is because expression can often be a once-off cathartic release of aggressive feelings, whilst anger which remains unexpressed can persist for much longer. Even without its overt expression, when anger is present evidence indicates that such a state of emotional arousal can lead to negative outcomes including reduced cognitive performance (Matthews & Desmond, 1995; Mayer & Treat, 1987), poorer judgement and decision-making (Mann, 1992), increased frequency of negative attributions (Wyatt, 1998), and increased propensity to engage in risky behaviours (Arnett, Offer, & Fine, 1997; Dahlen, Martin, Ragan, & Kuhlman, 2005; West, Elander, & French, 1993; Wyatt, 1998). These errors in judgment and risk taking behaviours can have dire results in particular domains such as on the road

(Derryberry, 1988), leading individuals to take needless risks, driving dangerously and consequently displaying an increased probability of being involved in a road accident (Deffenbacher, Deffenbacher, Lynch, & Richards, 2003; Deffenbacher, Lynch, Filetti, Dahlen, & Oetting, 2003; Deffenbacher, Lynch, Oetting, & Swaim, 2002).

The pervasive influence of anger has been acknowledged, and is now commonly recognised as a significant factor influencing physical health (Kerns, Rosenberg, & Jacob, 1994; Suinn, 2001). Anger is related to health problems such as cardiovascular disease and reactivity (Katz & Toben, 1986; Smith et al., 2005), and individuals with a trait predisposition to anger can also experience physiological outcomes like an increase in muscular tension which has been suggested to lead to chronic pain (Burns, 1997; Burns, Johnson, Mahoney, & Devine, 1996; Flor & Turk, 1989). When dealt with in a socially acceptable manner the expression of anger is suggested as such a natural response, that when suppressed may even lead to somatic symptoms such as headaches (Eckhardt & Deffenbacher, 1995). Retaining high levels of anger has also been linked to extensive physiological and psychological conditions, including but not limited to depression, chronic pain, and the reliance on maladaptive coping strategies (Beutler, Engle, Oro'-Beulter, Daldrup, & Meredith, 1986; Eckhardt & Deffenbacher, 1995; Fernandez & Turk, 1995; Kerns, Rosenberg, & Jacob, 1994; Materazzo, Cathcart, & Pritchard, 2000; Pennebaker, 1989; Pennebaker, 1992; Spielberger, Reheiser, & Sydeman, 1995).

In the workplace, anger is also seen to inhibit rational thought processes leading to poorer output due to temporary reduction in skill, and also increases the likelihood of hostile attributional biases where the behaviour of others is more likely to be seen as intentional and aggressive, thus increasing the propensity for the individual's own aggressive retaliation (Holtzworth-Munroe, 1992). It has been shown that anger mediates or is even a notable cause of spouse and child abuse (Mammen, Kolko, & Pilkonis, 2002; Norlander & Eckhardt, 2005), so the chronic experience of internal anger can have enduring interpersonal ramifications beyond just a single cathartic aggressive outburst. Thus it has been established that anger itself rather than overt anger expression has a pervasive effect in many life domains.

1.2.4 What Provokes Anger?

Overall, in the context of social situations involving other people, anger is seen as a negative feeling toward others (Gleason, Jensen-Campbell, & Richardson, 2004). It has been hypothesised that for a person to feel anger, they must experience a situation that they perceive as sufficiently significant enough to warrant the need to defend themselves against that victimisation (Lown, 2007). Other hypotheses include simply the presence of a negative stimulus or event, from direct physical pain to being the witness to social stressors like injustice (Fernandez & Turk, 1995). Fundamentally, it relies on how the individual perceives the situation, not on the situation itself (Berkowitz & Harmon-Jones, 2004). 'She made me do it' or 'he knows I have a short temper and shouldn't have aggravated me', and so on are all excuses used by spouse abusers in rationalising their aggressive behaviour, using external explanations to attribute the cause of their behaviour (Johnson, Todd, & Subramanian, 2005). These excuses are not legitimate, but those situations can help fuel the person's anger reaction if it is so perceived. One would assume that the vast socio-cultural differences between countries would make the provocations perceived as anger-eliciting different between people of different nationalities. However, it has been found that certain situations evoke anger regardless of cultural factors, most notably the violations of informal interpersonal norms and formal societal norms, with the former being the most anger evoking in individuals from the United States, Japan, Germany and Hong Kong (Ohbuchi, Tamura, Quiciley, Tedeschi, Madi, Bond et al., 2004). Japan is a major focus of the present work because it exhibits numerous cultural idiosyncrasies that are of great research interest.

1.2.5 Japanese Socio-cultural Differences in the Anger Experience

It has been proposed that a society's general inclination towards aggression can be reflected in an individual's daily manifestation of aggressive behaviour, such as driving anger (Connell & Joint, 1997; Izawa, Kodama, & Nomura, 2006). In general, Japanese society has a rather passive inclination towards problem resolution, and people actively avoid potential conflict by keeping their opinions reserved and answering questions in an indirect manner (Masataka, 2002; Miyazaki, Komaki, Tsuboi, Kobayashi, Shimizu, Fujita et al., 2003). Countries often index crime as a common outlet for aggression, but Japan is world renowned for its low crime rate (Roberts & Lafree, 2004). If anger is not manifested through this avenue, one must

postulate where and how it may be expressed. Compared to westerners, Japanese people are less likely to accept aggression as a means of solving interpersonal disputes, and instead avoiding direct conflict often by yielding to a superior (Kato, 2003). In a rational culture like Japan, people are not inclined to express emotion (Bhagat & Steers, 2009). In fact, withholding overt anger is a natural method of avoiding the negative consequences were it to be expressed (Averill, 1983). Further, in the case of bullying, Japanese people are likely to follow the generally observed practice of withholding anger towards others of a higher social rank (Allan & Gilbert, 2001). Nevertheless, the absence of overt expression of anger does not deny its covert existence. Previous studies have shown that anger does indeed exist among Japanese people despite the low rates of actual expression (McLinton & Dollard, 2010). Thus, rather than the measurement of overt anger and aggression, a better indicator of anger in such cultures may be self-reports of unexpressed anger. Anger as an internal and personal experience can only be measured via self report, and evidence suggests that any self report measure will be affected by social desirability, and thus an underreporting of actual anger levels (Arnold & Feldman, 1981). Despite concerns for social desirability and a standing belief that Japanese cultural influences would lead to underreporting of emotions and negative workplace conditions, Tsutsumi (Kayaba, Theorell, & Siegrist, 2001) in fact found that in a questionnaire on work stress a significant number of participants expressed their anxiety over pay rates and job security. Rather than anger expression instruments, perhaps a measure of the internal experience of anger presents a more useful tool for investigating the Japanese anger experience.

1.2.6 Characteristics of the Target and Environment in the Anger Experience

The intuitive assumption that anger differs according to the situation has been observed in studies of overt aggression and anger expression, where differences have been displayed according to situational variables (Everson, Goldberg, Kaplan, Julkunen, & Salonen, 1998; Houston, 1994; Spielberger, 1988). Petermann and Petermann (1996) showed that the home and work environments have led to differences in aggressive behaviour, and consequently these two domains have been used as easily identifiable yet environmentally unique situations when testing domain differences in anger expression (Bongard & al'Absi, 2003). Previous research has attempted to investigate how humans express their anger, for example, individuals are more likely to express anger in a private setting, though they exert more

control over it in public settings (Bongard & al'Absi, 2003; Porter, Stone, & Schwartz, 1999). However, measures of anger expression do not enable the investigation of how one's internal anger experience itself may be altered by environmental factors such as being in the workplace or in the family environment. Yet to date no instruments have been developed to measure anger (not expression) within specific domains. An existing anger instrument (STAXI: Spielberger, 1996) has been modified to test domain effects but only on anger expression style rather than the internal experience of anger itself (Bongard & al'Absi, 2003). There is no instrument that has been specifically developed to test for example, how an individual's trait potential to anger may be influenced by both the environment of an anger-eliciting event or the characteristics of the perpetrator.

Not only can we not tell whether the internal experience of anger differs from domain to domain, but also with existing measures we cannot identify whether anger differs according to the specific characteristics of the others in that social environment. This is an important question as it has been shown that in 89% of all situations where anger is involved, it is directed at other human beings (Averill, 1982). Previous studies have measured the differences in anger expression toward other targets, indicating that a particular person may have a predisposition for aggression toward specific people. For example, it is commonly held that potential for anger expression is reduced toward authority figures, and increased toward family members (Underwood, Coie, & Herbsman, 1992). Aggressive expression of anger may be restrained even without conscious knowledge when in the presence of a social superior (such as in a work environment), or to avoid negative consequences or aggressive retaliation (Allan & Gilbert, 2001; Averill, 1983; Deffenbacher, Oetting, Lynch, & Morris, 1996). Whilst anger expression can be influenced by the social relationship (a peer, a family member, a close friend, a stranger, etc.) it does not answer whether the anger felt toward, but not necessarily expressed, is the same from person to person (Porter et al., 1999). For example, would people still feel the same amount of anger toward such individuals in an identical situation, but simply not express it because of the target's position of authority? Or is the internal experience of anger toward that individual fundamentally different? Would people feel anger toward those authorities despite the fact that anger expression is lower? Cultural differences also exist in the propensity to express pent up frustrations. For example, if there is a reduced incident of overt anger expression in Japan, does that mean there is less actual anger or does everyone experience anger at the same level but are simply bound by socio-cultural rules not to express it?

In a study of domestically violent men, it was found that some groups of men can have a propensity to anger and aggress across numerous situations in and outside of the home environment, whereas another subset of domestic abusers felt a significantly different predisposition to anger in spouse-specific situations in the home domain only, in comparison to general anger and hostility in other non-marital situations (Holtzworth-Munroe, Rehman, & Herron, 2000). Further, some felt significantly *less* anger toward their spouse in comparison to non-marital situations, but engaged in *more* actual anger expression in domestic violence toward their spouse than expressing violence in other domains. Previous research focussing on the overt expression of anger and aggression (for example, see Bongard & al'Absi, 2003) has neglected to account for the internal experience of anger, and more importantly, that people can differ in their proclivity to anger according to the target (characteristics, relative relationship). Whilst previous studies have often postulated that anger is a multi-faceted construct, and others have shown how anger expression can be released or inhibited depending on the relative relationship of the target; Holtzworth-Munroe and colleagues (2000) is one of the few indications of awareness that not only expression, but the actual internal experience of anger and trait predisposition to anger may be different according to targets.

A new measure is required that incorporates all these variables to measure interpersonally-directed anger that permits ease of manipulation of the target characteristics relative to the subject. In fact, a recent critical review of the popular existing anger instruments specifically underlines the need for the development of new instruments that measure anger in specific areas of the human condition rather than general measures of anger, expression and hostility (Eckhardt, Norlander, & Deffenbacher, 2004).

1.2.7 The Window for Development of a New Measure of Anger

The previous section is littered with questions that cannot be answered with the limitations of existing measures. Eckhardt, Barbour and Stuart (1997) have discussed the need for researchers to specify the object of a person's anger and hostility through their extensive research into distinctions and measurement of domestic violence. Without a measure to look at how people are more likely to feel anger toward one person or another, we can't answer the conflicting research on the topic. For example, clinical research suggests that males engaging

in domestic violence only direct anger and aggression at their spouse and actually do not have elevated levels of general anger (spouse-specificity in anger: Boyle & Vivian, 1996; Langhinrichsen-Rohling & Vivian, 1994). However, other research reveals that these men report significantly more anger-eliciting experiences outside their spousal relationship (Holtzworth-Munroe et al., 2000). Are they most likely to feel anger toward their spouse than anyone else, or are they likely to feel a similar level of anger toward everyone in their social environment but only actually express it to close others? A measure that can easily manipulate the interpersonal target of anger would be able to further investigate this type of conflicting data and answer such questions. A measure that can easily manipulate the interpersonal target of anger would be able to further investigate this conflicting research. In fact, Eckhardt and colleagues (2004) state that situations like the aforementioned conflicting research justifies the creation of new and unique assessment tools that are particular to such aspects of the anger experience.

Numerous researchers have taken an interest in the measurement of how people express their anger more freely in certain domains or toward certain people, and how they restrain their anger in the presence of certain people. However the crux of the argument is that no research has made a concerted effort to delve to the very heart of this overt expression and identify whether the internal mechanisms of anger in the human experience are actually different according to domain or characteristics of others in the social environment. The key to the operationalisation of a new anger measure that can investigate all these facets of the anger experience is to be versatile in allowing researchers to easily manipulate the situational variables or the characteristics of the target of anger according to the topic of interest. For example, physical features (ethnicity, etc.), and relative relationship to the subject (vary the degree of intimacy), or a type of person largely unrelated in their actual life (religious association, political affiliation, etc.), may all be varied in such a measure.

Whilst past research has shown a bias in the expression of anger toward people of higher social rank, research has yet to establish whether this is an actual internal effect, wherein the levels of anger felt are also reduced due to the authority figure, or whether the internal experience of anger is consistent toward each target, higher equal or lower, but simply the expression of it is withheld? Thus a new instrument specifically designed to test the proposition; that people differ in their internal anger experience toward other individuals according to their relative hierarchical social status (i.e. superior, equal or subordinate); is

warranted. It would be interesting to test such an instrument in Japan, where the *jo-ge kankei* leads to strongly differentiated hierarchical positions in the workplace and even in society (seniority by age), in comparison to a culture with more relaxed social levels like Australia.

Further, with a new instrument specifically designed for ease of manipulation of the characteristics of the target of anger, it would also enable tests of differences in how a person experiences anger toward others according to the relative closeness of their relationship (e.g. colleagues at work, compared to spouse at home). The new instrument would be specifically designed to test another proposition; that people differ in their internal anger experience toward other individuals according to the closeness of their relationship (e.g. people at work versus family members). Again, it becomes an interesting phenomenon to test cross-culturally in Japan and Australia, since the former whilst a collectivist country, has been noted to view their in-group as their company, thus creating a 'work-family'.

It is surprising that until now neither an anger expression, aggression nor hostility measure has been specifically constructed to identify whether people hold biases toward others according to the domain they are in, or the characteristics of that target. Even measures of a highly targeted aggression phenomenon like domestic violence have relied on the modification of existing measures, many with poor construct validity or psychometric properties (Eckhardt et al., 2004). Whilst a new measure could be developed to further investigate these overt and easy to measure expressions of anger, it is well known that for each instance of overt expression there are countless internal feelings of anger that brew with the potential to fuel such behaviours when the situation arises. Thus, the internal experience of anger was selected for the development of a new instrument in the present research.

1.2.8 Section Summary

Anger has received much attention in research as it is suggested to be the feeling that is at the heart of motivating outward aggressive behaviour. The intuitive notion that feelings of anger may fuel the tendency to behave aggressively has been supported in the body of existing research. However, previous research is saturated with studies of overt anger expression and

its easily observable consequences, but less focus has been drawn to the internal experience of anger. The latter is not only more prevalent (but simply less overtly evident), but it also results in numerous negative consequences. It has been recognised across the literature that experiencing anger on a regular basis leads to negative health outcomes both physical health and performance at work, and also has been shown to also affect risk taking and other behavioural outcomes. Evidence suggests that anger expression differs according to the social environment and in the presence of different types of people, but no studies have discovered whether the internal experience of anger itself is similarly affected. There is a window for the development of new measure, and recent reviews of existing instruments encourage testing specific aspects of the anger experience beyond simply general feelings. It is reasonable to expect that individuals differ in their propensity to anger depending on who is provoking them. For example one might differ in the propensity to anger toward the frustrating behaviour of a subordinate at work, as opposed to a superior. Therefore, an 'interpersonally-directed' anger measure that permits manipulation of the domain (environment) and the characteristics of the antagonist would be highly useful to guide future anger research with important practical implications. It will also allow measurement of the differences in anger toward people of higher or lower social rank in Japan and Australia. This facilitates valuable cross-national research which is important when investigating cultural dimensions in the worldwide anger experience. Further, if aggression is a consequence of anger, the more we research anger and the methods to alleviate it, the better we can reduce the overt expression of it in society.

1.2.9 Personal Reflection

RDQ 3 – Effective problem solving: *Anger has been an area of interest since my honours research into the nature of anger on the road in Japan. During early background research I conducted during the inception of the PhD, I noticed an aspect of the internal anger experience that had gone largely untouched. The possibility of anger conceptualised as a directional measure that accounts for the characteristics of the target of that anger struck me as a novelconstruct with numerous possible applications, both theoretical and practical. Developing a new instrument for this would represent a significant contribution to unique knowledge in psychology with a new measurement tool for anger research, and I jumped at*

the opportunity without hesitation. Once I had identified this, I needed to exercise my problem solving skills to tackle the daunting task of operationalising a new construct. Of course, attempting to establish a brand new construct and instrument to measure it in a highly scrutinised field of psychology would not present an easy task.

1.3 Origins of Interpersonal Anger

1.3.1 Justification for a New Measure and the Origin of Interpersonal Anger

Instruments already exist to measure an individual's general levels of anger, propensity to anger and aggress, however, in a thorough review and evaluation of the existing anger instruments Eckhardt, Norlander and Deffenbacher (2004) explicitly state that "there is a need for more refined measures of anger and hostility as they relate to specific classes of the human experience" (p. 36). It is typical for researchers to employ existing measures with slight modifications as necessary to measure the desired area, but almost all general anger measures that are in common use are employed for convenience in spite of their surprisingly poor psychometric properties or conceptual development (Eckhardt et al., 2004). As outlined in the previous sections, there is an as yet unexplored facet of the human anger experience that deserves attention: how individuals may anger according to the characteristics of different people in their social environment. This specific aspect of human interaction has been dubbed 'Interpersonal Anger'.

The notion of Interpersonal Anger originated whilst researching Driving Anger (see Appendix 8.1) and observing that anger may be directed at the actions of other people on the road, according to their different actions such as when they observed others disobeying road rules, speeding, or engaging in discourtesy on the road, and so on (Hoggan & Dollard, 2007; McLinton & Dollard, 2010). It was suggested that if people felt anger toward the actions of others on the road, might they not feel anger in other interpersonal situations according to the behaviour of other people outside of their cars? This prompted the present work: the development of an instrument that was to measure whether people did in fact feel anger directed at others in their social environment, and how this interpersonal anger might differ according to possible characteristics or relative relationships with those individuals. Interestingly, no such instrument had been developed, despite the fact that in 89% of all situations where anger is involved, it is indeed directed at other people (Averill, 1982). This revelation led to the emergence of the Interpersonal Anger construct that defines a subset of anger conceptualised in the way that we direct it at others in our social environment; how an individual's potential to anger may be influenced by the characteristics of other people, specifically the perpetrator of anger-eliciting behaviour and their environment. For example, we get angry at the boss for putting unnecessary pressures on us at work; we get angry at a

stranger for not giving us a common courtesy. The most important aspect is the notion that Interpersonal Anger represents multiple different trait predispositions wherein an individual will differ in how they anger toward others according to characteristics of that person. Consider for example, being intentionally disrespected by a family member, and then the same disrespectful behaviour is carried out by a stranger, or a work colleague, or a superior or subordinate at work. It is only intuitive to suggest that despite the same behaviour, individuals will differ on the amount of anger they feel toward each target person. This is the fundamental characteristic that differentiates the proposed new instrument from existing measures – it is specifically designed to investigate the variations and biases in the internal anger experience.

1.3.2 The Shortcomings of Existing Measures

In a review of the literature, Eckhardt and colleagues (2004) suggest that almost all self-report anger measures are either a general review of angry feelings, cognitions or physiological changes. The remaining measures delve into a specific aspect of the anger experience, but are almost non-existent (for example, the Driving Anger Scale; DAS: Deffenbacher, Oetting, & Lynch, 1994). The former have been employed to attempt to measure anger expression, the influence of domains on aggression or withholding of anger (as discussed in the previous section), but rarely do researchers acknowledge the numerous shortcomings of the measures that seem to have become an institution (Eckhardt et al., 2004). In a thorough evaluation of existing instruments designed to measure anger and hostility, Eckhardt and colleagues (2004) noted that many of the most commonly used measures of anger have been shown to have poor psychometric qualities, conceptual development, and little or no validation data. Even in terms of simple scale reliability measures, many fail to even achieve an acceptable coefficient alpha of .70 or higher (Nunnally, 1978), let alone the more recent research which posits a more conservative estimate of acceptable coefficient alpha to be .80 or higher (Henson, 2001; Loo, 2001). Specific evaluation of just a few leading measures commonly used in the field of anger follows.

Buss-Durkee Hostility Inventory

The Buss-Durkee Hostility Inventory (BDHI; Buss & Durkee, 1957) is a measure of anger expression and hostility that consists of 75 items and eight subscales covering a broad

number of themes, and in terms of anger expression is reportedly the most frequently used instrument (Lange, Pahlich, Sarucco, Smits, Dehghani, & Hanewald, 1995). Despite this, the general feedback over the decades of use have indicated both poor internal consistency (Biaggio, 1980), poor test-retest reliability (Bishop & Quah, 1998), and very limited predictive validity (Biaggio, Supplee, & Curtis, 1981). In a recent review of the existing literature by Vassar and Hale (2009), BDHI alpha coefficients were not acceptable according to Nunnally's (1978) lenient minimum standard, with subscale reliabilities falling as low as .50.

Cook-Medley Hostility Inventory

Hostility is a construct that is highly related to aggression in the literature, but is different in conceptual distinction, covering more the mistrust of others and anticipation of mistreatment which leads to a hostile attitude toward other people (Smith, 1992). The Cook-Medley Hostility Inventory (Ho; Cook & Medley, 1954) is a 50-item scale designed to identify chronic anger and hostility-related constructs. Unlike the BDHI, the Ho has demonstrated acceptable reliability coefficients. However research suggests that its construct validity is dubious, with notable correlations with unrelated personality traits like neuroticism and general emotional distress (Barefoot, Dodge, Peterson, Dahlstrom, & Williams, 1989; Han, Weed, Calhoun, & Butcher, 1995). Furthermore, data suggests that it is not even related to hostility or aggression behavioural indexes bringing its usefulness further into question (Megargee & Mendelson, 1962; Shipman, 1965). Unlike other hostility measures which have shown to consistently predict coronary heart disease, the Ho has not demonstrated such predictive ability, again casting doubt over its construct validity (Miller, Smith, Turner, Guijarro, & Hallet, 1996).

Novaco Provocation Inventory

The revised Novaco Provocation Inventory (NPI; Novaco, 1977) asks subjects to report the level of anger they would feel when confronted with anger-eliciting situations, however there is inconsistent evidence to support its internal reliability and construct validity. Test-retest coefficients for the NPI vary considerably, with the lowest reported reaching .17, along with poor correlations with self-reported anger provocation and other measures of anger or hostility (Biaggio et al., 1981). Furthermore, its ability to discriminate between anger-prone samples (spouse abusers) and the normal population has been brought into question (Hastings

& Hamberger, 1988). Nevertheless, the concept of measuring people's anger reaction to different provocations helps elucidate the situational and environmental triggers in the human experience of anger. A measure that is developed from the ground-up to differentiate between environmental conditions in the human anger experience could prove useful if done correctly to avoid the woefully poor reliability of the NPI.

1.3.3 The Merits of the STAXI as an Existing Anger Measure

Unlike the aforementioned scales riddled with numerous flaws that should preclude their use from research, there is one well established multidimensional instrument to investigate anger; the State-Trait Anger Expression Inventory (STAXI; Spielberger, 1996) and its latest revision, the STAXI-2 (Spielberger, 1999). The STAXI measures anger as both an emotional condition (state anger) and as an enduring disposition (trait anger). Scales cover the intensity and frequency of anger, and additionally assess individual differences in dealing with anger, such as expressing it outward, inward, or controlling anger. The STAXI has been developed from a strong theoretical model, is empirically supported in research with consistently sound psychometric properties, and is of great value in a clinical setting due to a large body of representative normative data (Eckhardt et al., 2004). In the development of a new measure, locating an existing measure with sound psychometric properties and validation history but enough conceptual difference for convergent validity is a difficult task. The STAXI was selected for this role in the present study.

Whilst the STAXI measures the experience of anger across all situations in general, the construct is sufficiently different from the proposed Interpersonal Anger concept to warrant its development. First and foremost, the STAXI is a general measure both in terms of the conceptualisation of anger and in the item wordings. The new instrument to measure Interpersonal Anger instead focuses on specific situations involving anger-eliciting events in order to identify precursors to anger in an interpersonal environment. Thus Interpersonal Anger pertains more to social relationships and cognitions whilst the STAXI concerns physiological and behavioural manifestations of anger, along with anger expression styles. As such it is believed that whilst the STAXI succeeds in providing a general indication of anger proclivity, the new measure of Interpersonal Anger will provide a more focused instrument to determine valence of anger toward social constructs. In fact, the value of the present work was

justified through personal correspondence with the very creator of the STAXI, distinguished Professor Charles Spielberger, the world's leading expert in the field of anger research. Prof Spielberger has not only acknowledged that the operationalisation of anger in an interpersonal context has never been attempted in over 1,000 existing works on the subject, but furthermore encouraged the development of the Interpersonal Anger construct into a new and useful measure (personal communication, 2007). The new measure will be valuable to research by providing a means with which to better investigate the directional component of anger as it is felt toward specific people in one's social environment.

1.3.4 Operationalisation and Scale Construction – The Delphi Method

There are numerous approaches to instrument development, each with its own strengths and shortcomings. In terms of the qualitative and theoretical concerns with development, any new construct and resulting scale may be biased toward the creator's own personal judgement and may misrepresent the actual construct intended to be measured (Reid, 1988). On the other hand, when approaching quantitative problems a newly developed scale may be skewed by the naturally occurring characteristics of the samples used (Reid, 1988). In fact, it is surprising how many new instruments have been developed from scratch using samples of convenience like student populations to generalise to the entire population. In further developing our new Interpersonal Anger construct and the resulting measure, it was decided that no short cuts could be taken and thus the world-renowned Delphi technique was the only option that would result in a solid foundation of conceptual development for this tool (Duffield, 1988). The Delphi method is widely regarded as a valid technique primarily because it aims to achieve consensus on a topic between experts who may differ in their approach to it, bringing together divergent viewpoints in existing research to further build theory (Duffield, 1988). The Delphi technique takes the grounded theory approach to a new level by using the combined knowledge and theory background of a panel of international experts to drive the development of the construct in order to mitigate the influence of our own preconceptions when entering the process (Smith & McCarthy, 1995). The primary researcher instead becomes an administrator to co-ordinate the group of experts and records the concepts which they suggest and all agree upon, managing the theory development process and driving it forward.

The Delphi process begins with broad ideas that are gradually narrowed into specific concepts through a series of iterations, and the panel carry through only those ideas that have achieved group consensus. Although the experts work together to evolve concepts and ideas, members of the panel never meet and the role of the researcher is to collate all ideas and present them back to the panel for review. Thus there is more chance for the group to consider all initial suggestions including those only held by a minority who may have had their ideas overridden by more dominant members in a large face-to-face group discussion (Reid, 1988). The primary limitation in employing the Delphi technique is the sheer time commitment (Duffield, 1988; Smith & McCarthy, 1995), and with numerous iterations required in order to achieve group consensus and ethics approval for each new questionnaire per phase, a correct unabridged Delphi technique can take a year or longer to administer. Nevertheless, the acclaim that the method has received in the literature for developing new measures was justification enough to adopt the Delphi technique to develop Interpersonal Anger in the present study.

1.3.5 Research Aims

The primary goal of present work is summarised in Aim 1. The secondary goals follow in Aims 2 to 5.

Aim 1. To develop a new measure that fills the gap in existing instruments that cannot test differences in anger directed toward other people in one's social environment, and to add to existing theory using the Delphi method to develop Interpersonal Anger Theory. It will operationalise Interpersonal Anger and develop an instrument that measures the propensity for an individual to harbour anger toward other interpersonal stimuli, and also accounts for the influence of the situational context and the relative role or characteristics of the target individual. The Delphi method will be employed to obtain consensus from international experts on anger from different fields of psychology (including researchers, practitioners, and theorists), and to provide cross-cultural perspectives in the operationalisation of the newly identified construct.

Aim 2. The new measure will be administered to random stratified community samples in its validation testing to ensure that its revision and development is based on

generalisable samples to reinforce good construct validity, with the view to produce more sound psychometric properties than aforementioned scales in common use. Australian community and Japanese community data will allow us to refine the instrument and generate a valid and reliable multi-cultural measure of Interpersonal Anger. Factor analysis and multi-group analysis will aid to further validate the instrument's psychometric properties in a community sample that is culturally different from the study it is originally created in.

Aim 3. We intend to discover more about the global nature of the human anger experience by cross-cultural comparison of a random stratified community sample in both individualist and collectivist cultures, namely Australia and Japan. By testing the underlying theory using data collected from two culturally distinct samples, we intend to discover whether aspects of the human anger experience are consistent regardless of culture, or whether socio-cultural variables significantly influence our proclivity to anger in a social context. In a culture with such strict hierarchical rules, we expect that anger-eliciting behaviour of others in the workplace will provoke different levels of anger within the Japanese sample according to the perpetrator's relative social level (superior, co-worker or subordinate). Further, the anger experience in Japan will be compared with that of Australia which has far more relaxed social rules for workplace roles to investigate differences in the levels of anger toward superiors, co-workers, and subordinates at work.

Aim 4. To discover how Interpersonal Anger relates to work stress variables (Effort-Reward Imbalance) and investigate whether Interpersonal Anger may be a spillover consequence from the work domain to the home domain. Through research of Interpersonal Anger as a negative outcome of Effort-Reward Imbalance (ERI) work stress, the study attempts to underline the pervasive influence of chronic job stressors and how they can contaminate other areas of daily life. Furthermore, this relationship will be tested in two very different cultures, to investigate whether there is an underlying global phenomenon.

Aim 5. To investigate whether reported Interpersonal Anger on the new measure is indeed related to proclivity to aggress through an outward expression of anger (using the STAXI). Evidence that anger leads to aggression is extensive in the existing literature, and our new anger measure tests a specific aspect of the anger experience, suggesting that if it is related to outward anger expression there is the potential to see that individuals with more proclivity to anger only to a certain group of people will also be more likely to express that anger toward them. We intend to confirm this nature of our new instrument using longitudinal

data, justifying the importance of Interpersonal Anger with starkly overt aggressive outcomes beyond the numerous outcomes mentioned of anger as an internal state.

In conclusion, this PhD research concerns the development of grounded theory, the creation of a new measure, and testing the measure in a new context, combining all three of these aspects to create a cohesive whole with the aim to make a significant contribution to the field of anger research in psychology. Beyond simply establishing the new measure as a valid and reliable instrument for further use in an area that remains previously unmeasured, it will also demonstrate the importance of the construct and its relationship with other existing problems, namely as an outcome of the spillover of Effort-Reward Imbalance (ERI) stress at work, and with Interpersonal Anger leading to aggressive outcomes in the proclivity for outward anger expression (STAXI Anger Expression - Out). This PhD portfolio presents the four-year undertaking in developing theory of an emerging Interpersonal Anger construct, and moving beyond theory to create a measure with extensive revisions, and then to testing and validating the importance of Interpersonal Anger in an international context.

1.3.6 Section Summary

Previous studies have looked at anger as a temporary state, as a trait, and other measures of general proclivity for certain expression styles. As yet, no instrument has been developed that specifically measures the experience of anger directed solely at other individuals in one's social environment. A key element of our proposed concept of Interpersonal Anger is the ability to distinguish whether people are more or less likely to feel anger toward one person or another. It is suggested in a proposed theory on Interpersonal Anger that individuals differ in their propensity to anger depending on who is provoking them. There is no instrument to test for example, how an individual's potential to anger may be influenced by both the characteristics of the perpetrator (whether they are a friend, spouse, work-colleague, boss, etc.) and the environment of an anger-eliciting event (such as being in the workplace or at home). Not only are existing measures not suited to test these target-directed anger levels, but recent studies show that they are also ill equipped to measure anger in general, including poor construct validity, reliability, and predictive ability. This has spurred an explicit call for the

development of bold new measures that explore beyond the general anger condition and investigate specific aspects of the human anger experience. Designing an anger scale to measure one's potential to anger in a social situation and looking at interpersonally-directed anger is our answer to this call. The present research marks the first time in over one thousand existing works that anger has been operationalised in an interpersonal context despite the fact that in nearly nine-out-of-ten situations where anger is involved, it is directed specifically at other people. The present study will employ the Delphi method to develop the Interpersonal Anger instrument, involving a panel of international experts in different fields of anger research working together to define a new construct and create an instrument from the ground up to avoid the risk of perpetuating the preconceived biases of a single researcher looking at a theory based approach by themselves. Psychometric assessment will also be used to establish the construct validity using the STAXI trait anger scale as a measure of convergent validity as it has been recognised as the only valid and reliable anger measure in a recent review of all anger and hostility instruments. Scale alpha, test-retest reliability and other psychometrics will be established using cross-cultural validation in both Australian and Japanese community samples. Further, it will investigate whether there is a spillover of chronic stressors at work from Effort-Reward Imbalance (ERI) into displaced interpersonal anger in other areas of life. In measuring the internal experience of Interpersonal Anger, the present study may provide some insight into the nature, origins and factors influencing the prevalence of aggressive expressions of interpersonal anger, such as marital conflict, domestic violence, and workplace bullying.

1.3.7 Personal Reflection

RDQ 1 – Research based knowledge: *In my review of existing research I found a gap in knowledge regarding anger directed at other people, and studies indicate that the development of a new and more valid and reliable instrument to measure Interpersonal Anger is justified. Evidence also suggests that interpersonal anger could be a spillover consequence of ERI, and I hope to expand existing knowledge with Aim 4 to show that stress at work in both Australia and Japan can result in anger directed at others both in the work and home*

domains. Further I want to demonstrate the utility of my measure alongside other instruments that test individual anger levels by showing its relationship with anger expression in Aim 5.

RDQ 3 – Effective problem solving: *Through Aim 1 my goal is to develop a new measure that exceeds the standard set by existing measures of anger in terms of both conceptual development and psychometric properties. I took into consideration the numerous issues in instrument development for existing measures to ensure that I did not fall into the same traps. Further, with Aim 2 I wish to extend the testing of the instrument in random stratified community sampling rather than the commonly used samples of convenience utilised to develop existing popular measures of anger.*

RDQ 7 – International perspectives: *By the same token, I wanted to include international perspectives in the development of the construct. I saw the use of experts from multiple countries to establish the Delphi panel as an essential step in my research, over say conducting my own grounded theory development. With the excitement of developing a new construct I was happy to commit to the lengthy process of sourcing potential experts and the email correspondence to co-ordinate panel communication. Beyond this, my interest in international research will manifest in Aim 3 with a cross-cultural comparison between Interpersonal Anger in Australia and Japan, particularly in the workplace with such divergent socio-cultural environments. Discovering the existence of the spillover effect in Aim 4 and the manifestation of Interpersonal Anger as anger expression in Aim 5 will further corroborate the theory in two vastly different countries supporting the possibility of an underlying global phenomenon.*

2. Method

2.1 The Delphi Technique – Theory Development

The McLinton Domain-specific Anger Instrument (MIDAI) was originally developed using the Delphi method, a world-recognised process for instrument development. Figure 2 is a pictorial representation of the Delphi methodology (Steps 1 to 10) that will be covered in the present (2.1) and following sections (2.2).

2.1.1 Delphi Expert Panel

A Delphi panel was constructed by reviewing the body of research into anger, and identifying leading researchers. Eligibility requirements for inclusion on the expert panel were defined as; (1) holding a PhD, and (2) having half a dozen or more previous publications in the field of anger research. These experts were approached via email and briefed on both the study and why they were selected. There was an overall positive response to being selected for participation on a panel for the development of a new construct, and of the 18 experts approached, a total of 15 elected to participate (83% response rate). The reasons for non-participation in the remaining three were due to time commitments or declining early as they predicted being unable to maintain commitment through the duration of the Delphi panel which would take place at least over a few months (depending on speed of replies and consensus being reached). International perspectives were sought, and experts came from countries as varied as Israel, Italy, Germany, Iceland, Australia, the UK and USA. Further, diversity of viewpoints was important for an expert panel, and participants held a wide variety of current activities, working and researching in fields including social psychology, phenomenological psychology, clinical criminology, philosophy, biological and clinical psychology. With an international expert panel and the time constraints of coordinating 15 people simultaneously, the practical decision was made to conduct the Delphi correspondence via email. The panel do not have any communication with each other, and it is only through the researcher that communication is facilitated through each iteration of the Delphi process. The researcher presents a summary of responses from all experts from the previous iteration back to the panel for feedback, and there is no linking information that would identify other

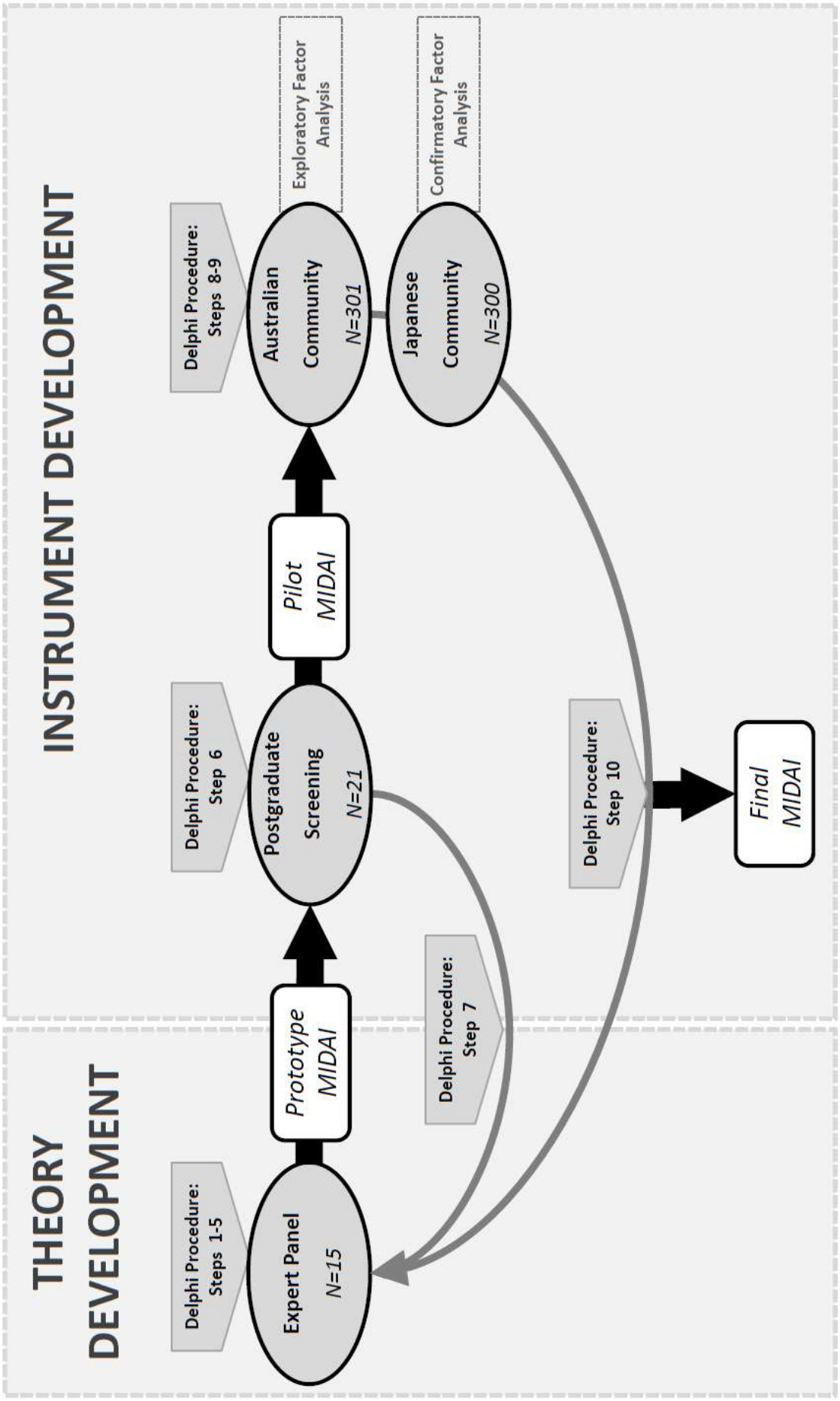

Figure 2. Samples and Steps employed in developing the MIDAI using the Delphi Method

participants. This way each member gets the opportunity to have their say and the group can decide on inclusion or exclusion of that material, rather than deferring to the most experienced (or perception thereof) member, or fearing to raise their own ideas in the presence of those they perceive as more qualified, outspoken, or judgmental. The Delphi process is at heart, a groupthink endeavour.

Iterations (see steps below) were mailed out once all experts had returned their answers and the data was processed, with an average of around four weeks between each iteration. If an expert was delayed in responding, a polite reminder email was sent, but the project had up to a year of ethics approval to conduct the Delphi so the agenda was not pushed on the participants as their continued participation through to the final stage was more important than time constraints. There was no dropout rate as we catered for their time commitments in returning each questionnaire and attempted to keep it as brief as possible after the first qualitative iteration (see steps below), with the cohort persisting through to the final iteration. The process from initial contact through theory development to final generation of the new instrument for pilot testing took a total of 11 months. The Delphi instrument development procedure involved a series of steps (1 through 10) each of which had one or more iterations of a questionnaire that received responses from the expert panel working to achieve consensus between them. The first five steps of the process involve development of the Interpersonal Anger Theory, whilst the last five steps describe the generation of the instrument itself. Some results of that development are included in the latter stages of the method for sake of continuity.

2.1.2 Step One – Qualitative Analysis of the Construct

First, experts were presented with a qualitative questionnaire which asked them to explain their view on the essential characteristics and components of the proposed Interpersonal Anger construct to assist in boiling down a definition of the notion of ‘Interpersonal Anger’. The researcher managed the group with as little preconceived bias influencing the group and simply used very general questions to elicit qualitative data on what the expert panel thought Interpersonal Anger might entail. The 15 experts produced a large volume of qualitative data from varying points of view, and content analysis was conducted in order to extract common themes and group the concepts. This revealed a total of 56 unique items to be extracted, each

of which was identified by at least one expert as a thematic aspect of Interpersonal Anger. A number of concepts were mentioned by multiple experts, suggesting the importance of a theme if experts suggest the notion independent of communication with others on the panel. For example, two concepts were mentioned by five experts independent of each other, whilst another three concepts were suggested by four different experts. These were;

Interpersonal Anger is:

(1) situation specific and thus may be affected by the environmental context; and

(2) is directed toward another person based on their actions or behaviour.

(3) can be seen as a trait;

(4) involves individual predisposition; and

(5) is a reaction to social events.

These items along with the other 51 unique concepts were assembled into a questionnaire and presented back to the panel with the intent to reach consensus on which of the concepts were essential defining aspects of Interpersonal Anger, to permit us to further develop the theory.

2.1.3 Step Two – Seeking Consensus on the Construct

In order to form a core definition of Interpersonal Anger, the 56 thematic concepts obtained in Step 1 were presented back to the expert panel. This questionnaire asked experts to respond with the degree to which they agreed or disagreed with the item being a significant aspect of Interpersonal Anger. For example, some themes included how the anger may arise, what it may be influenced by, and whether it could be an enduring trait. Here, the goal for the researcher was to guide the group to reach consensus on only the most important aspects of Interpersonal Anger, and allow the remainder to be discarded without any attachment to preconceived bias.

Consensus was defined as 80% of the total respondents agreeing (or strongly agreeing) with the inclusion of the item, which is a conservative cut off value successfully employed in previous Delphi studies (Green, Jones, Hughes, & Williams, 1999). If the item held more than 20% of experts disagreeing with the inclusion of the item as an essential aspect of Interpersonal Anger, that item was discarded. However, if an item failed to reach the cut off but the disagreement level was less than 20% (indicating that the difference is 'unsure'), the item was retained and resubmitted to the expert panel to encourage clear consensus on its importance. Furthermore, if 10% of experts suggested a new item, it was included in the following round. This has been suggested as a reasonable cut off rate for the second and subsequent Delphi iterations (McKinley, Strand, Gray, Schuwirth, Alun-Jones, & Miller, 2008).

Using the above method for determining consensus, 46 items did not reach the required cut-off and were immediately discarded, whilst the seven items that exceeded the consensus cut-off were retained. The remaining three items which held a disagreement level of less than 20% but an agreement level of less than 80% were then presented back to the expert panel in another iteration, to ask for a reassessment of agreement. In this round, two items achieved consensus and one was rejected. Thus, by the end of this stage, of the initial 56 items, nine held consensus between experts as a defining characteristic of Interpersonal Anger. A definition was also generated based on expert feedback:

> *'Interpersonal Anger is defined as a predisposition to feel anger toward other individuals in our social environment.'*

The themes that received the strongest level of consensus that further define Interpersonal Anger were;

(1) situation specific and thus may be affected by the environmental context (100%);

(2) influenced by the relative role of the other person (93%);

(3) influenced by internal biases toward others (93%);

(4) affected by judgments and perceptual filters (93%);

(5) strongly grounded in the principles of social psychology (93%).

In light of the common trends between the top concepts that experts agreed upon, the next step was to further develop Interpersonal Anger Theory. Social Psychology suggests that we evaluate the causes in behaviour of others according to numerous biases that affect the way we perceive the world and social relationships with the people around us (Heider, 1958), and likewise, other people in our social environment affect us through their presence and the influence of their behaviour (Allport, 1985). The key features shared were the notion that the human anger experience toward others is influenced by how we view others and the social environment and is thus fundamentally rooted in social psychology.

2.1.4 Step Three – Seeking Consensus on Inductive Theory: Perceptual Filters

In this and the following stage, themes that reached consensus were used to fuel research into how Interpersonal Anger Theory fits into social psychology. The fundamentals of Interpersonal Anger theory lie in Social Psychology, which uses a variety of social and cognitive theories to explain the nature of human social interaction (Allport, 1985). A key recurring premise in the items reaching highest consensus related to how interpersonal anger may be influenced by numerous factors including biases, so it was undertaken to relate social psychology perceptual filters to explain how individuals might differ in anger according to the interpersonal situation or targets. The concept that a schema from past experience with particular target individuals (associating their characteristics) is involved in the Interpersonal Anger process was presented back to the panel in the following iteration and consensus was reached. Thus it was included as an aspect of Interpersonal Anger Theory.

The Interpersonal Anger Process – Schema Theory

Even the works of Seneca two-thousand years ago conceptualise the nature of the anger experience as a response to a direct perceived threat and that this is influenced by one's own biases based on schemata built from previous experience (Seneca, 44; 1817). More recently social psychology agrees that people are bound to evaluate the behaviour of others that negatively affects them (the anger-eliciting behaviours) according to mental frameworks of past experience, or 'schema', which lead to biases in perception (Axelrod, 1973; Taylor & Crocker, 1981). This suggests that through personal experience, patterns of viewing the world have been established based on previous events (Axelrod, 1973). In this case, a person will

have a schema established for how all superiors at work act toward them based on the way all superiors have treated them in the past, and likewise schema for co-workers, subordinates, family members, and so on. These schemata lead to biases in the perception of those individuals in the future (Taylor & Crocker, 1981), so in the case of interpersonal anger, an individual who has been bullied or victimised at work by a boss will have developed a schema involving superiors in the workplace, which will affect subsequent appraisal of their behaviour. So we can expect them to attribute a different level of interpersonal anger on an Interpersonal Anger scale that measures anger toward superiors rather than anger toward co-workers who are on an equal hierarchical level. Schema theory supports the notion that in Interpersonal Anger a person considers a number of characteristics of the target and how they fit into their existing schema when appraising the behaviour of others. In another instance, experience of domestic violence in childhood, or even being a witness to such overt acts of interpersonal aggression might result, when older, in a propensity to feel higher levels of interpersonal anger toward family members when they engage in anger-eliciting behaviours. So the degree of anger felt toward the target depends on how that target's characteristics fit in existing schema that have been developed through past experience with similar individuals, thus accounting for biases toward gender, relative relationship, attractiveness, group membership, and so on.

The Interpersonal Anger Process – Attribution Theory

Attribution theory suggests how one appraises the behaviour of others in their social environment (Kelley & Michela, 1980), most importantly how they evaluate the intent behind the action. In the case of anger-eliciting behaviour, assuming more intent behind the behaviour may lead to higher levels of interpersonal anger toward that person blaming the other for the action. Previous studies have found that the evaluation of intent behind behaviour has a significant influence over how much one feels anger, and their potential to aggress toward the perpetrator (Holtzworth-Munroe, Rehman, & Herron, 2000). In fact, attribution of hostile intent behind the perpetrator's action is more likely to be made by men who have a predisposition toward aggression (Holtzworth-Munroe & Hutchinson, 1993), suggesting a continuous loop wherein aggressors see the behaviour of others as aggressive, which leads them to act aggressively themselves, and so on. This effect has been seen in the relationship between domestically violent men and the evaluation of their wife's behaviour (Holtzworth-Munroe et al., 2000; Holtzworth-Munroe & Hutchinson, 1993). Hostility has

been shown to be grounded in the negative evaluations of other people's behaviour too (Eckhardt, Barbour, & Stuart, 1997), resulting in a general attitude for dislike of others, and lower judgements of them to the point that they are seen of less worth or may even lead to the desire to harm them.

A common principle that may lead to increased levels of Interpersonal Anger is Fundamental Attribution Error, which leads to the attribution of more personal intent behind the target's behaviour since extraneous factors that might have motivated the behaviour are less salient to the observer (Ross, 1977). According to fundamental attribution error, people are more likely to make an internal (dispositional) attribution for the behaviours of others. Without considering the influence of the environment on that individual's actions, one instead assumes that they are internally motivated, thus bearing more responsibility and are to blame for the intent behind the action (Ross, 1977). By this reasoning, in Interpersonal Anger theory it is proposed that people have more potential to anger at the behaviour of others when they view that negative behaviour toward them is internally motivated. For example, a participant might be asked to consider a time when a superior at work caused significant delays for them despite the fact that they had a tight schedule. This is likely to result in the respondent attributing significant delays as internally motivated by the superior, such as due to their disorganised personality, lack of empathy with their schedule or even intentional spiteful behaviour. They are less likely to bear in mind the external factors that influenced that person's behaviour, such as the possibility that their superior is also under significant pressures from higher up, or even that they might have experienced some personal situation at home that have distracted them from realising how much the employee has on their schedule already. Thus, the respondent is more likely to view their superior's behaviour in the context of how it negatively affects them, their plans, and the frustrations caused by it, rather than considering that the superior may not have intended this outcome. Humans are fundamentally biased not to consider the external influences on other people, which affects their perception of behaviour (Ross, 1977), and thus how much interpersonal anger is felt according to how internally motivated or 'to blame' that person is for the behaviour. We suggest that the closer the relationship with the target, the more likely they are to see the influence of external factors as motivating their anger-eliciting behaviour, so theoretically people will attribute more internal causes to people in the work domain and thus more anger, in comparison to people in the home domain (family members).

The Interpersonal Anger Process – Warranted Anger

It could also be suggested that people may feel more anger according to whether they saw their stance in the situation (as a victim, etc.) to be warranted, whilst they may rationalise less anger toward the target if they felt their anger was unwarranted according to the situation and motivations of the perpetrator. The delineation between warranted and unwarranted anger was presented to the panel along with the above two social psychology theories but did not achieve consensus in the expert panel. This concept as an explanation of the biases in anger was seen as already parsimoniously explained by attribution theory, that the target is more 'to blame' for the actions since one interprets and internal motivation, thus making the perception of warranted or unwarranted anger irrelevant. The notion of warranted anger was rejected by the panel. In sum the main psychological mechanisms theorised to underpin Interpersonal Anger experience are explained via schema and attributional bias processes.

2.1.5 Step Four – Seeking Consensus on Inductive Theory: Outcomes

From feedback in the last iteration, the theory of Interpersonal Anger was further developed by suggesting possible outcomes, which were presented back to the expert panel for consensus and revision. Based on past research, various anger conceptualisations of general anger have been shown to result in negative outcomes, including physical health (e.g., cardio-vascular disease, blood pressure), behaviour (e.g., increased smoking), and personality (e.g., life satisfaction, depression). Of primary interest in the present work are behavioural outcomes, most importantly the notion that raised levels of interpersonal anger toward people in one's social environment leads to raised proclivity for aggression or 'outward anger expression'. Previous studies have displayed extensive support over the years for the anger-aggression relationship (for examples and review, see Anderson & Bushman, 2002; Averill, 1983; Frijda, 1986; Kinney, Smith, & Donzella, 2001; Smits & DeBoeck, 2007). From the previous (2.1.4) and the present step, a general model was constructed that gave an overall picture of the factors that influence Interpersonal Anger and its outcomes (see Figure 3). The model received consensus after two iterations with the expert panel, with the second iteration involving presenting a revised model with examples back, and rejecting aspects that did not receive at least an 80% agreement level. Examples that received consensus are provided in Figure 3 to enable the reader to get a better grasp of Interpersonal Anger Theory. However

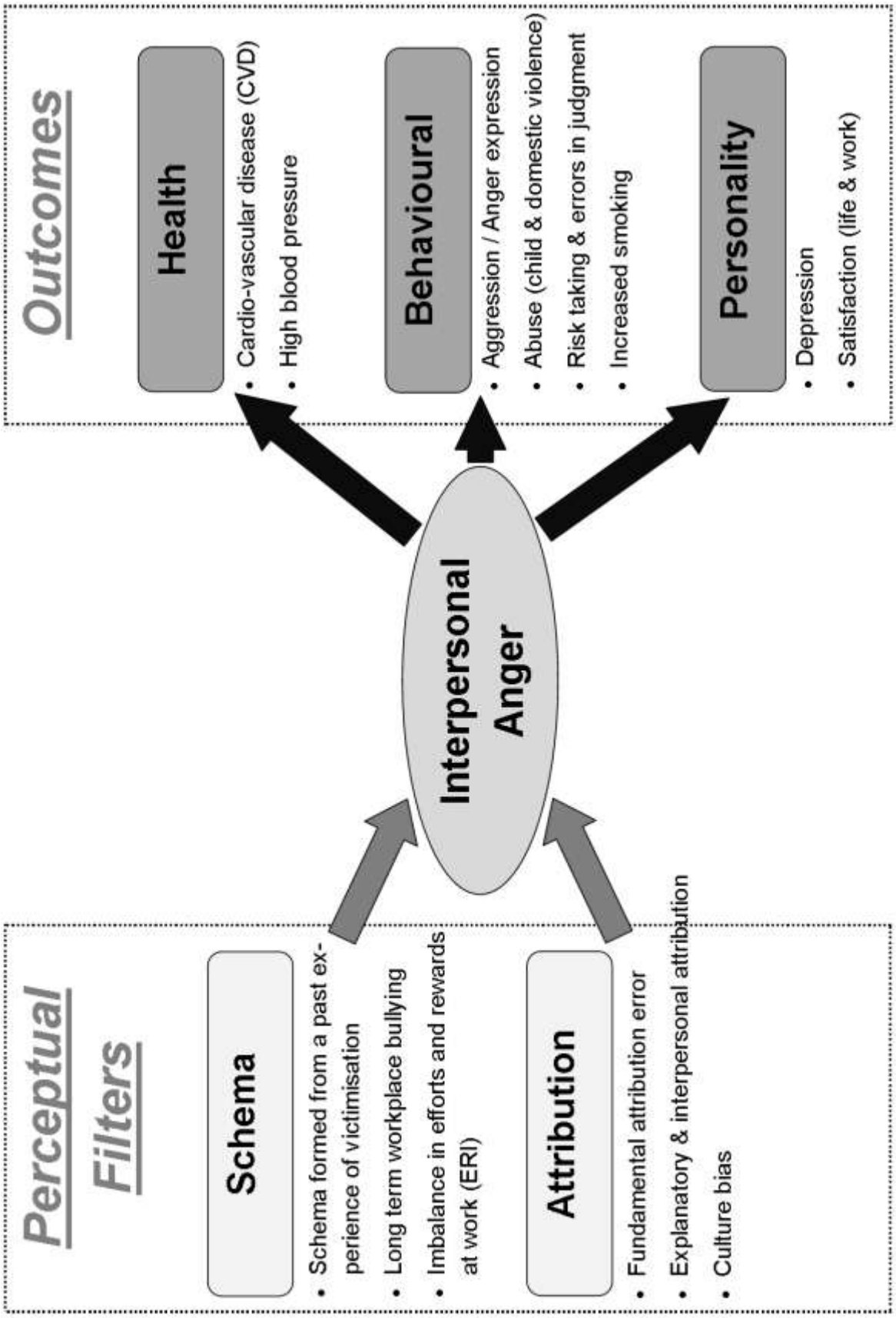

Figure 3. Interpersonal Anger Theory—Examples of Influencing Factors and Outcomes

due to the scope of this study, the present work will only test the influencing factor of schema through Effort-Reward Imbalance, and the outcome of Outward Anger Expression, beyond actually developing the Interpersonal Anger construct and instrument itself.

In terms of the influencing factor of ERI on Interpersonal Anger, we suggest that chronic exposure to work stressors builds a schema for the workplace experience, and it is intuitive to suggest that repeated exposure to such frustrations and the resultant feelings of anger may affect the employee's life in a more pervasive and enduring manner. In fact, it has been observed that long term exposure to a stressful work environment can shape a worker's behaviour patterns and personality development to the extent that individual traits such as 'trait anger' may become more pronounced (Dollard & Winefield, 1998). Recent studies have substantiated this proposal, finding not only correlations involving workplace stressors and trait anger, but also that work stress can be a predictor of trait anger (Fox, Spector, & Miles, 2001; Smith, Roman, Dollard, Winefield, & Siegrist, 2005).

2.1.6 Step Five – Extracting Core Themes of Interpersonal Anger-Eliciting Situations

With the core definition of Interpersonal Anger established, and the grounded theory development underway, the expert panel was then asked to suggest some situations they thought might elicit anger in social situations. For example, a commonly mentioned situation involved being yelled at by another person. Using content analysis, the key themes grouping each situation were extracted to generate a shortlist of themes for anger-eliciting situations. Essentially, broad notions of why someone might feel anger in that type of situation. In the example of being yelled at, the situation was one of the many that held the core theme of being the target of overt hostility or victimisation. A total of six such themes were extracted, and presented back to the expert panel for consensus and feedback. Out of these, five themes received consensus of over 80% of the panel as being a prominent aspect of interpersonal anger-eliciting situations. These themes are listed below;

Moral transgression: *'behaviour of the target is perceived as a betrayal or injustice'*

This theme was generated from a group of anger-eliciting situations suggested by the expert panel that included some aspect of unfairness, an ethical dilemma or betrayal. For

example; A family member criticises me without justification; a friend of mine lies to me on purpose; my boss makes me work harder than other employees with no additional reward; my employee doesn't follow through on a task I needed them to do; or a close friend betrays a secret I confided in them.

***Victimisation* :** *'the individual is the target of hostility'*

The victimisation theme was extracted from anger-eliciting situations that involved being on the receiving end of some confrontational or aggressive behaviour that was overt rather than indirect or surreptitious. For example; my boss replies aggressively when I'm just asking a question; a co-worker raises their voice at me during a conversation; a friend of mine makes a nasty insult about my family or partner; a stranger tries to push me around; or someone behaves in an unnecessarily aggressive manner toward me.

***Personal risk*:** *'the individual perceives a risk to wellbeing or self-esteem'*

The personal risk theme concerned more covert behaviours that may have been intentional or not, but either way lead to the target feeling poorly about themselves or otherwise had their self-worth questioned. For example; a family member doesn't value my opinions; my boss criticises me in front of my clients or customers; one of my employees undermines my authority in front of others; someone I just met starts to put me down; or someone in the office I just started at tried to exclude me from the social group.

***Practical barriers*:** *'the target impedes the individual's plans or goals'*

This theme concerned behaviours that slowed down one's progress in the workplace, or otherwise was an inconvenience or general frustration in daily life that was specifically caused by the actions of other people. For example; when one of my employees arrives late for work without any excuse; my boss makes me stay at work later than I had planned; a friend of mine doesn't lend me money; a stranger on the street approaches me and takes my time when I am trying to get somewhere; or when one of my colleagues doesn't hold up their share of the group task.

***Lack of insight**: 'target fails to account for the impact of their behaviour on others'*

The lack of insight shown by others in one's social environment was anger-eliciting as the behaviour showed no empathy or concern for how it would affect others. For example; a family member doesn't provide support when I really need it; my boss is not sensitive to my current situation; a friend of mine doesn't realise how their comments may hurt my feelings; my co-worker doesn't realise how much more effort I invest in the job; or during a tough decision one of my employees doesn't seem to understand the difficulty I have to face in my position.

The sixth theme did not receive consensus within the expert panel and was rejected. It concerned ***Semantic confusion*** (*'the target's action leads to misunderstandings and confusion'*), and was extracted from situations that involved the frustrations originating from miscommunication or lack of effort on the part of the target. For example, my partner just doesn't understand what I'm trying to say; or one of my employees can never seem to get the job I ask of them right. The semantic confusion theme was rejected and multiple experts' comments posited that it could be an aspect of 'Lack of Insight', being that the target's failure to consider the effect on other individuals can lead to misunderstandings and communication difficulties. The previous five themes that scored 80% or higher in agreement were included as the proposed themes of Interpersonal Anger-eliciting situations.

2.1.7 Interpersonal Anger Theory

With the extensive information that was refined by the expert panel and concepts that achieved consensus, the Interpersonal Anger Theory building process was complete and is compiled here. Presented is three stage summary of the Interpersonal Anger Theory; (1) observation, (2) classification, and (3) defining relationships (Carlile & Christensen, 2005). This *inductive* theory process established through this section (and in the literature review chapter) is completed here, then the following section continues the Delphi method for developing the actual instrument for measurement of Interpersonal Anger, permitting the move to deductive *theory*.

Inductive Theory Stage 1: Observation. The observation stage consists of a description and definition of the construct, how it was developed and how it works (Carlile & Christensen, 2005). The development process is omitted here as this and the following section cover the Delphi method of theory building and instrument development in detail.

Definition and Description of Interpersonal Anger

The observation has been made that people differ in their expression of anger according to variables in the target of that anger expression, but no assumptions can be made as to whether the internal anger experience itself is different according to the target. Social psychology asserts that people hold biases in perception, so do these biases apply to anger directed toward other people? Do we evaluate the characteristics of a target when determining how much anger to feel toward them?

Interpersonal Anger is a specific facet of the human anger experience concerning our social relationships and how we modify the anger we feel according to the target. Its definition received consensus with the expert panel. Interpersonal Anger is defined as;

'…a predisposition to feel anger toward other individuals in our social environment. Interpersonal Anger is spurred by anger-eliciting situations in the social environment that involve another person engaging in behaviour that involves moral transgression, victimisation, personal risk, a practical barrier, or a lack of insight. The trait propensity to react with anger is influenced by the characteristics of the perpetrator of anger-eliciting behaviour, such as whether they are a family member or superior at work. Further, it is influenced by the environment in which the anger-eliciting situation occurs, such as the home or work domain. Interpersonal Anger Theory is grounded in social psychology. The perceptual filters that influence the way one differs in how they feel anger toward different people are governed by attributional biases and their existing schema toward a perpetrator with those characteristics. Whilst Interpersonal Anger is an internal experience, it is directly related to behavioural outcomes, most notably the overt expression of anger.'

How Interpersonal Anger Operates

Anger has been seen as a core emotional trait that is deep-seated in an individual's personality (Novaco, 2007). Interpersonal Anger is a trait rather than a transient state – a

predisposition to anger toward other people. Interpersonal Anger differs from existing measures of anger as it represents a number of independent constructs, that whilst correlated, are still different aspects of the anger experience measuring anger toward separate targets in the social environment. This anger may be affected by the characteristics of each target, so a person may feel more anger toward a superior at work for the exact same behaviour that a family member might engage in. These differences originate from perceptual filters that affect the way the behaviour is observed and thus reacted to (with anger). These filters may come from past experience as the person evaluates the behaviour based on existing schema about targets with those characteristics, or may come from an attributional bias in the motivation behind that behaviour. Provocations of other individuals may elicit interpersonal anger because they are showing lack of insight, or the action may be seen as a moral transgression, practical barrier, or the person may feel victimised or a sense of personal risk.

Interpersonal anger, like other conceptualisations of anger will result in numerous outcomes including reduced cognitive performance, poorer judgement and decision-making, increased frequency of negative attributions, and increased propensity to engage in risky behaviours. Most importantly, Interpersonal Anger may be the emotional precursor to interpersonal aggression (expression of this anger toward others in the social environment). Interpersonal Anger differs according to the target, so may be a predictor of targeted anger expression, for example high interpersonal anger toward family members may predict domestic violence or spouse abuse. High interpersonal anger toward subordinates in the workplace may predict workplace bullying.

Inductive Theory Stage 2: Classification. The classification stage concerns organising the Interpersonal Anger construct into manageable and malleable sub-constructs to simplify and organise it so that it will help ease the transition to the following stage, to elucidate relationships between the Interpersonal Anger phenomena and outcomes (Carlile & Christensen, 2005).

Interpersonal Anger is not a uni-dimensional construct, but rather a blanket term for numerous trait predispositions to anger depending on various targets. Target characteristics can be limitless, including predisposition to anger toward people by classifications of relative closeness, hierarchical position, sex, ethnic origin, attractiveness, and so on. For example, one

person may have higher Interpersonal Anger toward others classified as people in authority. The exact same person might have a different level of anger proclivity toward people of a certain race, the opposite sex, a certain religious identification, and so on. In order to make a testable subset of particular characteristics that can be used for the present research, it is essential to classify a limited aspect of the Interpersonal Anger construct. Based on previous research interest, it was determined to classify a number of targets that fall into both a home domain and work domain category. In specific, Interpersonal Anger toward family members, as opposed to people in the workplace.

Targets of Interpersonal Anger in the workplace were further divided according to hierarchical relationship, as previous research has shown that anger expression is influenced by social rank through the tendency to withhold anger when in the presence of an authority figure or higher social rank (Allan & Gilbert, 2001). Thus, the author selected 'superior at work' as a target of Interpersonal Anger. To test other suggestions that relative social rank plays a role in anger, it was logical to include the other end of the spectrum to permit comparison of Interpersonal Anger in the work domain within subjects. 'Co-worker' and 'subordinates at work' were chosen as the other two Interpersonal Anger targets for the workplace. When testing relative social status, superior at work, co-worker and subordinate at work were selected because the inherent social hierarchy in workplaces is more clearly defined than in other areas of life, so when measuring anger we can be more confident that the participant is accounting for some degree of social hierarchy in their decision making and anger reaction. The choice of terminology was specific in order to avoid terms like 'boss' or 'employee' which may raise confusion. It intended to convey a specifically hierarchical delineation, and is a concept that would be readily parsed by westerners (who may have more relaxed atmospheres in the workplace, such as being on good friendly terms with a 'boss' or underlings). Incidentally, with the strict *jo-ge-kankei* relationship in the Japanese society, the concept would be easily understood in the Japanese language instrument.

Interpersonal Anger toward 'family members' was selected to provide a comparison of anger levels within subjects toward other people in the work domain and home domains. Since the term 'family members' also covers the spousal relationship, this will further allow investigation of anger directed toward close others, rather than simply measures of overt aggression toward close others like domestic violence and child abuse. Last, a generic target was required for comparison to see whether it might be an effective benchmark for

contrasting Interpersonal Anger levels within subjects toward different targets. Interpersonal Anger toward 'strangers' was selected to play this role, seeing how people reacted with anger toward the behaviour of recently met acquaintances.

Classification of a subset of five different targets of Interpersonal Anger as they would be designated in the proposed instrument are presented below:

Family Members – This term classifies anyone in your family or your partner.

Superiors at Work – The term *superior* is used to refer to anyone in an organisational role higher than yours, including your employer, a senior employee, coordinator, team leader, or project manager.

Co-workers – The term *co-worker* is used to refer to other employees and colleagues who have a similar status to you. Although they may not be employed in the same area or may have different roles and titles, neither of you are considered to be in a superior or subordinate position in relation to each other.

Subordinates – The term *subordinate* is used to refer to anyone in an inferior position to you, including your employees, general staff, or new group members.

Strangers – The term *stranger* is used to refer to someone with whom you are not acquainted. The listed behaviours are assumed to take place sometime within the first day of meeting the person in question and in a context where neither of you is in a superior nor subordinate social or organisational position.

Inductive Theory Stage 3: Defining relationships. Here relationships between Interpersonal Anger and other constructs are proposed in order to develop models, which completes the first descriptive stage of the *inductive* theory building process (Carlile & Christensen, 2005). Those that are within the scope of this project are tested and results are presented in the published material that follows (Section 3 of this Portfolio), forming the *deductive* aspect of the Interpersonal Anger Theory. A visual depiction of the *inductive* theory for Interpersonal Anger was previously presented in Figure 3 (see section 2.1.5).

Interpersonal Anger Theory – Propositions to be Tested

We further extend the theory of this aspect of the human anger experience with the following propositions. Inductive theory based on existing evidence suggests that ERI stress may be related to interpersonal anger on the MIDAI.

1. *An imbalance between efforts invested at work and the rewards received (Effort-Reward Imbalance) leads to increased Interpersonal Anger toward other people in the workplace.* Contemporary investigations appear to support the existence of a relationship between Effort-Reward Imbalance and other anger constructs (Hoggan & Dollard, 2007; McLinton & Dollard, 2010; Smith et al., 2005).
2. *The stress of an imbalance between efforts invested and reciprocal rewards received (Effort-Reward Imbalance) at work leads to a spillover effect of increased Interpersonal Anger toward family members at home.* In the only other research conducted in anger spillover from ERI, it has been shown to relate to proclivity to anger in a driving situation, demonstrating this spillover of anger into other domains of life (McLinton & Dollard, 2010; Hoggan & Dollard, 2007).
3. *The trait predisposition to anger in general (trait anger) mediates the relationship between Effort-Reward Imbalance and Interpersonal Anger.* Those experiencing the stress of Effort-Reward Imbalance at work are likely to anger more toward other people, if they are already inclined to anger in general (trait anger). Past research has demonstrated that ERI spills over into other forms of anger in other domains such as on the road if the individual has a trait proclivity to anger in general (Hoggan & Dollard, 2007; McLinton & Dollard, 2010).
4. *Interpersonal Anger toward any target leads to higher proclivity for outward anger expression.* The STAXI anger expression (out) scale measures this propensity for overt aggression, and the internal experience of anger has been shown to be related to its outward expression (Averill, 1983; Novaco, 2007; Smits & De Boeck, 2007).

As per the propositions above, the present work will endeavour to discover more about Interpersonal Anger, how it may be a negative behavioural outcome of chronic stressors in the workplace, and how it may lead to outward anger expression. There are also a number of Interpersonal Anger propositions that are not tested in the present work or the published

material included, but are suggested as tentative assumptions according to existing anger literature. These have been included in the theory development process and were presented in Figure 3 (see section 2.1.5) for the reader's interest. The following will be tested in future research by the present author:

Interpersonal Anger Theory – Propositions not Testable in this PhD Portfolio

5. *Individuals more strongly affected by attribution errors based on lack of empathy and 'putting themselves in the target's shoes' will be more likely to hold higher Interpersonal Anger toward that target.* Interpersonal Anger is influenced by our social biases in the evaluation of intent through fundamental attribution error. The expectation that others are more responsible for their actions because they are seen as internally motivated makes them appear more culpable for their anger-eliciting behaviour.
6. *Chronic high Interpersonal Anger levels toward any target leads to negative physical health outcomes.* Anger has already been shown to be linked to high blood pressure (Hogan & Linden, 2004), and cardiovascular disease (Katz & Toben, 1986; Smith et al., 2005).
7. *High Interpersonal Anger leads to negative life outcomes.* Existing research has demonstrated the relationship of other anger measures with life outcomes like work and life satisfaction, and negative mental health outcomes like depression. (Beutler, Engle, Oro'-Beulter, Daldrup, & Meredith, 1986; Spielberger, Reheiser, & Sydeman, 1995; Materazzo, Cathcart, & Pritchard, 2000).
8. *High Interpersonal Anger toward a certain target leads to negative behavioural outcomes in the form of increased in risk taking behaviour involving that target.* The relationship between the internal anger experience not being expressed but instead taking the form of an inclination to engage in risky behaviours has been supported extensively (Arnett, Offer, & Fine, 1997; Dahlen, Martin, Ragan, & Kuhlman, 2005; Deffenbacher, Deffenbacher, Lynch, & Richards, 2003; Deffenbacher, Lynch, Filetti, Dahlen, & Oetting, 2003; Deffenbacher, Lynch, Oetting, & Swaim, 2002; West, Elander, & French, 1993; Wyatt, 1998).
9. *High Interpersonal Anger toward a spouse or child leads to negative behavioural outcomes such as domestic violence and child abuse.* Anger has been shown to mediate or even directly predict spouse and child abuse (Mammen, Kolko, & Pilkonis,

2002; Norlander & Eckhardt, 2005), and considering that the measures used were general anger instruments it suggests that a new instrument developed to test specifically anger directed at a target like a partner or child, mediation or prediction could be improved using the new Interpersonal Anger instrument. Clinical research has suggested that there is spouse-specificity in the anger experience, and that males engaging in domestic violence only direct anger and aggression at their spouse and actually do not have elevated levels of general anger (Boyle & Vivian, 1996; Langhinrichsen-Rohling & Vivian, 1994).

The propositions are the formal end point of *descriptive* theory, which has been the focus of the theory building in the present work up until this section. Now the move forward is to test propositions and develop *normative* theory. This will be achieved by first, developing the actual Interpersonal Anger instrument itself, establishing it as a valid and reliable measure, and then testing propositions to support the move from *inductive* to *deductive* theory.

2.1.8 Section Summary

Experts were gathered from around the world to generate an international and multi-disciplinary Delphi panel. The goal of these first five steps of the Delphi method was to achieve consensus in operationalising the new construct of Interpersonal Anger, between experts who had a variety of divergent viewpoints on the anger process. This was accomplished through a series of iterations first involving qualitative data that was analysed with content analysis to extract themes and to progressively boil down to core aspects of Interpersonal Anger through successive phases seeking consensus. By step five, consensus was achieved on the Interpersonal Anger definition, core themes, and inductive theory was established. *Interpersonal Anger is defined as a predisposition to feel anger toward other individuals in our social environment.* Unlike other conceptualisations of anger however, Interpersonal Anger accounts for the characteristics of others in the social environment, the 'targets' of anger. These characteristics include aspects such as relative relationship to the

participant, hierarchical role above or below the participant such as in the workplace, familiarity such as family and close others versus strangers, and then all other individual characteristics that the research might desire to measure (e.g. age, ethnicity, group membership, etc.). The concept of Interpersonal Anger is grounded in social psychology and the notion that humans have numerous filters influencing the way they experience their social world, and according to these, the propensity to anger is different toward each target. Biases in these perceptual filters lead one to evaluate the behaviour of others with numerous flaws, explained by both attribution theory and schema theory in social psychology. For example, we are more likely to assume the negative behaviour of another person towards us is intentional (internally motivated) due to fundamental attribution error, which suggests that we cannot see into the mind and motivations and external influencing factors on the other person as much as we see their influence on our own actions. In schema theory we characterise our view of the world according to past experiences, developing schema with which to interpret the world around us. Individual differences in interpersonal anger may be due to schema they have developed from a variety of reasons, for example a long history of being victimised in the workplace may result in elevated levels of interpersonal anger toward those antagonists (for example, interpersonal anger toward superiors at work) but not to others (subordinates). Overall, empirical evidence of past research and consensus with the Delphi expert panel has led to descriptive theory, which proposes a model whereby personal experiences, biases, and perceptual filters influence the Interpersonal Anger trait, which in turn results in negative consequences for health, behaviour, and personality. With the theory developed, the next phase is to design an instrument to measure one's proclivity for Interpersonal Anger.

2.1.9 Personal Reflection

RDQ 2 – Lifelong learning: *In administrating the Delphi method to facilitate expert communication and consensus, I further realised the importance of remaining impartial in the process as an administrator rather than a participant. I knew this would be a challenge, particularly putting aside my preconceived notions of how I wanted the Interpersonal Anger construct to develop or in aspects that I felt were important but were rejected by the group. For example, the concept of warranted versus unwarranted anger was an aspect that I had*

developed but was not supported in group consensus, so whilst rejecting this from the construct was difficult at the time, in retrospect it helped the parsimony of the Interpersonal Anger theory. We cannot guide the theory development process with a personal bias, or it will corrupt the outcome from the observable to the desired.

RDQ 4 – Autonomous and collaborative researcher: *I went into the decision to use the Delphi method knowing that it would be very time intensive, but that the outcome was undeniably better than simply my own personal theory development. In establishing a new measure I really couldn't cut corners and allow any chance for possible criticism of the theory development or instrument development methodology. Collaborating with fifteen researchers who each had more experience than me was a daunting task, but I found myself leading the group toward the intended goal and facilitating the process with ease once the trepidation of working with experts was overcome.*

RDQ 7 – International perspectives: *I am proud that I had the opportunity to collaborate with anger experts from around the world to build international perspectives, and the multidisciplinary panel really added to the diverse viewpoints and broadened my own perspective of the proposed Interpersonal Anger construct.*

2.2 The Delphi Technique – Instrument Development

2.2.1 Nomenclature of the Interpersonal Anger Instrument

The process of constructing an instrument to measure Interpersonal Anger using the theory developed in the first five steps of the Delphi method is outlined here. Steps six through ten detail the process of using the expert panel and also an independent sample of postgraduate psychology students to pilot the measure for refinement. The first instrument was originally referred to as the Interpersonal Anger Scale (IAS), however pronunciation of the acronym was problematic without another consonant, so the decision was made to include the creator's name (McLinton Interpersonal Anger Scale: MIAS). Later, we deemed it necessary to include a descriptor that also denoted the scale's ability to differentiate not only between interpersonal target but also the domain-specific nature of Interpersonal Anger. Thus, the name evolved into the MIDAS (McLinton Interpersonal Domain-specific Anger Scale). It was soon discovered that multiple scales (subscales) were required to measure anger at differential targets, leading the nomenclature of Interpersonal Anger Scale Family Subscale (etc.) to be needlessly repetitive with the term 'scale'. Further, there was some confusion as to how the entire measure is a scale, and the different targets of family, superior at work (etc.) are subscales intended to load onto the same Interpersonal Anger scale. Thus, the 'S' in the acronym was replaced by 'I' to denote that the blanket term for all scales is the MIDAI, or McLinton Interpersonal Domain-specific Anger Instrument. Under this term, any number of Scales (rather than 'subscales') exist, each measuring individual trait propensity for Interpersonal Anger toward a different target. Thus, the final terminology for the new measure of Interpersonal Anger is the;

McLinton Interpersonal Domain-specific Anger Instrument (MIDAI), currently with five scales to be tested in the present work;

MIDAI Family Scale (interpersonal anger toward family members)

MIDAI Superiors Scale (interpersonal anger toward superiors at work)

MIDAI Co-workers Scale (interpersonal anger toward co-workers)

MIDAI Subordinates Scale (interpersonal anger toward subordinates at work)

MIDAI Strangers Scale (interpersonal anger toward strangers)

2.2.2 Step Six – Developing the Prototype Instrument

In the previous step (5) the expert panel was asked to suggest some situations they thought might elicit anger in social interactions, and content analysis was used to extract the five core themes of anger-eliciting situations. The suggested situations that fit in the five proposed Interpersonal Anger themes (moral transgression, victimisation, personal risk, practical barriers, and lack of insight) were compiled and redundancies removed and presented back to all experts for review. They were asked to respond to whether they agreed or disagreed with the idea that each interpersonal situation could promote a measureable anger response, and consensus was determined using the same 80% method above. A total of 65 unique situations received consensus from the expert panel in this stage, deeming them interpersonal situations that held the potential to be anger-eliciting. For example, one situation involved a superior at work not acknowledging the efforts that the person had put into a certain task.

From these 65 anger-eliciting situations, items were created by the primary researcher. Multiple versions of the same item were generated with an average of three items per suggested anger-eliciting situation. In the case of the previous example situation, it was used to create an item concerning "how much anger would I feel if my superior at work does not acknowledge all the hard work I invested." It was also worked into multiple versions of the item with roughly the same meaning permit later selection of the ideal version. For example two versions were: "how much anger would I feel if my superior at work fails to recognise all the effort I put in" and "how much anger would I feel if my superior at work doesn't give me credit for the efforts I made during a certain task". The goal of this stage was to create a new list of items that could be used in a prototype instrument that would help select ideal versions that expressed each situation, and to identify items that required revision of wording to avoid ambiguities. Even more important was the idea that the items were written in a manner that the layperson would find readily comprehensible and easy to parse, which is identified as a very important step in developing a successful instrument (de Vaus, 1991). Each of the 65 unique interpersonal situations generated around three versions of the item intentionally designed to cover the same situation but with slight semantic differences, allowing us to identify the most readily understood items and delete the more troublesome versions. This resulted in a total of 186 items that were considered for inclusion in the MIDAI.

The items were compiled in a questionnaire that asked two questions for each item; how much anger the participant would feel when confronted with such a situation, and also

whether they found the question easy to immediately parse, welcoming comments and feedback to help identify refinements to the prototype instrument. A convenience sample of 21 postgraduate psychology students was then used to pilot the questionnaire and assess the readability of the tool . The prototype questionnaire included a total of 186 potential items for the MIDAI concerning the actions of another individual in a variety of social situations. A new sample other than the Delphi panel was intentionally selected to trial these items to obtain a fresh outlook on the construct. This postgraduate population was chosen specifically for their previous experience with psychological research and instrument administration, but since they were new to the study they held fewer preconceived biases toward the construct than the experts who had been intimately involved in developing it over the last half year. The students were approached in class, briefed on the study and asked to complete a voluntary questionnaire which requested that they identify items on the list that required revision for readability; to identify those items that were difficult to understand immediately, overly complex, difficult to parse, or provided too little information to make an informed response. They were also asked to rate the anger they would feel in such a situation.

Administering this prototype to postgraduate psychology students and also reading their feedback helped greatly with identifying items that contained ambiguities or were difficult to understand. For example one popular item '(target person) insults me' had widely varying evaluations as participants identified uncertainty as to whether the act was malicious or just unintentional. Thus the item was modified slightly to reduce ambiguity, becoming '(target individual) insults me on purpose', to give more of an impression that the act was intentional, and by extension not done in a playful manner. Further, in compiling the self-reported levels of anger for each situation, it was obvious that a handful of items did not provide sufficient differentiation between subjects to be useful measures of anger. For example, the *victimisation* themed items that involved being hit by someone, being assaulted or otherwise on the receiving end of physical aggression were all consistently rated at the highest available anger level by almost all of the subjects. Whilst this is certainly measuring Interpersonal Anger as it demonstrates that being struck by someone does lead a person to feel anger directed at the aggressor, it does not present a useful measure of Interpersonal Anger. If we expect to measure the differences between the way humans anger toward different targets, then an item that rates high on Interpersonal Anger regardless of target characteristics is useless, so all items concerning the anger-eliciting situations that involved being the victim of physical violence were promptly removed. The feedback from this

postgraduate sampling procedure assisted in eliminating 95 versions of items that were problematic. Of the remaining 91 unique items, 22 were identified for slight revisions.

2.2.3 Step Seven – Seeking Consensus on Items

Once items were revised in light of the postgraduate feedback, the final 91 item version of the prototype instrument was presented back to the original Delphi panel of experts. The questionnaire in this stage asked whether they agreed or disagreed with each item as an appropriate measure of Interpersonal Anger. They were asked to be critical in eliminating items that they deemed not completely ideal in the measurement of Interpersonal Anger, and conversely to provide comments on the ones that excelled. We took the same consensus of 80% or higher as an indication that the item should be retained. Those with lower consensus were removed. Overall, the items that received the highest consensus were selected by the expert panel because they were; 1) the easiest to immediately understand and visualise; 2) displayed good face validity for the reader, and; 3) had the versatility to be general enough to apply to multiple different targets, rather than because they were simply work-specific or home-specific. A total of 33 items reached consensus and were retained whilst 50 items were rejected. A further eight items were nominated for inclusion subject to minor revisions, and these were presented back to the panel in a subsequent short questionnaire requesting consensus on whether the new modified version of the item was to be included. Each of these received consensus after that minor revision, resulting in a total of 41 unique items covering a variety of anger-eliciting situations.

2.2.4 Step Eight – Refining a Pilot Instrument

A pilot version of the MIDAI was constructed using the 41 items that reached consensus in the previous stage of the Delphi technique. As described earlier, five different targets were selected for Interpersonal Anger, and items needed to be selected for the MIDAI Family Scale, MIDAI Superiors Scale, MIDAI Co-workers Scale, MIDAI Subordinates Scale, and MIDAI Stranger Scale. Some of the 41 unique items were selected by the Delphi panel due to their versatility to apply to numerous targets, so these particular items were included in every one

of the five MIDAI Scales. This would also be useful in determining which of these items common to every MIDAI Scale would be useful in cross-scale comparison of a subset of identical items. The remaining items were more specific, concerning the anger-eliciting behaviours of another person in a certain domain such as home or work. Further, some involved a target that had some hierarchical relationship with the respondent, for example items that referred to a superior bringing about negative change in their work conditions, or people in a subordinate position disrespecting their authority. These items were allocated to the MIDAI Scale that best corresponded with the target, in this case Superiors and Subordinates. The resulting five MIDAI scales consisted of a mix of replicated and unique items from the original 41 (common items and items unique to that specific target), with the view that future factor analysis and psychometric testing would further select the best common and unique items for each MIDAI scale. This pilot questionnaire included the five MIDAI scales; Interpersonal Anger toward family members (*MIDAI Family Scale:* 20 items), Interpersonal Anger toward superiors at work (*MIDAI Superiors Scale:* 24 items), Interpersonal Anger toward co-workers (*MIDAI Co-worker Scale:* 18 items), Interpersonal Anger toward subordinates at work (*MIDAI Subordinate Scale:* 17 items), and Interpersonal Anger toward strangers (*MIDAI Stranger Scale:* 14 items). The questionnaire that was used to pilot the five new MIDAI Scales along with other measures of interest is included in the appendices, section 8.4.

Using the Item Stem with a Situation-Reaction Response Format

A final question asked to the expert panel in this step of the Delphi method was for consensus on the appropriate response format for the MIDAI Scales in the pilot questionnaire. Consensus was achieved without any further iteration on the decision to employ a situation-reaction format for the primary reason that it permits easier retrieval of situation-related information, which in this case also applies to target-related information. Instead of offering one large scale with redundant and repetitive references to the individual perpetrator (e.g., 'How much anger would I feel if a family member causes significant delays when I have a schedule to keep?'), each MIDAI scale is simply preceded with the situational context in an item stem, and then items are listed thereafter. For example the MIDAI family scale reads 'How much anger would I feel if a family member…' Item 1: '…makes a nasty joke about me', Item 2: '…etc', each answered with the degree of anger from *0* (none at all) to *4* (very much). The situation-reaction format is better than recalling the specific events listed and

reporting the anger felt in that situation, and the success of this instrument format has been well supported (Pekrun, Goetz, Perry, Kramer, Hochstadt, & Molfenter, 2004). The longer the period of recall for very specific events, the more likely it will actually provide a false indication of a stable trait, since reports of anger will be more 'trait-like' (Moore, Sherrod, Liv, & Underwood, 1979). When the situation-reaction format presents a hypothetical scenario it helps to alleviate the likelihood of any memory bias of retrospective recall (Peterson, 1980). Further, not every participant may have actually experienced each scenario, leading to a reduction of data for that case and thus reduced reliability. In the end, the testing of propensity to anger toward another individual if such situations were to occur is the key aspect of the MIDAI. The final questionnaire was presented to all expert panellists for any last revisions before a community sample pilot study. Two instances of instruction phrasing and structure were modified slightly in light of the feedback.

2.2.5 Factor Analysis of the Pilot Instrument

The pilot instrument was trialled in a random stratified community sample of over 300 working Australians in metropolitan Adelaide in order to conduct exploratory factor analysis to further streamline the MIDAI Scales. Details of the results of the factor analyses are beyond the scope of this method section, but are provided in Chapter 3 of this Portfolio (the first publication). The primary reason for including the key results of the factor analysis here is because it formed a significant step in revision of the MIDAI scales, and thus is pertinent to the flow of this instrument development section. For further information of the process used for factor analysis, see Analysis Strategy (2.3.5), and for the results of the analyses, see the first publication (Chapter 3). The outline of how the MIDAI Scales were revised from these factor analytic techniques is included in this section for continuity of the Delphi instrument development process.

Exploratory Factor analysis was conducted separately for each of the five MIDAI scales in an Australian community sample. Each scale was reduced to 12 items before the factor structure and reliabilities were compromised below desirable levels. Then, the 12-item MIDAI family, superiors, co-worker, subordinates, and stranger scales were further submitted to confirmatory factor analysis including all those 60 items to determine whether each of the five targets of anger were conceptually distinct, or whether all five scales were tapping in to

the same construct. The model with five different scales fit significantly better and included higher loadings onto the relevant scales than a model with only one single 'Interpersonal Anger' Factor. This provides support for the notion that interpersonal anger toward different individuals in a social environment are distinct constructs, and each target individual can represent a different aspect of the anger experience.

2.2.6 Step Nine – Dual Factor Structure of Interpersonal Anger

Factor analysis further revealed that each 12-item MIDAI Scale consisted of two factors (six items each) that were a new way to conceptualise the Interpersonal Anger-eliciting situations. Upon observation of the similarities between items it was apparent that the factors differed in terms of the explicit versus the surreptitious nature of the antagonist's anger-eliciting behaviour. These were; *Overt Hostility*, concerning explicit aggressive acts where the target individual (according to the relevant MIDAI scale) victimises the subject, for example 'How much anger would I feel if a superior at work insults me on purpose?' (MIDAI Superiors Scale: item 9); and *Covert Provocation*, where the target individual would engage in more surreptitious anger-eliciting acts, for example 'How much anger would I feel if a superior at work refuses to acknowledge my point of view' (MIDAI Superiors Scale: item 10).

The proposed factor structure was presented back to the expert panel for review and immediate consensus was achieved in light of factor analysis results that the *Overt Hostility* versus *Covert Provocation* delineation was a parsimonious explanation of the type of anger-eliciting situations. It was also believed that these two factors were more indicative of interpersonal anger situations and a better classification system than the five core themes; Moral transgression, Victimisation, Personal risk, Practical barriers, and Lack of insight. Whilst these five core themes were useful in the development of the core concepts of Interpersonal Anger, the expert panel now agreed that the results of the exploratory factor analysis warranted that the new two-factor model be considered superior. To confirm this structure a random stratified community sample of over 300 working Japanese people in metropolitan Nagoya was collected as a validation sample for confirmatory factor analysis of the two-factor structure in a completely different population (for details of this sample, see the following section 2.3.2 on Community Sample Recruitment, and for details of the factor analysis and results see 2.3.5 Analysis Strategy and the first publication in Chapter 3

respectively). Data from the validation sample in Japan showed that the factor structure between a two culturally divergent populations was identical, indicating the Western and Eastern cultural invariance of the MIDAI. This makes the tool appropriate for use in comparison of samples from different countries. We investigated the further removal of items to provide a better fit, but no significant improvements were observed.

2.2.7 Step Ten – The Revised Final Instrument

This is the final step of the Delphi process, and the final revised instrument was presented back to the expert panel for their interest. Any comments in terms of revision were welcomed, and all experts immediately reached consensus in this final iteration. The final version of the MIDAI was approved without revision. The final version is provided in Appendix 8.2.

The MIDAI has a Flesch-Kincaid Grade level of 10.5, indicating that an average 10th grade student or 15-16 year old would be able to readily understand it. The MIDAI asks participants to rate the degree of anger they would feel in a number of situations on a five-point scale ranging from *0* (none at all) to *4* (very much). They are asked to rate the anger they would feel in 12 different situations involving the actions of another individual (target), and five possible different targets that include a range of individuals in the home or work domain with different hierarchical relationships. These five targets each have a MIDAI Scale; Interpersonal Anger toward family members (*MIDAI Family Scale:* 12-items), Interpersonal Anger toward superiors at work (*MIDAI Superiors Scale:* 12-items), Interpersonal Anger toward co-workers (*MIDAI Co-worker Scale:* 12-items), Interpersonal Anger toward subordinates at work (*MIDAI Subordinate Scale:* 12-items), and Interpersonal Anger toward strangers (*MIDAI Stranger Scale:* 12-items). The 12 items on the scales can be summed to provide an individual's scale score for that target, i.e. totalling the 12 MIDAI Family Scale items generates a score for interpersonal anger toward members of their family. This can be compared with population means, or used in cross-sample comparisons of anger toward family members.

Each MIDAI Scale consists of six items that concern behaviour of another individual that is construed as *Overt Hostility* (e.g. Item 7: "[target]…behaves in an unnecessarily aggressive manner toward me"), and six items of a *Covert Provocation* nature (e.g. Item 12:

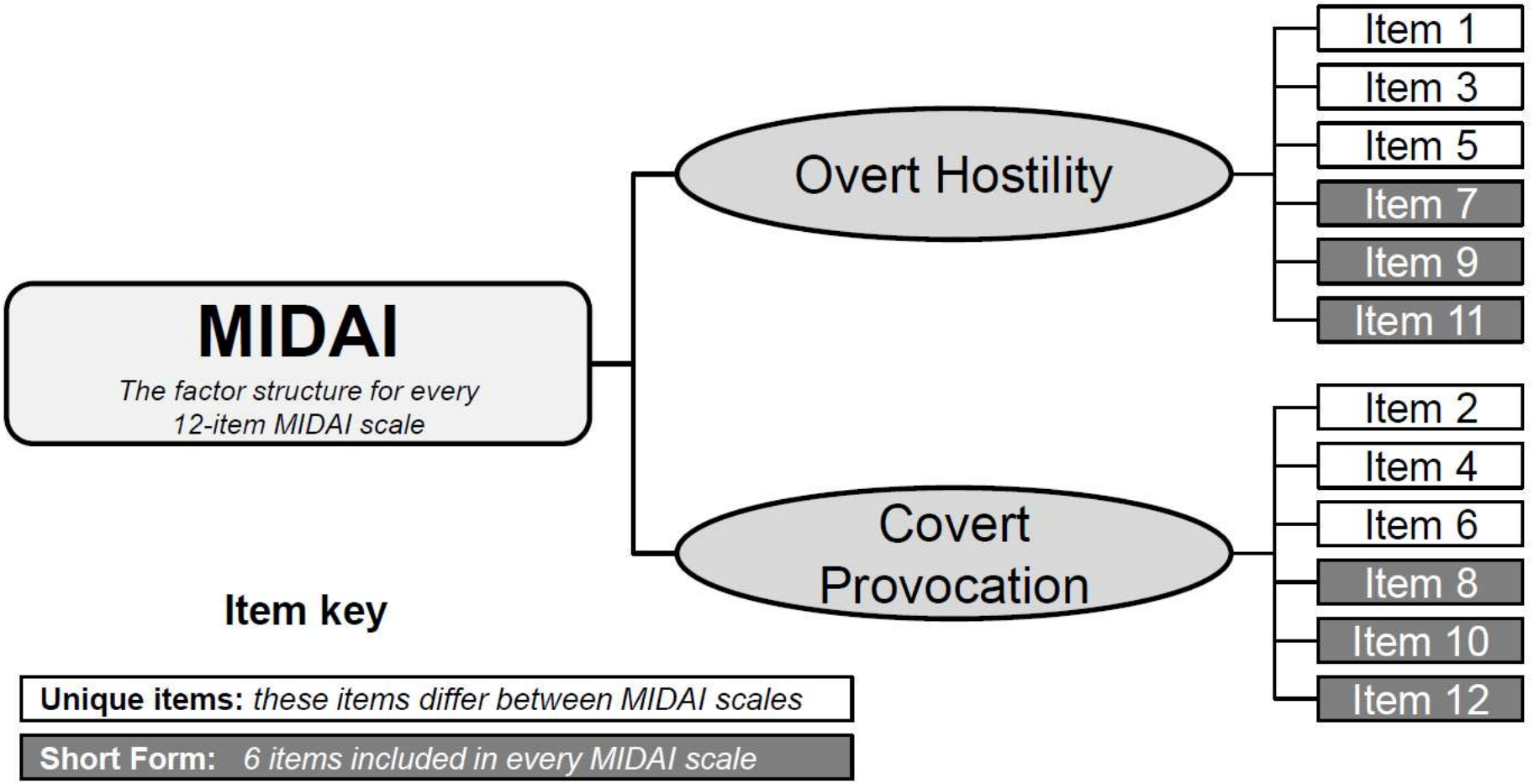

Figure 4. Factor structure for every 12-item MIDAI scale and 6-item 'Short Form'

"[target]…doesn't give me the respect I deserve"). These create the two-factor model of Interpersonal Anger. Further, the 12-item MIDAI scales (Family, Superior, Co-worker, Subordinate, and Stranger) also contain six common items that are replicated in all five MIDAI Scales to facilitate cross-scale comparison of identical items (three items from the *Overt Hostility* subset, and three items from *Covert Provocation*). An illustration of the factor structure of each 12-item MIDAI Scale is displayed in Figure 4, along with the delineation of which items differ between the MIDAI scales, and which are identical. Those six items that are consistent between all five 12-item MIDAI scales were decided upon during factor analysis (previous steps 8 and 9) by selecting the three most parsimonious, generalisable (i.e. situation non-specific), and highest loading from the *Overt Hostility* and *Covert Provocation* factors. This resulted in a MIDAI Short Form which consists of the same 6-items that are included in every MIDAI Scale and permits direct comparison of interpersonal anger toward different targets despite the six anger-eliciting behaviours they engage in being identical. The six common items can be summed to provide an individual's Short Form scale score for that target, i.e. totalling the MIDAI Superiors Scale Short Form (6-items) items generates a score for interpersonal anger toward their superiors at work. This can be directly compared to other Short Forms to make valid comparisons between for example the level of anger toward superiors as opposed to anger toward co-workers or subordinates in the work domain.

Note that the structure in the diagram is followed for each of the 12-item MIDAI Scales, and is presented as such in the final instruments in Appendix 8.2. However, when the questionnaire is presented to participants, items on each of the five MIDAI Scales are randomised. This presents a confounding effect in responses, so that the participant is less likely to see the identical item (Short Forms) and recognise that the motive of the study is to test differences in anger attributed according to the target despite their behaviours being identical. This is aimed to elicit less social desirability in responses. Further, although only Short Forms can be used to compare Interpersonal Anger toward different targets (because the items are identical, whereas 12-item scales may include certain situations that are inherently more aggravating than items in a different 12-item scale), it is still useful to administer in the context of the 12-item scale simply due to the necessity of confounding items to ensure that the goal of measurement is not immediately transparent.

Now that the final Instrument had been developed and refined, the next step was to test the psychometrics in order to establish it as a valid and reliable new measure of

Interpersonal Anger. The next section discusses the data collection and analysis strategy for establishing convergent validity, divergent validity, scale reliabilities, test-retest reliabilities, factor analysis and cross-cultural comparisons. Further, the analysis strategy is outlined for testing the propositions in the Interpersonal Anger Theory as the process moves from *inductive* and *descriptive* theory to the *deductive* process of creating new *normative* theory.

2.2.8 Section Summary

The new McLinton Interpersonal Domain-specific Anger Instrument (MIDAI) measures the propensity to feel anger directed toward others in one's social environment, known as Interpersonal Anger. Five MIDAI Scales were developed to test anger levels toward specific individuals; Interpersonal Anger toward family members, superiors at work, co-workers, subordinates, and strangers. Through the Delphi technique, themes that achieved consensus were used to develop sample items for possible inclusion in the proposed measure. The sample situations were piloted in a postgraduate psychology student sample to evaluate readability and face validity with a sample that was familiar with the administration of psychological instruments but was new to the study and thus did not hold biases toward themes and topics if they had been involved in the Delphi method from the beginning. Items were revised in light of their feedback, and then consensus was reached on the best items selected by the Delphi expert panel. Exploratory factor analysis was conducted with an Australian stratified community sample, then confirmatory factor analysis was used in a Japanese community sample. The factor structure of Interpersonal Anger-eliciting behaviour of others was strongly linked to whether the situation was perceived as *overt hostility* or *covert provocation.* The final instrument was refined after factor analysis and consisted of five 12-item scales; Interpersonal Anger toward family members (*MIDAI Family Scale*), Interpersonal Anger toward superiors at work (*MIDAI Superiors Scale*), Interpersonal Anger toward co-workers (*MIDAI Co-worker Scale*), Interpersonal Anger toward subordinates at work (*MIDAI Subordinate Scale*), and Interpersonal Anger toward strangers (*MIDAI Stranger Scale*). Within each MIDAI 12-item Scale is a 6-item Short Form that consists of the six common items that are identical in each of the scales. These Short Forms may be used to identify differences in the anger experience toward others according to certain defining

features, for example to assess whether a participant has comparatively more propensity to anger toward their boss at work or to a family member. The next step was to test the new instrument in two random stratified community samples of divergent cultures (Australia versus Japan) to establish psychometric properties.

2.2.9 Personal Reflection

RDQ 2 – Lifelong learning: *I enjoyed this segment of the instrument development process as I could really see the MIDAI itself coming together piece by piece. The experts and I had been immersed in the topic for the preceding months, so I discovered the value of a 'fresh eye' in the creation of items with the postgraduate sample revising the prototype. Further, I learned numerous new techniques in the validation of a new measure including EFA, CFA, and the use of cross-cultural validation samples.*

RDQ 3 – Effective problem solver: *I recognised in the reviews of the literature that a common criticism of existing instruments was the fact that they had poor conceptual development, and I sought to avoid this in Interpersonal Anger by using the Delphi expert panel. This would lead the grounded theory approach with a collaborative effort rather than guiding it via my own preconceived biases in how I wanted the final result to look. I tried to divorce my own agenda from the development of the construct and instrument, which was a difficult but necessary task. The second common criticism of existing anger instruments that I wanted to overcome was the reliance on homogenous samples in development and lack of generalisable validation data. Hence I elected to conduct the factor analysis of the MIDAI only in a random stratified community sample, which will be discussed in more detail in the following section. It was important for me to pre-emptively address the shortcomings of existing measures in the development of my own.*

2.3 Community Sampling

2.3.1 Background

The project had full ethics approval from the University of South Australia Human Research Ethics Committee. It was decided that for the first trials of the MIDAI to be credible, and for the newly developed measure to be recognised as a valid and reliable measure, significant efforts would have to be made in collecting a high quality sample that would be generalisable to the population. Thus the decision was made to obtain a community sample that was both random in selection of all potential participants in the city, and stratified to account for diversity in socio-economic status. Samples of convenience were unacceptable, and it is surprising to consider the sheer number of commonly employed anger measures that have no normative data and were generated and validated using student samples (Eckhardt, Norlander, & Deffenbacher, 2004). Further, it was not sufficient to test the new measure in cross-sectional data, thus two waves were deemed necessary for longitudinal analyses of test-retest reliability. Last, the MIDAI which was created for international use could not simply be tested in a single country, so it was considered essential that randomised community sampling from at least one other country was to be carried out, hence the selection of a Japanese community sample. In addition, this permitted cross-validation of the factor structure and psychometric properties in a vastly divergent cultural environment. The city of Nagoya was selected as the target population in Japan due to the primary researcher's personal contacts whom facilitated the acquisition of accommodation and resources for the project. Beyond convenience, both Adelaide and Nagoya represent mid-range population density cities relative to their country.

2.3.2 Community Sample Recruitment Procedure

Identical methods of data collection were employed to gather participants in Australia and Japan to establish two culturally different random stratified community samples. The doorknock method was used, moving from door-to-door in metropolitan Adelaide (South Australia, Australia) and metropolitan Nagoya (Aichi Prefecture, Japan). This time-consuming method was selected over simply a mail-out questionnaire because it allowed the researcher to make a personal introduction to each potential candidate, which was hypothesised as more likely to garner a good response rate. In fact, use of the personal

introduction to explain the study and the importance of their participation actually resulted in a very good response rate in both countries (Australia 67%; Japan 78%).

The technique used to select suburbs, streets and houses to be approached was conducted using a random stratified selection. Initially, a number of suburbs were selected from a metropolitan map of the city and a random number generator with a unique number assigned to each different suburb (based on postcode). Whilst the selection of suburbs was random, care was still taken to ensure fair inclusion of low, middle and high socio-economic status areas according to the latest census data by stratifying the sampling frame of suburbs initially selected by socio-economic status (*Australian Bureau of Statistics*: McGrath, 2008; *Japan Statistical Yearbook*, 2008). Then, each street was allocated a number within that suburb moving in concentric circles from the north-eastern corner of the suburb on the map, and a random number generator was used to select which streets to include. Then, the researcher approached every household on both sides of that street for potential participants in the study. If the person who answered the door met the eligibility criteria (18 or older and currently engaged in full-time employment), they were asked to complete the survey. If not, but one or more other people who lived at that address were eligible, one of these people were selected at random and asked to complete it instead. Only a maximum of one person per household was asked to complete the study in order to maintain the random sampling procedure and alleviate any bias for related participants.

The aforementioned method was conducted in an identical manner for both the Adelaide (Australia) metropolitan area, and the Nagoya (Japan) metropolitan area. Data collection was conducted in February 2008 in Australia, and then in August 2008 in Japan (completed just prior to the extreme financial volatility of Lehman's fall). In the latter, the primary researcher approached potential candidates in Japanese and no additional native Japanese speaking coordinators assisted. However, prior to conducting the data collection the researcher sourced native speakers to assist with priming in his second language via rehearsal of key study terms and processes.

Australian participants were also informed of the opportunity to be involved in a follow-up study conducted four months later in June 2008. Moderate length intervals between waves as opposed to long (1 year) or short (1 month) have been suggested to be valid as they account for occasion factors without underestimating the actual existence of causation (Zapf, Dormann, & Frese, 1996). It was decided that collecting longitudinal data in at least one of

the countries tested would be valuable in determining the reliability of the new measure, so a four month interval was used. Participants who wished to be included in the second wave were provided a detachable slip for address details that were subsequently separated from their responses upon receipt in order to preserve anonymity. Participants who returned the questionnaire with the slip for postal contact details were sent a follow up questionnaire (wave two) four months later. The second wave saw 68% of the original sample participate providing longitudinal data for Australia. This second wave of data collection was only conducted in the Australian sample due to the researcher's time constraints on visas in Japan.

2.3.3 Community Sample Characteristics

Overall similar numbers were achieved in wave 1 of data collection in Australia and in Japan. The Australian sample consisted of 301 working adults (male 128, female 173) who were aged between 18 and 82 (M = 42 years, SD = 17). The sample displayed roughly equal distribution according to socio-economic status, which was divided according to suburb with SES groups at low (n = 112), middle (n = 91), and high (n = 98). Wave 2 in Australia saw 204 people (male 87, female 117) from the original sample participate in order to provide longitudinal data, representing a good retention rate of 68%. Age distribution was similar to wave 1 (M = 41 years, SD = 17; range min. 18, max. 82) and the socio-economic distribution was preserved in the longitudinal sample (low n = 76, middle n = 58, high n = 70).

The Japanese sample consisted of a similar number of participants at a total of 300 working adults (male 119, female 181), representing a very good response rate of 78% of potential participants initially approached. General demographics were comparable to the Australian sample, with the Japanese sample including participants aged from 18 to 89 (M = 43 years, SD = 16). A similar number of participants from low (n = 109), middle (n = 96), and high (n = 95) socio-economic areas was obtained forming a random stratified community sample. Interestingly, both the Australian and Japanese samples displayed an overrepresentation of women, which may be explained by the higher proclivity for women to respond to questionnaires in western research (Sax, Gilmartin, & Bryant, 2003), and a factor of the time of day the data was collected as men are known to work longer hours in Japan (Kanai, 2009; Kawakami & Haratani 1999). Overall, the first wave of Australian and

Japanese participants exhibited similar spreads of age, gender, and socio-economic status, permitting valid sample comparisons.

2.3.4 Measures

The English versions were translated into Japanese along with the questionnaire and cover sheet for administration in the Japanese community sample. The Japanese version of the questionnaire was translated by the primary author and subsequently confirmed by a professional translator. Following revisions, it was piloted in a sample of three native Japanese speakers who were completely independent from the study, with the goal being to identify readability and language nuances. This method of back-translation of measures was successfully employed in previous research by the present author, and was deemed both time efficient and valid in producing an accurate Japanese version.

The questionnaire used in both Japanese and Australian samples included the five new MIDAI Scales, along with a number of other variables of interest. The State-Trait Anger Expression Inventory was included, particularly the trait anger scale to test convergent validity of our new measure with an anger instrument renowned for its construct validity and strong theoretical development, and the Anger Expression (Out) scale to measure outcomes of MIDAI anger in terms of anger expression style. Also included were the Effort-Reward Imbalance scale to test work stress levels and the 13-item version of the Marlowe-Crowne scale to measure social desirability in responses. Last, in order to test divergent validity a scale for an unrelated construct was selected (the extroversion scale from the Eysenck Personality Questionnaire). Description of these measures follows.

Mclinton Interpersonal Domain-specific Anger Instrument (MIDAI)

The MIDAI consists of five scales, each concerning Interpersonal Anger toward the behaviour of a different target individual (MIDAI Family Scale: 12-items; MIDAI Superiors Scale: 12-items; MIDAI Co-worker Scale: 12-items; MIDAI Subordinate Scale: 12-items; MIDAI Stranger Scale: 12-items). Each scale includes six items that are common to all MIDAI scales to permit cross-scale comparisons of anger toward identical situations, referred to as the MIDAI Short Forms (6-items). In each of the MIDAI scales, participants are asked to

rate *how much anger* the hypothetical situation would elicit from them on a five-point scale ranging from *0* (none at all) to *4* (very much). Also included is a measure of the *frequency* of each anger-eliciting behaviour as it is actually experienced, answered on a seven-point scale ranging from *0* (less than once a year) to *6* (everyday).

State-Trait Anger Expression Inventory (STAXI)

The State-Trait Anger Expression Inventory (STAXI: Spielberger, 1999) consists of two general measures of anger; State Anger (15-items) and Trait Anger (10-items). It also includes four more measures of anger expression style; Anger Control In (8-items); Anger Control Out (8-items); Anger Expression In (8-items), and; Anger Expression Out (8-items). Of these, the trait anger and Anger Expression (Out) scales are of particular interest and employed in numerous analyses in the present work. The former is a 10-item scale designed to measure a general and enduring trait predisposition to anger. Each item proposed a statement such as "I am quick tempered" (Item 1) to which participants indicated the degree they believed it to be representative of themselves. Responses are graded on a Likert scale ranging from *1* (strongly disagree) to *4* (strongly agree). The same response format was used to answer items on the Anger Expression (Out) scale which proposed that the individual deals with anger by overtly expressing it, for example "[when I'm angry]… I strike out at whatever infuriates me" (Item 7) or "…I say nasty things" (Item 8). The responses for negatively-worded questions were recoded to ensure that high scores reflected a higher level of the anger in question.

Effort-Reward Imbalance (ERI)

This 17-item ERI instrument (Siegrist, 1996) is used to measure stress at work from a disparity in efforts invested and reciprocal rewards consists of two subscales. The first subscale concerns extrinsic effort and is measured by the first six items which relate to the employee's perceived demands in the workplace. Each item consists of a statement, such as "I have constant time pressure due to a heavy workload" (Item 1), and responses were assigned a point value from *1* (strongly disagree) to *4* (strongly agree). The higher the individual scored on this scale, the greater degree of extrinsic effort at work. The second component consisted of the remaining 11 items which covered three areas of job reward; status (Items 11, 14, 16, & 17), esteem (Items 7, 8, 9, 10, & 15), and job security (Items 12 & 13). The same format of

response is used for this scale, with negatively-worded items reverse coded. A high total score on the Reward scale indicates a higher level of reciprocal rewards received by the employee.

Scores from both scales were employed to determine the effort-reward imbalance in terms of a ratio. An average score for each scale was determined by dividing the total score by the number of items within the scale. This average extrinsic effort score was then divided by the average score from the reward scale to produce the ERI ratio. This value was taken as a numerical representation of the degree of perceived disparity between an individual's efforts at work and rewards thereof.

Marlowe-Crowne Social Desirability Scale (Reynolds 13-item version)

The Reynolds (1982) 13-item version of the Marlowe-Crowne Social Desirability Scale was included to identify whether responses on the MIDAI are likely to be affected by the pressure to conform to societal standards of behaviour and to be looked upon favourably by others. Items attempt to discern the propensity to lie by asking whether participants experience certain situations that doubtlessly all people will have experienced at some point in their lives. For example, "there have been times when I was quite jealous of the good fortune of others" (Item 11). To each statement the degree to which they agree is measured on a five-point Likert scale, from *1* (strongly disagree) to *5* (strongly agree).

Eysenck Personality Questionnaire – Brief Version (EPQ-BV)

An unrelated extraversion subscale from the EPQ-BV (Sato, 2005) was included to test divergent validity with the MIDAI. It consisted of a series of descriptors regarding being extroverted, to which the participant was asked the degree to which they agree on a five-point Likert scale, from *1* (strongly disagree) to *5* (strongly agree). A sample question would be; 'I tend to keep in the background on social occasions' (Item 7). This was hypothesised to be a conceptually different construct from MIDAI measured anger and thus employed for divergent validity.

The final page of the questionnaire requested demographic details from the participant including gender and age, along with a unique six letter code that would permit the researcher to match their answers in wave 1 and wave 2 without any identifying participant information. For this purpose it had to be something that they would not forget over 4 months, but also that

was not directly related to their name, age, address, or other details collected that could identify them. The code was the first three letters of their mother's first name followed by the first three letters of their father's first name.

2.3.5 Analysis Strategy

Analysis techniques for the portfolio are outlined by addressing each aim in turn.

Aim 1. *To develop a new measure that fills the gap in existing instruments by testing differences in anger directed toward other people in one's social environment using the Delphi method.*

This has been achieved throughout this chapter (Chapter 2), resulting in the final MIDAI. Further analyses are not relevant.

Aim 2. *To establish the MIDAI using random stratified community samples in two different countries to establish good psychometric properties and a factor structure that applies across culture.*

Data from the community samples was screened for normality and outliers. The requirements of minimum *N* for factor analysis were met. Our sample sizes of greater than 300 exceed the long held minimum requirements for good factor analysis, often cited at *N*=100 (Gorsuch, 1983; Kline, 1979) or 200 (Comrey & Lee, 1992; Guilford, 1954), and furthermore fulfils the generally held expectations of *N:p* ratio being between 5 and 10 (Everitt, 1975; Gorsuch, 1983). Nevertheless, minimum requirements of *N* without taking into account the particular characteristics of the sample have been deemed largely useless (MacCallum, Widaman, Zhang, & Hong, 1999). Instead it is suggested that when communalities are all consistently high (.6 or greater), valid factor analysis can be conducted even in a sample of less than 100. Communalities for our data were around .5 or higher, indicating the analysis could be run on a sample between 100 and 200. Since our Australian and Japanese samples were $N = 300$ or more, the minimum requirements to run a factor analysis were exceeded. The larger the sample, the more likely it is to reflect population loadings and it will remain consistent across repeated testing.

Separate exploratory factor analyses (EFA) were conducted in the Australian Wave 1 sample to identify the factor structure of each of the MIDAI Family, Superior, Co-worker, Subordinate and Stranger scales in turn. EFA was conducted using SPSS (Statistical Package for the Social Sciences) with principal axis factoring and direct oblimin rotation. Parallel Analysis was used for each EFA as it has been suggested the most effective method for extracting factors and making retention decisions (Humphreys & Montanelli, 1975; Zwick & Velcier, 1986). The scales were cleaned up by removing items with poor factor loadings according to two criteria: (1) that the primary loading is .5 or higher; and (2) that the secondary loading is lower than .3 (for example, see Shapiro, Roberts, & Beck, 1999). These criteria were selected based on evidence suggesting that a cut off of .60 and .40 is too conservative and may lead to a rejection of an adequate model (McCroskey & Young, 1979), whilst a cut off of .40 or higher and at least a .15 difference between the secondary loading is far too liberal (Gorsuch, 1983; Nunnally, 1978).

Once the EFA had elucidated the factor structure in the Australian community sample, a confirmatory factor analysis (CFA) was conducted using the Japanese community sample, using AMOS 17 (Analysis of Moment Structures: Arbuckle, 2005). This tested the factor structure proposed by the EFA in each of the MIDAI Scales from the Australian sample. Multiple different goodness-of-fit indices were observed to test model fit, as recommended by Bollen and Long (1993). Our study employed the following fit indices: Chi-square (χ^2), Comparative Fit Index (CFI), goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), and Root Mean Square Error of Approximation (RMSEA). The acceptable cut-off points for good model fit are: CFI or GFI of .90 or higher; AGFI of .80 or higher; RMSEA of .08 or lower; and a significant reduction in χ^2 in comparison to a single factor model (Bollen & Long, 1993). A good model fit across a variety of indicators in the CFA would confirm the factor structure originally established in the EFA and validate the cultural invariability of the MIDAI.

Further psychometric properties were evaluated, including convergent validity, divergent validity, scale reliabilities and test-retest reliability. Each of the five 12-item MIDAI Scales were tested for convergent and divergent validity using bivariate correlation. Convergent validity was evaluated by strength of the correlation with an existing measure of trait anger from the STAXI, whilst divergent validity was measured by correlation with an unrelated extroversion scale (EPQ-BV). Scale reliability scores were measured using

Cronbach's alpha in both the Australian and Japanese samples, whilst test-retest reliability of the final instrument was then analysed using correlations of the first and second wave Australian scale scores.

Aim 3. *Investigate whether MIDAI anger-eliciting behaviour of others in the workplace provokes different levels of anger within the Japanese sample according to the perpetrator's relative social level (superior, co-worker or subordinate), and also compare the anger experience in Japan with that of Australia.*

To enable a fair comparison of interpersonal anger toward different targets, each MIDAI scale contains six identical items general enough to apply to any situation (referred to as the MIDAI Short Form). When comparing anger between MIDAI scales, these common items should be used to ensure that certain domain scales do not consistently elicit significantly higher anger in comparison to others simply because they refer to more aggravating situations.

The difference in mean levels of anger on the MIDAI Short Forms was tested using a related samples *t*-test to investigate whether it was significant in the Japanese community sample. Related samples *t*-tests were also employed to identify significant differences between Short Forms in the Australian community sample (wave 1). Following this, both samples were compared using independent samples *t*-tests to explore cross-cultural differences in the levels of anger toward Family, Superiors, Co-workers, Subordinates, and Strangers.

Aim 4. *To discover how Interpersonal Anger relates to work stress (ERI) and investigate whether Interpersonal Anger may be a spillover consequence both within the work domain and also the home domain. Is this relationship invariant across culture?*

AMOS 17 (Analysis of Moment Structures: Arbuckle, 2005) was employed to conduct Structural Equation Modelling (SEM: Kenny, Kashy, & Bolger, 1998) in order to test propositions 1 through 4 suggested in Inductive Theory Stage 3 (see section 2.1.7). A graphic model of these propositions is presented in Figure 5.

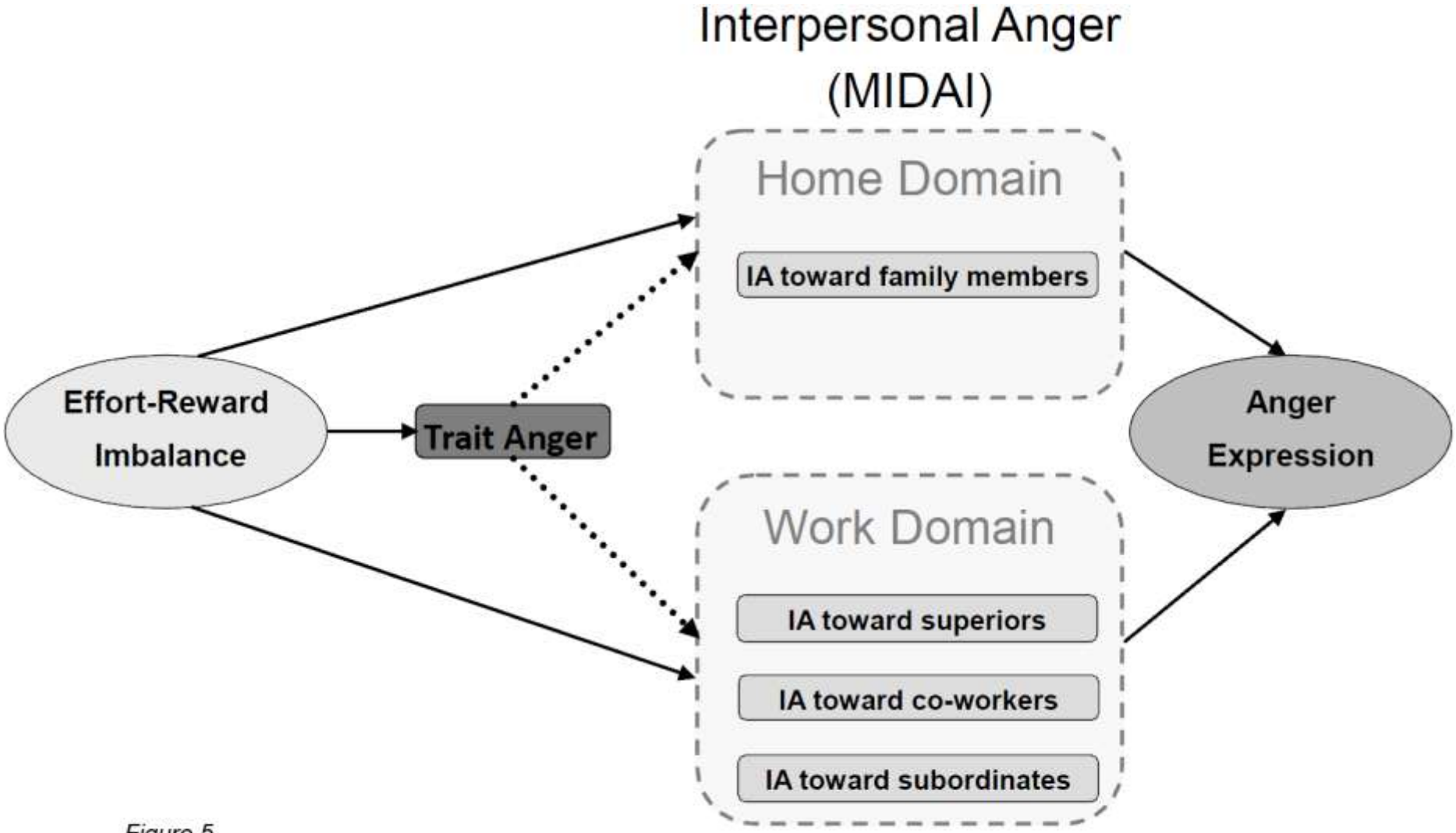

Figure 5

M1: Model for the spillover effect of Effort-Reward Imbalance on Interpersonal Anger in the Work and Home Domains

A number of competing models were compared by tested the progressive model fit of the chi-square difference test. A total of five absolute fit indices were selected (Joreskog & Sorbom, 1986): the chi-square (χ^2),Comparative Fit Index (CFI), Goodness-of-Fit index (GFI), Adjusted Goodness-of-Fit Index (AGFI), and the Tucker-Lewis index (TLI). Values greater than 0.90 are acceptable for GFI, CFI and TLI, whereas AGFI being a more conservative measure of fit is considered acceptable from 0.80 and higher (Byrne, 2001; Bollen & Long, 1993). The comparison of multiple goodness-of-fit indices to provide a cohesive view of model acceptability is a well-supported notion (Bollen & Long, 1993).

First, the null hypothesis model was tested (M0), followed by testing of the proposed full mediation model (M1) as suggested in the model (Figure 5), which simultaneously includes all Propositions 1 through 4 (see 2.1.7). To test the mediation effect, we used bootstrapping because of the expected non-normal distribution of the product of the effects of the paths comprising the indirect effect (Hayes, 2009; Preacher, Rucker, & Hayes, 2007). We used 95% confidence intervals (CI), and these were significant if the interval did not include the value of 0.

Aim 5. *To investigate whether reported interpersonal anger on the MIDAI is related to proclivity to aggress through an outward expression of anger (STAXI Anger Expression - Out).*

The Structural Equation Modelling (SEM) employed to test proposition 4 suggested in the Inductive Theory Stage 3 section (2.1.7), is also included in Figure 5. This proposition was analysed in conjunction with Aim 4 above.

2.3.6 Guide to Published Results Presented in the Following Chapters

The next chapters (Chapter 3, 4 and 5) include the results of the above analyses in validating Interpersonal Anger Theory, and establishing the MIDAI psychometric properties. These are organised in the form of three publications in press and in review.

Chapter 3 (first publication)

This seminal work deals with the development and validation of the MIDAI, covering Aims 1 and 2 primarily. It covers the pilot in a random stratified community sample (Australia; *N*=301) to test psychometrics, reliabilities and explore the factor structure, as well as test-retest reliabilities from the second wave (Australia; *N*=204). A validation sample of cross-cultural data (Japan; *N*=300) is used to confirmed the factor structure of each MIDAI scale.

Chapter 4 (second publication)

This follow-up study to the previous publication covers the cross-cultural evaluation of the MIDAI and thus Aim 3. It investigates whether Japanese workers report different levels of interpersonal anger according to the target, and also whether they differ from Australians to test whether proclivity to anger toward others across cultures may be influenced by culture. It also investigates whether the frequency of experiencing interpersonal anger-eliciting provocations from others is related to the level of reported anger toward that target.

Chapter 5 (third publication)

The third instalment in published MIDAI developmental work deals with the *deductive* theory process and the Interpersonal Anger model, addressing Aims 4 and 5. Specifically, it explores the pervasive influence of chronic job stressors (ERI) and how they can contaminate other areas of daily life such as Interpersonal Anger and outward anger expression. This relationship is also tested in two very different cultures to investigate the existence of an underlying global phenomenon.

2.3.7 Section Summary

Community samples were recruited to improve generalisability by avoiding samples of convenience commonly used for instrument testing. Samples in both Australia and Japan were collected using the same system including personal contact by the researcher to elicit good

response rates. The samples were collected randomly from metropolitan Adelaide (Australia) and Nagoya (Japan) using random number generation for suburbs and streets within a stratified sampling frame based on socio-economic status. This created a random stratified community sample for Australia (N = 301) and Japan (N = 300), as well as a second wave conducted in Australia for longitudinal data (N = 204). The questionnaire included the five recently developed scales for the MIDAI (Family, Superiors, Co-workers, Subordinates, and Stranger), the STAXI (state, trait, and anger expression scales), the ERI (effort and reward scales), the Reynolds (13-item short form for social desirability), and an unrelated extroversion scale (EPQ-BV) for divergent validity. The version was translated by the author into Japanese and then sent to a professional translator for confirmation, as well as piloting with three native Japanese speakers for readability. Using the data from the community samples, psychometric properties of the new measure would be conducted, in order to establish scale reliability, test-retest reliability, and good convergent and divergent validity. Once established, the results of the MIDAI anger levels would be used to compare the cross-cultural Interpersonal Anger experience between Australia and Japan, as well as within each country. Then, propositions of the Interpersonal Anger Theory would be tested using structural equation modelling, specifically the nature of work stress (ERI) spillover into Interpersonal Anger, as well as the MIDAI relationship with overt anger expression.

2.3.8 Personal Reflection

RDQ 5 – Ethical action and social responsibility: *As a researcher I have a responsibility to uphold the academic standards of the University of South Australia and professional standards of psychologists. During ethics application through the Human Research Ethics Committee, it was mentioned that some participants might have had traumatic history of victimisation (as the MIDAI does deal with being a victim of hostile acts), so I ensured that avenues were in place to assist such individuals if the questionnaire caused them distress. My priority was the ethical administration of my new measure, and whilst my intent was of course to uncover feelings of anger toward other people, in no way would I allow that goal to compromise the safety of the participants.*

RDQ 6 – Effective communication: *One significant aspect of the process for me during data collection was the challenge of approaching strangers for participation in my research. I knew that the effort involved in personal introduction to each potential participant would be worth it in the long run with people being more eager to assist a person whom they could identify with personally. In the end this theory paid off, as establishing rapport with each person through face-to-face contact resulted in a great response rate. However, the task itself was not only incredibly time consuming, but also taxing psychologically to maintain vigour for hours on a daily basis approaching over a thousand households in Australia and Japan. I found that communicating with complete strangers was a challenge particularly in the early stages, however once I had adapted to the learning curve and made my pitch parsimonious, I found that I relaxed into the role with ease. Overall, people appeared happy to assist a stranger once they knew I wasn't there for anything more than their time to complete a survey, and some expressed great interest in hearing the results of the study upon completion.*

RDQ 7 – International perspectives: *I have always had an interest in international communication which has fuelled my passion for languages. In the PhD I was able to extend that interest with the opportunity to not only collect data in a Japanese sample, but also to employ my skills in language to create a bi-lingual instrument and even make personal contact with each potential participant in Japanese. This has improved my grasp of the language as well as my awareness of culture, and I believe that my research embodies these international perspectives.*

3. Results – Publication One

The following paper by McLinton and Dollard is in final review in the *Journal of Psychopathology and Behavioral Assessment* (JPBA) and is the seminal publication for the development of the MIDAI.

Title

'Hating the boss' – How we look at others in anger:

Development of the McLinton Interpersonal Domain-specific Anger Instrument (MIDAI)

Abstract

Interpersonal anger focuses on how an individual's potential to anger may be influenced by the characteristics of other people, specifically the perpetrator of anger-eliciting behaviour and their environment. To develop an instrument to measure this newly operationalised construct we employed the Delphi technique, gaining consensus with an international panel of 15 anger experts from seven countries. Face validity and readability were assessed with a group of 21 postgraduate psychology students. The final five scales each dealt with a different target individual, forming the McLinton Interpersonal Domain-specific Anger Instrument (MIDAI). The MIDAI was piloted within a stratified sampling frame based on socio-economic status (Australia; *N*=301) to test psychometrics, reliabilities and explore the factor structure. The second wave of longitudinal data (Australia; *N*=204) displayed good test-retest reliability, and a validation sample of cross-cultural data (Japan; *N*=300) confirmed the two factor structure of each MIDAI scale; overt hostility and covert provocation. Results show significant differences in anger toward different targets, and indicate interpersonal anger to be a trait rather than transient state. Therefore our study suggests that individuals may have different predispositions to anger according to characteristics of the target and the environment (domain) in which it occurs.

3.1 Publication One: Introduction

Anger has drawn research interest as it has been one of the many suggested catalysts for aggressive behaviours such as domestic violence, violent sex crimes, and school or workplace bullying (Geen, 2001). Whilst these are all examples of overtly expressed anger, it is reasonable to assume that for each instance of aggression there are numerous accounts of unexpressed anger. Tests already exist to measure an individual's general levels of anger, propensity to anger and aggress, however, in a thorough review and evaluation of the existing anger instruments Eckhardt and colleagues (Norlander & Deffenbacher, 2004) explicitly state that "there is a need for more refined measures of anger and hostility as they relate to specific classes of the human experience" (p. 36). The goal of the present study was to operationalise a previously unmeasured aspect of the anger experience, 'Interpersonal Anger', and develop an instrument that measures it using established scale development techniques (the Delphi method), psychometric assessment, and cross-cultural validation of the factor structure in both Australian and Japanese community samples.

Interpersonal Anger

It has been shown that in around 89% of all situations where anger is involved, it is directed at other human beings (Averill, 1982). As yet, no instrument has been developed that specifically measures the experience of anger directed solely at other individuals in one's social environment. Are we more likely to anger toward family members or the boss at work?

Previous research has attempted to investigate how humans express their anger, for example, individuals are more likely to express anger in a private setting, though they exert more control over it in public settings (Bongard & al'Absi, 2003; Porter, Stone, & Schwartz, 1999). Further, potential for anger expression is reduced toward authority figures, and increased toward family members (Underwood, Coie, & Herbsman, 1992). Whilst anger expression can be influenced by the social relationship (a peer, a family member, a close friend, a stranger, etc.) it does not answer whether the anger felt but not necessarily expressed is the same toward person to person (Porter et al., 1999). For example, would people still feel the same amount of anger toward such individuals in an identical situation, but simply not express it because of the target's position of authority? Or is the internal experience of anger toward that individual fundamentally different?

The internal experience of anger is just as important an area of research as aggression and anger expression. Whilst overt aggression and its consequences are easily observable, the internal experience of anger is in fact a highly stressful state. People with high levels of anger are in a greatly aroused emotional state, leading to reduced cognitive performance which in turn increases propensity for errors in judgement (Mann, 1992; Matthews & Desmond, 1995; Mayer & Treat, 1987). Furthermore, anger is also related to health problems such as cardiovascular disease (Smith, Roman, Dollard, Winefield, & Siegrist, 2005), cardiovascular reactivity (Katz & Toben, 1986), risk-taking behaviour (West, Elander, & French, 1993; Wyatt, 1998), 'road rage' (Deffenbacher, Kemper, & Richards, 2007), and work stress (Hoggan & Dollard, 2007; McLinton & Dollard, 2010). Thus it has been established that anger itself rather than overt anger expression has a pervasive effect in many life domains.

A key element of our proposed concept of Interpersonal Anger is the ability to distinguish whether people are more or less likely to feel anger toward one person or another. With such an instrument we can attempt to resolve discrepancies where conflicting research exists. For example, clinical research suggests that males engaging in domestic violence only direct anger and aggression at their spouse and actually do not have elevated levels of general anger (spouse-specificity in anger: Boyle & Vivian, 1996; Langhinrichsen-Rohling & Vivian, 1994). However, other research reveals that these men report significantly more anger-eliciting experiences outside their spousal relationship (Holtzworth-Munroe, Rehman, & Herron, 2000). Are they most likely to feel anger toward their spouse than anyone else, or are they likely to feel a similar level of anger toward everyone in their social environment but only actually express it to close others? A measure that can easily manipulate the interpersonal target of anger would be able to further investigate this type of conflicting data. In fact, Eckhardt and colleagues (2004) state that situations like the aforementioned contradictory findings justify the creation of new and unique assessment tools that are particular to such aspects of the anger experience. Accordingly this research aimed to develop a tool to assess 'Interpersonal Anger', the propensity for an individual to anger toward others in their social environment.

Existing Anger Measures and the Opportunity to Develop a New Anger Instrument

Many of the most commonly used measures of anger have been shown to have poor psychometric qualities and conceptual development (Eckhardt et al., 2004). The Buss-Durkee Hostility Inventory (BDHI; Buss & Durkee, 1957) is a measure of anger expression and

hostility that consists of 75 items and 8 subscales covering a broad number of themes, and is reportedly the most frequently used instrument (Lange, Pahlich, Sarucco, Smits, Dehghani, & Hanewald, 1995). Despite this, reports over decades of use have indicated both poor internal consistency, test-retest reliability, and very limited predictive validity (Biaggio, 1980; Biaggio, Supplee, & Curtis, 1981; Bishop & Quah, 1998; Vassar & Hale, 2009).

The Cook-Medley Hostility Inventory (Ho; Cook & Medley, 1954) is a 50-item scale designed to identify chronic anger and hostility-related constructs. Unlike the BDHI, the Ho has demonstrated acceptable reliability coefficients. However research suggests that its construct validity is dubious, with notable correlations with unrelated personality traits like neuroticism and general emotional distress (Barefoot, Dodge, Peterson, Dahlstrom, & Williams, 1989; Han, Weed, Calhoun, & Butcher, 1995). Furthermore, data suggests that it is not even related to hostility/aggression behavioural indexes bringing its usefulness into question (Megargee & Mendelson, 1962; Shipman, 1965).

The revised Novaco Provocation Inventory (NPI; Novaco, 1977) asks subjects to report the level of anger they would feel when confronted with anger-eliciting situations, however there is inconsistent evidence to support its internal reliability and construct validity. Test-retest coefficients for the NPI vary considerably, with the lowest reported reaching .17, along with poor correlations with self-reported anger provocation and other measures of anger or hostility (Biaggio et al., 1981). Furthermore, its ability to discriminate between anger-prone samples (spouse abusers) and the normal population has been brought into question (Hastings & Hamberger, 1988).

A well-established multidimensional instrument to investigate anger is the State-Trait Anger Expression Inventory (STAXI; Spielberger, 1996) and its latest revision, the STAXI-2 (Spielberger, 1999). The STAXI measures anger as both an emotional condition (state anger) and as an enduring disposition (trait anger). Scales cover the intensity and frequency of anger, and additionally assess individual differences in dealing with anger, such as expressing it outward, inward, or controlling anger. The STAXI has been developed from a strong theoretical model, is empirically supported in research with consistently sound psychometric properties, and is of great value in a clinical setting due to a large body of representative normative data (Eckhardt et al., 2004).

Whilst the STAXI measures the experience of anger across all situations in general, the construct is sufficiently different from the proposed new Interpersonal Anger measure to warrant its development. The STAXI subscales have been used to identify anger expression style at home, work, and free time, modifying the phrasing to account for the domain (Bongard & al'Absi, 2003). We desire to investigate similar effects of domain but on the internal experience of anger rather than expression style. Not only does our measure investigate the domain, but it is also directional, assessing valence toward a specific target, uses a situation-reaction format, and permits researchers to isolate the nature of the target of anger as well as the environmental context.

Interpersonal Anger and the Situation-Reaction Format

The notion of interpersonally-directed anger suggests that an individual has: (1) the potential to anger, to a degree that is; (2) based on their evaluation of other people's actions. In the case of domestic violence, the commonly heard defence for physical violence is "I was provoked" or "they made me angry and I couldn't stop myself". Although not a justification for violence, the actions of other people may lead to an anger response (e.g. NPI; Novaco, 1977), and individuals may differ in their tolerance of other individuals' actions according to characteristics of the target, their relative relationship, or the environmental context.

Previous instruments that measure anger typically phrase items in terms of personal reflection (e.g., 'I feel angry'), but do not incorporate the situation-reaction element, for example, "How much anger would I feel if… (a situation occurs, with multiple variables manipulated according to the area of interest)". Instruments that simply ask about current or general angry dispositions rarely account for the environmental context and thus it is difficult to provide a comparison of anger for the same person in different domains of their life. When an individual is identified in previous measures as an angry person (i.e., high 'trait anger') they are characterised as having a generally higher propensity to anger across all situations. The missing factor in existing measures is the ability to delineate whether anger varies according to situational variables, such as the environmental context, the relative relationship of other people involved, the characteristics of the other person, and so on. With a measure that accounts for these factors we can identify whether an individual has a higher proclivity to anger specifically toward a certain person or group, such as a spouse, ethnic group, or even a boss at work. In practice it could be employed as a diagnostic tool to identify an individual who might be more likely to become angry in certain environments, such as at home in a

spousal relationship. Anger has been shown to be a mediator and even a notable cause of spouse and child abuse (Mammen, Kolko, & Pilkonis, 2002; Norlander & Eckhardt, 2005), and this would suggest that a measure developed to test anger specifically directed toward a spouse or family member might in fact be related to actual acts of abuse toward those individuals.

With a measure that is able to also account for the role of the individual who engages in the antagonistic behaviour (the 'target' of interpersonal anger), it allows researchers to investigate the influence of factors such as social hierarchy in the experience of anger in the workplace. For example, are employees more likely to direct anger toward their superiors at work as per the western socio-cultural stereotype of 'hating the boss', or less likely because it is assumed that their higher social position 'entitles' them to act that way. Or perhaps people are more likely to feel anger toward family members because of the closer relationship and less likely to feel anger toward work colleagues because it is not socially acceptable. "How much anger would I feel if a family member yells at me?" as opposed to "How much anger would I feel if a co-worker yells at me?" These are all topics of interest that can be investigated with domain-specific interpersonal anger instruments using the situation-reaction format.

Scale Construction: The Delphi Method

Scale construction has numerous approaches, each with its own shortcomings. In terms of the qualitative and theoretical concerns with instrument development, any questionnaire may be biased toward the creator's own personal judgement and may misrepresent the actual construct (Reid, 1988). When approaching quantitative problems, a newly developed scale may be skewed by the naturally occurring characteristics of the samples used (Reid, 1988). In fact, it is surprising how many new scales have been developed using samples of convenience like student populations. The Delphi method is widely regarded as a valid technique for instrument development primarily because it aims to achieve consensus on a topic between a group of experts who may differ in their approach to it (Duffield, 1988). The process begins with broad ideas that are gradually narrowed into specific concepts through a series of iterations, and the panel carry through only those ideas that have achieved group consensus. Although the experts work together to evolve concepts and ideas, members of the panel never meet and the role of the researcher is to collate all ideas and present them back to the panel for review. Thus there is more chance for the group

to consider all initial suggestions including those only held by a minority who may have had their ideas overridden by more dominant members in a large face-to-face group discussion (Reid, 1988). We adopted this technique to develop the instrument in this study.

3.2 Publication One: Method

A pictorial representation of the methodology including the nature of the samples and the relevant analyses are presented in Figure 1.

Delphi Participants

A Delphi panel was constructed by reviewing the body of research into anger, and identifying leading researchers. These experts were approached via email and briefed on both the study and why they were selected. A total of 15 experts from countries as varied as Israel, Italy, Germany, Iceland, Australia, the UK and USA were elected to participate. These experts had previous publications in the field of anger, all held a PhD and were currently working and researching in a variety of fields including social psychology, phenomenological psychology, clinical criminology, philosophy, biological and clinical psychology. The practical decision was made to conduct the Delphi correspondence via email. Following the construction of the preliminary prototype instrument, a convenience sample of 21 postgraduate psychology students was used to assess the readability of the tool within the Delphi process.

Delphi Procedure

The Delphi instrument development procedure involved a series of steps (1 through 6), outlined systematically here. The results section deals with the subsequent psychometric assessment of the tool.

Step 1: Qualitative analysis. Experts were presented with the first qualitative questionnaire which related to the definition of the notion of 'Interpersonal Anger'. Experts were asked to explain their view on the essential characteristics and components of the proposed construct. They were also asked to list some situations they thought might elicit anger in social situations. Content analysis was conducted by the first author on the

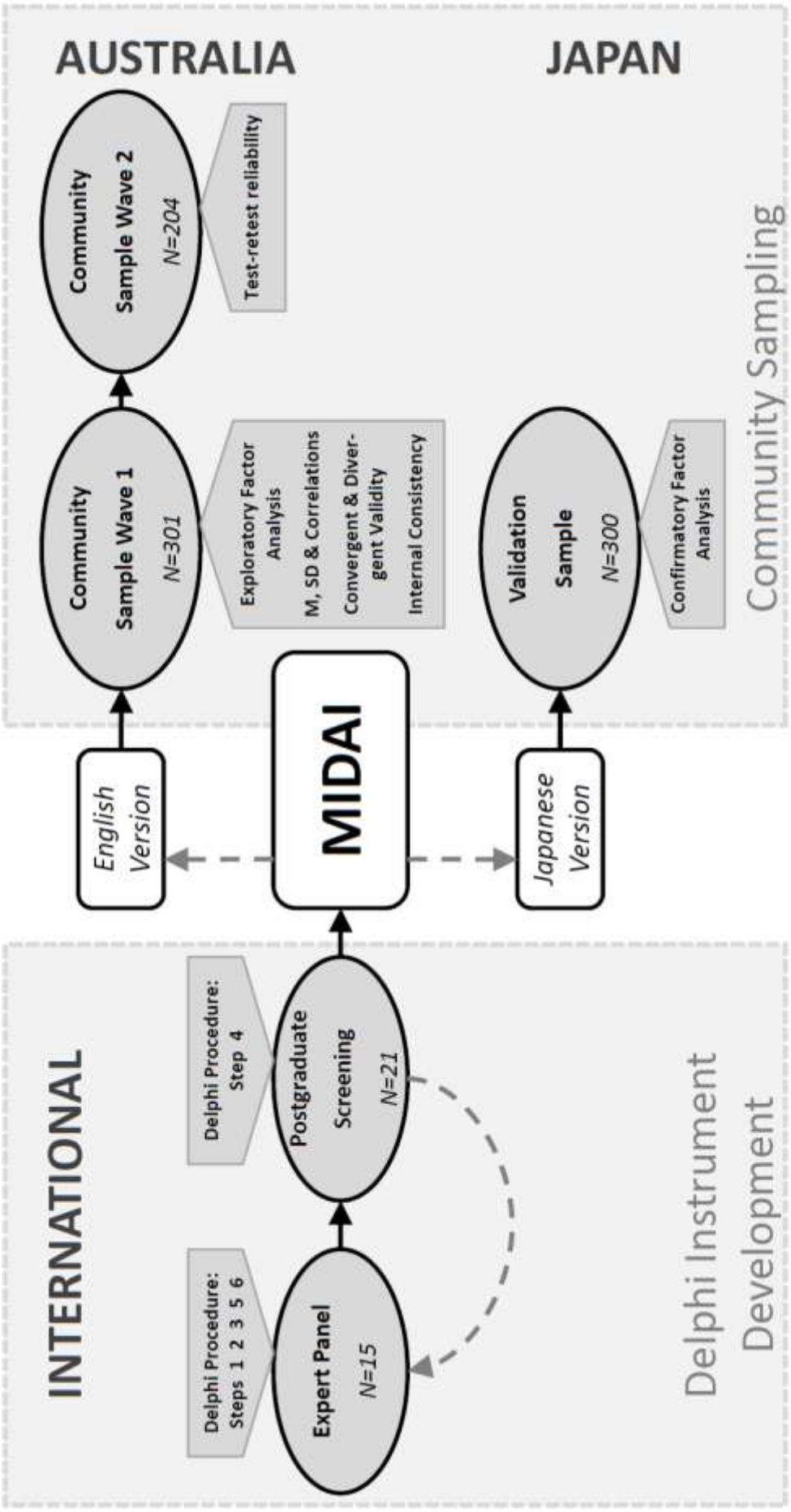

Figure 1. Method and samples used in developing and validating the MIDAI

qualitative responses, revealing a total of 56 unique items to be extracted, each identified by at least one expert as a thematic aspect of Interpersonal Anger. The most popular concepts mentioned by most (five) experts independently, that immediately achieved consensus in the group were the notions that Interpersonal Anger is: (1) situation specific and thus may be affected by the environmental context; and (2) is directed toward another person based on their actions or behaviour. The other items mentioned independently by four experts further posited that Interpersonal Anger: (3) can be seen as a trait; (4) involves individual predisposition; and (5) is a reaction to social events.

Step 2: Seeking consensus on themes. In order to form a core definition of Interpersonal Anger, the thematic concepts obtained in Stage 1 were presented back to the expert panel. This questionnaire asked experts to respond with the degree to which they agreed or disagreed with the item being a significant aspect of Interpersonal Anger. Themes included how the anger may arise, what it may be influenced by, and whether it could be an enduring trait.

We defined consensus as 80% of the total respondents agreeing (or strongly agreeing) with the inclusion of the item, which is a conservative cut off value successfully employed in previous Delphi studies (Green, Jones, Hughes, & Williams, 1999). Of the initial 56 items, 9 held consensus between experts as a defining characteristic of Interpersonal Anger. Themes that received the strongest level of consensus proposed that Interpersonal Anger is; (1) situation specific and thus may be affected by the environmental context (100%); and (2) is influenced by the relative role of the other person (93%). This provided support for the development of an instrument to account for the situation and the characteristics of the target.

Analysis of core themes: in step 1 experts listed situations they considered had the potential to elicit anger. These were compiled (and redundancies removed) and presented back to all experts for review. They were asked to respond to whether they agreed or disagreed with the idea that each interpersonal situation could promote an anger response, and consensus was determined using the same method above.

Step 3: Establishing the structure. The core definition generated from the items which received consensus in Step 2 was presented to the expert panel for feedback and evaluation. It was further refined based on expert feedback and is presented on the next page.

"Interpersonal Anger is defined as a predisposition to feel anger toward other individuals in our social environment."

Analysis of core themes: based on the list of anger-eliciting situations that received consensus in the previous step, core themes were extracted and then presented for feedback. Experts were asked to rate each of the themes with the degree to which they agreed or disagreed with it being a prominent aspect of interpersonal anger-eliciting situations. The six major themes were: (1) *moral transgression* - 'behaviour of the target is perceived as a betrayal or injustice'; (2) *victimisation* - 'the individual is the target of hostility'; (3) *personal risk* - 'the individual perceives a risk to wellbeing or self-esteem'; (4) *practical barriers* - 'the target impedes the individual's plans or goals'; (5) *lack of insight* - 'target fails to account for the impact of their behaviour on others'; and (6) *semantic confusion* - 'the target's action leads to misunderstandings and confusion'. These were presented to the expert panel for feedback. The first five themes (all but 'semantic confusion') scored 80% or higher in agreement and thus were included as the proposed themes of Interpersonal Anger.

Step 4: Developing the prototype. The five proposed Interpersonal Anger themes from the previous step were used to develop sample items for possible inclusion in the proposed measure: the McLinton Interpersonal Domain-specific Anger Instrument (MIDAI). The goal of this stage was to highlight items that required revision of wording to avoid ambiguities and were written in a manner that the layperson would find readily comprehensible, a very important step in developing a successful instrument (de Vaus, 1991). Many items were intentionally designed to cover the same aspect but with slight semantic differences, allowing us to identify the most readily understood items and delete the more troublesome versions.

The prototype questionnaire included a total of 186 potential items for the MIDAI concerning the actions of another individual in a variety of social situations, and included many similar items with slight semantic differences and phrasing. For example 'How angry would I feel when (the target individual)…' 'doesn't give me the respect I deserve' versus 'doesn't show me respect'. In order to identify the phrasing most readily understood, all 186 items were administered to 21 postgraduate psychology students. This population was chosen specifically for their previous experience with psychological research and instrument administration, but since they were new to the study they held fewer preconceived biases toward the construct than the experts who had helped develop it. The students were

approached in class, briefed on the study and asked to complete a voluntary questionnaire which requested that they identify items on the list that were difficult to understand, overly complex, difficult to parse, or provided too little information to make an informed response.

Administering this prototype to postgraduate psychology students helped greatly with identifying items that contained ambiguities or were difficult to understand. For example one popular item '(target person) insults me' had widely varying evaluations as participants identified uncertainty as to whether the act was malicious or unintentional. Thus the item was modified slightly to reduce ambiguity, becoming '(target individual) insults me on purpose', to give more of an impression that the act was intentional, and by extension not done in a playful manner. The feedback assisted in eliminating 95 versions of items that were problematic and identified 22 items to be retained for slight revisions, leaving a total of 91 unique items for the next step.

Step 5: Obtaining consensus on items. We presented the remaining 91 unique items back to the original panel of experts, asking whether they agreed or disagreed with the item as an appropriate measure of Interpersonal Anger. We took the same consensus of 80% or higher as an indication that the item should be retained. Those with lower consensus were removed, and each item was open to comments which could be used to revise it. This resulted in 41 refined items concerning anger-eliciting interpersonal behaviour.

Step 6: Refining the final questionnaire. The final version of the MIDAI was constructed using the 41 items which were then spread (and some duplicated) across 5 different scales, each with its own situational context involving both the environment and the relative relationship or characteristics of the antagonist, referred to as a 'MIDAI scale'. The final measure was developed with a situation-reaction format, which is employed to permit easier retrieval of situation-related information. Instead of offering one large scale with redundant and repetitive references to the individual perpetrator (e.g., 'How much anger would I feel if a family member causes significant delays when I have a schedule to keep?'), each MIDAI scale is simply preceded with the situational context, and then items are listed thereafter. For example the MIDAI family scale reads 'How much anger would I feel if a family member…' Item 1: '…makes a nasty joke about me', Item 2: '…etc'. The success of this instrument format has been well supported (Pekrun, Goetz, Perry, Kramer, Hochstadt, & Molfenter, 2004). The final questionnaire was presented to all expert panellists for the last

revision in preparation for a community sample pilot. Items, phrasing and structure were modified slightly in light of the feedback.

Psychometric Testing

Once the MIDAI was completed via the Delphi technique, it was subjected to psychometric analysis.

Samples and procedure. The project had full ethics approval from the University of South Australia Human Research Ethics Committee. The final MIDAI was administered to a random stratified community sample of metropolitan Adelaide, South Australia. Suburbs and then streets within were randomly selected using a number generator and metropolitan street map, and personal introduction to each potential candidate was made using the doorknock method. Care was taken to derive a stratified community sample by distributing to low, middle and high socio-economic status suburbs evenly according to the latest census data from the Australian Bureau of Statistics (McGrath, 2008). The first wave of data was from 301 adult Australians (128 males, 173 females) currently engaged in full-time employment (67% response rate). A roughly even spread of participants from low (n = 112), middle (n = 91), and high (n = 98) socio-economic areas was obtained forming a random stratified community sample. The mean age was 42 years (SD = 17; range min. 18, max. 82). Participants who returned the questionnaire with postal contact details were sent a follow up questionnaire for the second wave four months later. Their details were separated from their answers to preserve anonymity.

A second wave of data collection saw 204 Australians (87 males, 117 females) of the original participants return the questionnaire (68% response rate), thus providing longitudinal data. Age and gender distribution was similar to wave 1; mean age 41 years (SD = 17; range min. 18, max. 82) and socio-economic status (low n = 76, middle n = 58, high n = 70).

A Japanese validation sample was acquired by replicating an identical participant collection method in metropolitan Nagoya, Aichi-prefecture, Japan. Care was taken to derive a random stratified community sample by distributing evenly to low, middle and high socio-economic status suburbs as identified by the latest census data (*Japan Statistical Yearbook*, 2008). The sample consisted of 300 adults (121 males, 179 females) currently engaged in full-time employment, representing a good response rate of 78%. A similar number of participants

from low (n = 109), middle (n = 96), and high (n = 95) socio-economic areas was obtained with a mean age of 43 years (SD = 16; range min. 18, max. 89).

Measures. The MIDAI had a Flesch-Kincaid Grade level of 10.5, indicating that an average 10th grade student or 15-16 year old would be able to read it. Items were allocated to 5 different MIDAI scales, each concerning a different target of anger; Interpersonal Anger toward family members (MIDAI family scale: 20 items), Interpersonal Anger toward superiors at work (MIDAI superiors scale: 24 items), Interpersonal Anger toward co-workers (MIDAI co-worker scale: 18 items), Interpersonal Anger toward subordinates at work (MIDAI subordinate scale: 17 items), and Interpersonal Anger toward strangers, i.e., anger toward recently met individuals with no family, work or hierarchical relation (MIDAI stranger scale: 14 items). Each scale had a number of common items which were replicated in all five MIDAI scales to facilitate comparison, and unique items concerning behaviours that are specific to that individual, eg. '(the target)… undermines my authority in front of others' is specific to the MIDAI subordinate scale. In each of the MIDAI scales participants are asked to rate how much anger the hypothetical situation would elicit from them on a 5-point scale ranging from *0* (none at all) to *4* (very much).

In addition to the five MIDAI scales, the questionnaire included: (1) the STAXI (Spielberger, 1996) to test convergent validity of our new measure with an anger instrument renowned for its construct validity and strong theoretical development; (2) an unrelated extraversion subscale from the EPQ-BV (Eysenck Personality Questionnaire Brief Version; Sato, 2005) to test divergent validity; and (3) the Reynolds (1982) 13-item version of the Marlowe-Crowne Social Desirability Scale to identify whether responses on the MIDAI are likely to be affected by social desirability.

Analysis strategy. Data from the community sample in the first wave was screened for normality and outliers. Our sample size of greater than 300 exceeds the long held minimum requirements for good factor analysis, often cited at *N*=100 (Gorsuch, 1983; Kline, 1979) or 200 (Comrey & Lee, 1992; Guilford, 1954), and furthermore fulfils the generally held expectations of N:p ratio being between 5 and 10 (Everitt, 1975; Gorsuch, 1983). Nevertheless, minimum requirements of N without taking into account the particular characteristics of the sample have been deemed largely useless (MacCallum, Widaman, Zhang, & Hong, 1999). Instead it is suggested that when communalities are all consistently high (.6 or greater), valid factor analysis can be conducted even in a sample of less than 100.

Communalities for our data were around .5 or higher, indicating the analysis could be run on a sample between 100 and 200.

Separate exploratory factor analyses (EFA) were conducted in the Australian Wave 1 sample to identify the factor structure of each of the MIDAI family, superior, co-worker, subordinate and stranger scales in turn. The Parallel Analysis method for each EFA was used as it has been suggested the most effective method for extracting factors and making retention decisions (Humphreys & Montanelli, 1975; Zwick & Velcier, 1986). The scales were cleaned up by removing items with poor factor loadings according to two criteria: (1) that the primary loading is .5 or higher; and (2) that the secondary loading is lower than .3. These criteria were selected based on evidence suggesting that a cut off of .60 and .40 is too conservative and may lead to a rejection of an adequate model (McCroskey & Young, 1979), whilst a cut off of .40 or higher and at least a .15 difference between the secondary loading is far too liberal (Gorsuch, 1983; Nunnally, 1978). A reasonable number of common items (items that were replicated in each of the five MIDAI scales) were retained in order to facilitate comparison between domains. The total number of items removed from each MIDAI scale were; Interpersonal Anger toward family members (8 items removed), superiors at work (12 removed), co-workers (6 removed), subordinates at work (5 removed), and strangers (2 removed). A confirmatory factor analysis (CFA) was then conducted including all remaining items from the five MIDAI scales to ensure that each scale was indeed measuring a different underlying construct to further support the notion that the MIDAI measures anger toward different targets and not simply a single 'Interpersonal Anger' construct.

Once revised, each of the five MIDAI scales were tested for convergent and divergent validity using bivariate correlations. We tested the difference in mean levels of anger from each MIDAI scale to investigate the nature of Interpersonal Anger in our Australian community sample. Test-retest reliability of the final instrument was then analysed using correlations of the first and second wave Australian scale scores.

It was deemed important to confirm the factor structure in another sample. We used data collected in Japan as a validation sample with a CFA to confirm the factor structure proposed by the EFA in each of the MIDAI scales from the Australian sample. Multiple different goodness-of-fit indices were observed to test model fit, as recommended by Bollen and Long (1993). Our study employed the following fit indices: Chi-square (χ^2), Comparative Fit Index (CFI), goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), and Root

Mean Square Error of Approximation (RMSEA). The acceptable cut-off points for good model fit are: CFI or GFI of .90 or higher; AGFI of .80 or higher; RMSEA of .08 or lower; and a significant reduction in χ^2 in comparison to a single factor model (Bollen & Long, 1993).

3.3 Publication One: Results

Factor Analysis of the MIDAI

Exploratory Factor analysis was first conducted separately for each of the five MIDAI scales in the Australian community sample (wave 1). Each scale was reduced to 12 items before compromising the factor structure and reliabilities below desirable levels. Then, the 12-item MIDAI family, superiors, co-worker, subordinates, and stranger scales were further submitted to confirmatory factor analysis including all those 60 items to determine whether each of the five targets of anger were conceptually distinct, or whether all five scales were tapping in to the same construct. A model using the five MIDAI scales demonstrated significantly better fit χ^2 (1710) = 4891.73, $p < .001$, than a hypothetical single factor model $\Delta\chi^2(1) = 1660.53$, $p < .001$. With five MIDAI scales in the model, each set of 12 items displayed loadings on their relevant scale ranging from .63 to .92, whilst the single factor model with all 60 items exhibited loadings from .79 down to as low as .46. This provides support for the notion that interpersonal anger toward different individuals in a social environment are distinct constructs, and each target individual can represent a different aspect of the anger experience.

A trend in the five separate EFA for the 12-item MIDAI scales appeared in Wave 1 (Australia), with each scale consistently extracting two concrete factors of 6 items each. Upon observation of the similarities between items it was apparent that the factors differed in terms of the explicit versus the surreptitious nature of the antagonist's anger-eliciting behaviour. These two factors are; *Overt Hostility*, concerning explicit aggressive acts where the target individual (according to the relevant MIDAI scale) victimises the subject, for example 'How much anger would I feel if a superior at work insults me on purpose?' (MIDAI superiors scale: item 9); and *Covert Provocation*, where the target individual would engage in more surreptitious anger-eliciting acts, for example 'How much anger would I feel if a superior at work refuses to acknowledge my point of view' (MIDAI superiors scale: item 10). An

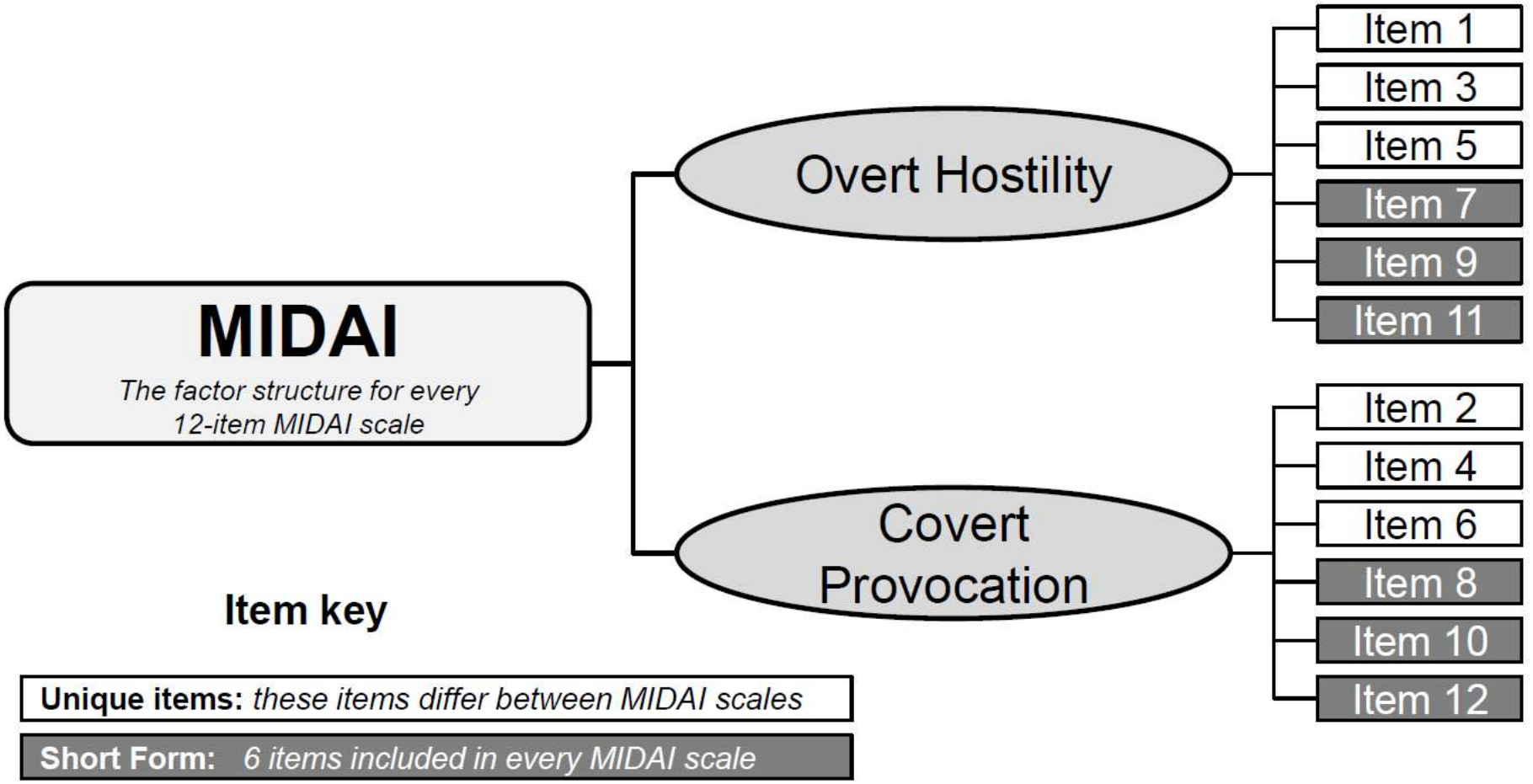

Figure 2. Factor structure for every 12-item MIDAI scale and 6-item 'Short Form'

illustration of the factor structure of each 12-item instrument is displayed in Figure 2, along with the delineation of which items differ between the MIDAI scales, and which are identical. We decided on six items to be consistent between all five 12-item MIDAI scales by selecting the three most parsimonious, generalisable (situation non-specific), and highest loading from the Overt Hostility and Covert Provocation factors in each of the five EFA results, thus generating a MIDAI Short Form which facilitates direct comparison of the six identical items in each 12-item MIDAI scale.

We used the Japanese community sample to conduct a CFA to validate the factor structure for each of the five MIDAI scales in a culturally different sample. In all five 12-item MIDAI scales, every item loaded significantly onto their respective factor; *Overt Hostility* (6-items) and *Covert Provocation* (6-items). For example, in the MIDAI superiors scale (12-items) proposed two-factor model, loadings ranged from .75 to .84 on the Overt Hostility factor, and between .70 and .82 on the Covert Provocation factor. Examination of the fit indices showed good model fit with CFI = .94, GFI = .91, AGFI = .87, and approached good fit with RMSEA = .09. The two factor model was also a significantly better fit than the single factor model, χ^2 (54) = 398.51, $p < .001$, with $\Delta\chi^2(1) = 228.84$, $p < .001$, and notably poorer fit indices for the single factor model; CFI = .82, GFI = .76, AGFI = .66, and RMSEA = .15. Overall this indicates good support for the proposed two-factor model for the anger toward superiors at work.

The fit of the factor structures for the remaining four MIDAI scales (family, co-workers, subordinates and strangers) are presented in Table 1 for ease of reference. All five indicators displayed marked improvement in the proposed two-factor solution when compared with a single factor model. Out of five different goodness of fit indicators, RMSEA was the only value to fail to meet the cut off for good fit in four of the MIDAI scales, but overall each RMSEA value approached a good fit, and the other fit indicators (CFI, GFI, AGFI and χ^2) all showed strong support for a two factor structure. We investigated the further removal of items to provide a better fit, but no significant improvements were observed. It should also be noted that model fit is expected to improve with a larger sample size, but this validation sample is a preliminary indication that the factor structure holds in a culturally different population.

Table 1

Goodness-of-Fit Indices of Confirmatory Factor Analyses in the Japanese Validation Sample

	χ^2	df	$\Delta\chi^2(1)$	CFI	GFI	AGFI	RMSEA
MIDAI family scale							
Single factor model	434.95	54		.79	.77	.66	0.15
Two-factor model	232.63	53	202.32**	.90	.88	.83	0.10
MIDAI superiors scale							
Single factor model	398.51	54		.82	.76	.66	0.15
Two-factor model	169.67	53	228.84**	.94	.91	.87	0.09
MIDAI co-worker scale							
Single factor model	451.99	54		.83	.76	.65	0.16
Two-factor model	223.02	53	228.97**	.93	.89	.84	0.10
MIDAI subordinates scale							
Single factor model	416.98	54		.83	.73	.62	0.15
Two-factor model	160.06	53	256.92**	.95	.91	.87	0.08
MIDAI stranger scale							
Single factor model	554.91	54		.79	.70	.57	0.18
Two-factor model	219.77	53	335.14**	.93	.89	.84	0.10

** indicates significant (p <.001) change in χ^2 between the single factor and two factor model

Descriptive Statistics

Scores for the five MIDAI scales are presented in Table 2 (overleaf) separated according to demographic data. A correlation matrix (Table 3, page 121) displays bivariate correlations for each scale in the questionnaire.

As expected, all MIDAI scales demonstrate a significant correlation with the measures of convergent validity (STAXI scales) and non-significant correlation with those selected to demonstrate divergent validity (extraversion). Cohen (1988) details the strength of correlations to be strong at .50, moderate at .30 and weak at .10. Not only did all five MIDAI scales show significant correlations with STAXI anger expression style subscales, but all exhibited moderate positive correlations with Anger Expression (Out) consistently higher than the other three anger expression subscales, indicating that Interpersonal Anger may be related to overt anger expression.

Table 2

Means, Standard Deviations, and Alpha Coefficients for reported anger levels on the MIDAI scales for Working Adults in Adelaide, South Australia

	Total Sample		Socioeconomic Status			Ages 18-29		Ages 30-49		Ages 50+	
	M (128)	F (173)	Low (112)	Mid (91)	High (98)	M (37)	F (53)	M (48)	F (62)	M (43)	F (58)
Anger toward Family											
Mean	25.04	28.39	27.68	26.54	26.53	24.49	30.19	27.90	27.98	22.20	27.12
SD	10.60	9.32	9.18	10.19	10.78	10.36	9.42	9.92	8.42	10.98	10.06
Alpha	.93	.90	.90	.93	.94	.92	.90	.92	.89	.95	.92
Anger toward Superiors											
Mean	28.53	29.88	29.43	28.72	29.80	28.48	31.62	31.93	28.57	24.29	29.62
SD	11.34	10.32	10.39	10.15	11.72	9.97	11.00	11.14	8.95	11.58	10.96
Alpha	.94	.94	.92	.94	.96	.92	.95	.94	.92	.95	.94
Anger toward Co-workers											
Mean	29.94	31.54	31.36	30.52	30.66	29.85	33.08	33.52	31.42	25.18	30.13
SD	11.32	10.90	10.32	11.27	11.87	10.67	11.17	9.92	9.63	12.20	11.91
Alpha	.95	.95	.93	.96	.96	.94	.95	.94	.95	.96	.96
Anger toward Subordinates											
Mean	29.81	30.40	30.96	29.19	30.13	28.45	33.21	33.02	29.38	27.06	28.75
SD	10.16	10.39	8.83	10.53	11.62	9.12	9.43	10.30	10.24	10.06	11.09
Alpha	.93	.95	.91	.95	.96	.90	.94	.94	.95	.94	.96
Anger toward Strangers											
Mean	26.07	26.36	27.15	26.00	25.42	25.63	28.42	28.45	25.53	23.62	25.37
SD	10.90	10.17	9.86	9.91	11.59	9.50	10.43	11.28	9.27	11.27	10.75
Alpha	.94	.93	.92	.93	.95	.90	.93	.95	.92	.95	.95

Table 3

Correlation Matrix for all Five MIDAI Scales, the STAXI Subscales, Social Desirability, and a Scale for Divergent Validity (Extraversion)

	MIDAI scales											
	Superiors	Co-worker	Subordinate	Stranger	State Anger	Trait Anger	Control Out	Expression Out	Control In	Expression In	Extra-version	Social Desirability
MIDAI family scale	.72**	.71**	.70**	.65**	.24**	.50**	-.29**	.29**	-.26**	.26**	.04	-.24**
MIDAI superiors scale	--	.84**	.78**	.64**	.27**	.46**	-.17**	.29**	-.20**	.26**	.00	-.32**
MIDAI co-worker scale		--	.86**	.74**	.24**	.48**	-.20**	.30**	-.20**	.28**	.06	-.28**
MIDAI subordinates scale			--	.77**	.24**	.50**	-.22**	.35**	-.20**	.25**	.01	-.27**
MIDAI stranger scale				--	.28**	.48**	-.19**	.27**	-.21**	.33**	-.01	-.26**

Scale reliability is commonly held to be acceptable when the coefficient alpha exceeds .70 (Nunnally, 1978; de Vaus, 1991). More recent research posits a more conservative estimate of acceptable coefficient alpha to be .80 or higher (Henson, 2001; Loo, 2001). All five of the 12-item MIDAI scales for the different targets (family, superiors at work, etc.) displayed a Cronbach's alpha of between .92 and .96, and a test-retest reliability score of between .85 and .89, indicating strong psychometric properties. Means and standard deviations for items along with reliability alpha, and the test-retest reliability, and digital versions of the entire MIDAI (both English and Japanese) can be provided by the authors. This paper however goes into detail *only* on the common items (items 7 through 12 which are identical on each MIDAI scale) which constitute what we refer to as the MIDAI Short Form.

Comparison of Scales – the MIDAI Short Form of common items

Paired *t*-tests (with Bonferroni adjustment) were performed to determine the significance of the differences between the anger elicited toward the five different target individuals in the MIDAI scales presented in Table 4. These comparisons used only the common six items (the MIDAI Short Forms) which are included in all five scales to provide valid contrasts. Means and standard deviations for each of the common items are also presented in Table 4, along with reliability scores for the 6-item Short Forms.

Table 4 demonstrates that despite identical items, subjects reported different propensity to anger toward perpetrators when the only manipulated variable was their relation to the subject; a family member, a superior at work, a co-worker, a subordinate, and a stranger. The actions of strangers elicited the least amount of anger, whilst all three individuals in the workplace domain (superiors, co-workers and subordinates) elicited the most amount of anger. Interestingly, whilst anger levels toward those in the workplace were significantly more than the actions of family members or strangers, anger toward the three different work individuals did not significantly differ.

Table 4

Comparison of Means and SD for Individual Anger Items and Reliability for 6-item Short Form versions of the MIDAI scales

MIDAI Short Form (6-items consistent in each scale)	Self-reported anger on the MIDAI items									
	Family		Superiors		Co-worker		Subordinates		Stranger	
"How much anger would I feel if a (family member, superior, etc.)…"	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Item 7: Behaves in an unnecessarily aggressive manner toward me	2.45	1.21	2.78	1.21	2.72	1.13	2.75	1.12	2.36	1.15
Item 8: Causes significant delays when I have a schedule to keep	2.07	1.13	2.07	1.12	2.29	1.07	2.35	1.08	2.10	1.01
Item 9: Insults me on purpose	2.42	1.34	2.76	1.23	2.65	1.21	2.75	1.13	2.49	1.18
Item 10: Refuses to acknowledge my point of view	2.39	1.06	2.33	1.10	2.29	1.06	2.28	1.04	1.70	1.16
Item 11: Yells at me	2.32	1.19	2.84	1.26	2.62	1.23	2.74	1.23	2.44	1.23
Item 12: Doesn't give me the respect I deserve	2.20	1.08	2.41	1.14	2.41	1.11	2.37	1.13	1.75	1.09
Cronbach's alpha (6 items)	.84		.91		.91		.90		.89	
Test-retest reliability	.83		.84		.89		.85		.88	
Core Item Total Score	13.85	5.23	15.18	5.86	14.99	5.70	15.22	5.53	12.84	5.41
Paired t-test: Family (6-item)			-3.27**		-3.25**		-3.98**		4.18**	
Paired t-test: Superiors (6-item)					.96,n.s.		-.08,n.s.		7.29**	
Paired t-test: Co-workers (6-item)							-.81,n.s.		7.70**	
Paired t-test: Subordinates (6-item)									9.49**	

3.4 Publication One: Discussion

We cannot view anger as devoid of environmental and individual factors, yet current anger scales cannot easily account for such aspects of the anger experience. It is reasonable to suggest that the level and propensity for an individual to feel anger when provoked by the actions of another can be influenced by their relationship and the socio-cultural environment. The aim of our study was to develop an instrument for measuring anger that accounts for these factors and enables the study of how these factors may influence anger experience in interpersonal situations. The newly developed MIDAI is intended for use in researching the nature of anger directed as others in one's social environment. Using the renowned Delphi method for instrument development we created the MIDAI, and refined it using a variety of psychometric techniques. Random community data from the studies in Australia and Japan showed support for a valid and reliable scale for future research.

A range of methods were employed to ensure our final measure was both comprehensive and parsimonious. First, the Delphi method allowed us to not only gather information and opinions from researchers in a wide variety of backgrounds, but also to achieve a consensus between those experts. Although researchers differed in terms of approach to the construct, unearthing common themes between qualified informed opinions is what makes the MIDAI a comprehensive measure of Interpersonal Anger that brings together cross-cultural perspectives. Interestingly in the Delphi method a couple of similar themes emerged common to the NAS-PI Provocation elements; namely the notion of injustice or unfairness and frustration. This overlap may provide validation for some highly relevant trends in the anger experience. The MIDAI however goes further by identifying overt and covert anger eliciting behaviours that include a malleable perpetrator or domain-specific element.

As expected, a number of common items were suggested by most if not all experts, but more importantly the Delphi technique allowed the ideas of a minority to be presented to the group for feedback regarding possible inclusion. We found a number of experts lent great support to certain items mentioned by the minority when they were returned for feedback, in particular the notion of anger eliciting 'practical barriers' that cause delays and thus frustrate the individual. The Delphi is not without its shortcomings, particularly as we conducted this development via email to facilitate international collaboration. Email participation may

receive less cognitive attention than in person and correspondence is very time consuming to keep all participants on track to work toward the goal of the project. Nevertheless, the use of the Delphi method lends credit to the construct and face validity of the MIDAI.

Second, the use of the postgraduate psychology student sample assisted with the refinement of the measure. Having not been involved in the creation of the instrument from the ground up but still holding a working knowledge of psychological instruments from their own research, the postgraduate student opinions were important in identifying whether the questionnaire would read easily and had good face validity.

Evaluating Psychometric Qualities: Highlighting the Strengths of the MIDAI

The five MIDAI scales demonstrate good convergent validity, using the well-established STAXI as the criterion variable. Not only does each scale demonstrate similar strong and moderate-to-strong correlations with trait anger, but they also display markedly lower correlations with state anger. This indicates that anger in the MIDAI is more closely related to general and enduring anger and less so to the subject's present feelings. This lends support to the notion that Interpersonal Anger is an enduring personality trait – a predisposition to anger toward others. Furthermore, moderate and weak-to-moderate correlations were found with the anger expression subscales of the STAXI; significant positive correlations with the two anger expression subscales, and significant negative correlations with the two anger control subscales. This again underlines the convergent validity of the MIDAI with an existing measure testing the same construct, but it also indicates that individuals who have a predisposition to feel more anger toward others are not only more likely to express anger, but are also ill equipped at managing it.

In order to test the divergent validity of the MIDAI, a measure of extraversion was included in the Australian community sample. As expected, our newly developed anger scale was not significantly correlated with an existing test measuring an unrelated construct. Conversely, all five MIDAI scales displayed a weak but significant correlation with social desirability, indicating that the prevalence of anger may be underreported in this study. This data suggests that individuals reporting lower anger levels may instead be conforming to social pressures to exhibit favourable behaviour instead of portraying themselves as a less desirable 'angry person'.

Results also provide strong support for the MIDAI as a reliable measure. Each of the five 12-item MIDAI scales displayed good internal consistency with a Cronbach's alpha of .92 or higher, and showed high test-retest reliabilities (.85 or higher). Even the five MIDAI Short Forms (6 common items) showed good reliability scores. It is important to note that although the Short Form may provide a useful abridged measure of Interpersonal Anger, some items need to differ between each MIDAI scale for practical reasons. For researchers wishing to investigate significant differences within groups in their attribution of higher levels of anger depending on the characteristics of the perpetrator, a certain level of transparency will be obvious if exactly the same items are used. Administering the common six items identical in two or more MIDAI scales to the same person may give away the true nature of the bias being tested. Thus, having up to six other different items forming the reliable 12 item measure serves to reduce the transparency of research aims to the subject. Nevertheless, common items are important to permit valid comparison between different MIDAI scales, for example when comparing the family scale to the superiors scale. Only the six items common to every MIDAI scale (Short Forms) should be used to ensure that certain scales do not elicit significantly higher anger simply because they contain items representing more aggravating situations in general. Furthermore, keeping particular items consistent in every scale removes the possibility of phraseology or other nuances affecting the comparisons.

We also found support for a two factor structure in each of the five MIDAI scales. Exploratory factor analysis in the first wave of the Australian community sample revealed a two factor solution; overt hostility, i.e., whether the respondent was the target or witnessed an act of overt hostility; or covert provocation i.e., whether they were victimised in a more subtle and insidious manner. Support for this two factor structure was further demonstrated to be consistent across two different cultures, with a confirmatory factor analysis on the community sample from Japan. Not only did the two factor solution prove to be significantly better than a single factor solution, but between the five MIDAI scales there were an average of four-out-of-five individual measures of goodness of fit that met at least the minimum required values for acceptable fit. This indicates that overall the model is a decent explanation of our proposed two-factor interpersonal anger experience (overt versus covert). Our research from expert consensus to statistical analysis of a community sample suggests that overt hostility and covert provocation together represent strong theoretical themes in the experience of anger.

Social Trends in the Experience of Interpersonal Anger

The results of the Australian community sample have indicated that the anger experience is influenced by the nature of the people in our social environment. Coupled with the fact that interpersonal anger is emerging as a trait rather than transient state, it suggests that individuals may have different predispositions to anger toward each specific individual. Consider a person who feels angry toward others at work but may return home to a stress-free home environment, or perhaps a person who is less likely to anger at the actions of strangers in the street and yet has more potential to anger toward their spouse at home. The comparison of the six common item Short Forms showed that Australians reported different levels of anger toward the behaviour of others according to the perpetrator despite being identical anger eliciting situations. They were least likely to feel anger toward the actions of a stranger than family members or anyone in the work environment, suggesting a societal trend for courtesy toward recent acquaintances. On the other hand, the behaviour of individuals in the workplace domain showed higher levels of propensity to anger, with the actions of superiors, co-workers and subordinates at work eliciting more anger than family or strangers. Interestingly, all three MIDAI scales within the workplace domain (superiors, co-worker and subordinate) elicited more anger than family or strangers but none significantly higher than the other. It appears that regardless of hierarchical position in the Australian workplace, disrespectful, aggressive or inconsiderate behaviour from anyone in that domain elicits similar levels of anger. The workplace has long been recognised as a highly stressful environment (Terkel, 1972), which could explain why the propensity to feel anger toward anyone on the job is higher than in the family environment or when meeting strangers outside of work. Nevertheless, whilst we have gone to great lengths to ensure that we remove as many extraneous variables as possible to facilitate comparison between domains on anger, it is possible that social norms in each domain do influence anger. Perhaps a number of situations elicit more anger when a superior, co-worker or subordinate engages in the act because it is a less acceptable social norm in the workplace.

Looking solely at the six common item Short Forms in the Australian sample it is evident that people's reaction to the behaviour of others will differ according to the target's relationship or the environment. This underlines the importance of context and characteristics of the target in the anger experience which have up until now remained untested. With the high test-retest reliability previously mentioned, this indicates Interpersonal Anger may be a

stable and enduring trait; a predisposition to anger toward specific types of people or their roles in one's social environment. Furthermore, it is theorised that comparison could be more robust under the pressure of social desirability bias. Although social desirability has a significant correlation with the MIDAI self-reported anger, if we assume its effect is relatively consistent across all reporting of anger then it permits valid comparisons for the same individual on their levels of anger from one MIDAI scale to another. Further research will be conducted into wether social desirability does indeed exert the same force over responses to all MIDAI scales.

Implications and Future Research

There are both theoretical and practical implications for the present study. The development of a domain-specific anger instrument provides a tool for researchers in the field of anger and answers the call for new measures to investigate specific areas of the human condition rather than simply general measures of anger, expression and hostility (Eckhardt et al., 2004). Most notably, the capacity to test an individual's propensity to anger toward certain people allows us to look deeper at the nature of biases toward other individuals in the social environment. When manipulating the characteristics of the antagonist as opposed to the environment, we can test predisposition to anger toward specific types of people, or people sharing a group membership. For example, if a MIDAI scale was used to study anger toward specific ethnic groups, it could identify the underlying angry feelings that are not necessarily expressed overtly (racial aggression and violence are easily observable whilst anger biases are not). We have seen that anger mediates or is even a notable cause of spouse and child abuse (Mammen et al., 2002; Norlander & Eckhardt, 2005), and future research into the MIDAI will help us see whether our interpersonally-directed measure does indeed predict such acts. Certainly, now that a measure exists to specifically test propensity to anger toward such individuals, it is another step forward in further understanding these phenomena.

Research into Interpersonal Anger and the MIDAI is nascent, but even from this seminal study we can already see that people are more likely to feel anger toward others in their workplace than those at home or strangers. This highlights that the workplace is an area where people are more likely to be angered by the behaviour of others, and underlines the importance of workplace relations and social norms for etiquette on the job and prevailing levels of anger.

The primary direction for future research is the administration of the MIDAI scales in a much larger sample to provide population norms. We used a random community sample to emulate this and provide generalisable results, but a higher N is required to better investigate societal trends. This will also provide the basis for cross cultural comparison. As a note, whilst our Delphi method incorporated experts from such culturally diverse backgrounds as Israel, Italy, Germany, Iceland, Australia, the UK and USA, this leads to a fundamentally western interpretation of Interpersonal Anger. Through the Delphi expert panel we accounted for cross-cultural differences in the framing of the construct, but experts in anger research are almost exclusively from western countries. Despite the lack of Asian perspectives on the development of the MIDAI, with the Japanese validation sample it was evident that the factor structure of the MIDAI established in the Australian sample still held in such a culturally divergent sample. Future research intends to further investigate data in both a western and eastern context, which not only permits comparison between two vastly different cultural populations, but also assists in the refinement and development of a robust and culturally generalisable final MIDAI for future research.

The MIDAI Short Forms (6 common items) display good alpha reliability scores. Further research will be conducted into the validity of using the short forms over the 12-item MIDAI scales, however one barrier to the former is simply due to the necessity of confounding items to ensure that the goal of measurement is not immediately obvious. Since common items (7 through 12) are identical in every MIDAI scale, administration with multiple scales, changing only the characteristics of the situation or perpetrator will increase likelihood of the respondent answering with knowledge of the intent of the researcher. This may legitimise the use of randomisation, confounding dummy items, or the full 12-item scales since items 1 through 6 differ.

The MIDAI Short Form items are thematically general enough to concern an individual with any characteristics the research desires; physical characteristics like ethnicity, group membership such as religious or political affiliation, relative relationship to the subject such as social hierarchy or familiarity, and so on. The strength of our new measure is its flexibility, and any researcher can potentially investigate the nature of anger in the environmental context of their choice, or explore the characteristics of interest in the offending individual.

Conclusion

Using the Delphi method for scale development we have created and refined the McLinton Interpersonal Domain-specific Anger Instrument. In this inaugural study we have found Australians to differ in their attribution of anger according to the perpetrators of anger-eliciting behaviour, underlining the notion that characteristics of the target individual and their environment play a significant role in how we experience anger. Furthermore, finding invariance in the factor structure across eastern and western samples suggests an underlying cross-cultural trend in the human anger experience.

3.5 Publication One Supplements

3.5.1 Personal Reflection

RDQ 2 – Lifelong learning: *The first publication was a major undertaking in order to establish the instrument and I learnt a great deal through the extensive review process. The paper was originally submitted to Human Relations due to the relevance of the Interpersonal Anger topic but they do not deal with instrument development so it was resubmitted to the Journal of Psychopathology and Behavioral Assessment (instrument development is their focus). In order to be accepted, significant revisions were requested, including the addition of a cross-cultural validation sample for CFA. Nevertheless, all reviewers and the editor expressed their strong interest in the construct, and recognised the value of our research. This was very rewarding to hear and really encouraged me to keep moving forward with my new instrument.*

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4. Results – Publication Two

The following paper by McLinton and Dollard is in first review in the *Journal of Cross-Cultural Psychology* and covers primarily the cultural comparison aspect of the MIDAI.

Title

Interpersonal Anger – A cross-cultural investigation on targets of anger using the McLinton Interpersonal Domain-specific Anger Instrument (MIDAI) in Australia and Japan.

Abstract

The seminal study testing the McLinton Interpersonal Domain-specific Anger Instrument (MIDAI) in Australia was replicated in an Asian socio-cultural context. A random stratified community sample was collected from metropolitan Nagoya, Japan (*N*=300). It was found that Japanese workers report different levels of interpersonal anger according to the nature of the target (i.e. family members, superiors at work, co-workers, subordinates, and strangers). Japanese interpersonal anger levels toward superiors were significantly lower, whilst toward strangers was higher than for all other targets. The frequency of experiencing interpersonal anger-eliciting provocations from others also correlated with the level of reported anger toward that target. Further, significant differences were found in interpersonal anger levels when compared with an Australian sample (*N*=301), indicating that proclivity to anger toward others across cultures may be influenced by numerous socio-cultural variables.

4.1 Publication Two: Introduction

Japan is well known for its stressful working conditions, and recently anger management plans have been implemented to curb anger in the workplace (Jones, Tanigawa, & Weiss, 2003; Kawakami & Haratani, 1999). However, research has yet to be conducted into the actual nature of the anger experience in Japan. Recently developed theory proposes that people do feel different levels of anger toward other people in their social environment according to the others' role characteristics, for example as a work colleague, boss, family member, or stranger (McLinton & Dollard, 2011). A tool was developed to measure this specific aspect of the human anger experience, called the McLinton Interpersonal Domain-specific Anger Instrument (MIDAI). The psychometric properties of the tool were tested in a random stratified community sample in Australia, and we intend to confirm the cross-cultural validity of the anger target constructs. We aim to further validate the MIDAI psychometric properties in an Asian socio-cultural context, and whilst comparing the experience of interpersonal anger in two vastly different cultures. Japan was selected for its world renowned workplace stress issues and strong workplace hierarchy.

Since the collapse of Japan's economy in 1991, the country has experienced a prolonged economic recession (Kanai, 2009; Kawakami & Haratani, 1999). Employees have seen a significant reduction in their job security, and unprecedented levels of unemployment due to major downsizing and outsourcing, the result of wide-scale restructuring in an effort to deal with the situation (Tsutsumi, Kayaba, Theorell, & Siegrist, 2001; Ministry of Health Labor and Welfare, 2007). With the implementation of western styles of employment, there has been a significant change from Japan's traditional seniority-based wage systems to merit-based pay (Clegg & Kono, 2002; Kanai 2009). Life-long employment has made way for drastic changes including a significant increase in temporary contracts, part-time and lease employment (Goto, 2006). Understandably, these extensive negative changes have taken their toll on Japanese workers, with an unprecedented level of overworking (Kanai, 2009), 'death by overwork' (*karoshi*; Kanai, 2006), 'suicide by overwork' (*karojisatsu*; Amagasa, Nakayama, & Takahashi, 2005), hypertension (Tsutsumi, Kayaba, Tsutsumi, & Igarashi, 2001), fatigue (Kumashiro & Nagae, 1984), anxiety (Irie, Miyata, Nagata, Mishima, Ikeda, & Hirayama, 1997), psychological strain (Liu, Spector, & Shi, 2007), dissatisfaction with work (deFrank, Ivancevich, & Schweiger, 1988), and depression (Iwata, Okuyama, Kawakami, &

Saito, 1989). This accumulating evidence underlies Japan's reputation as one of most stressful workplaces in the world.

Workplace hierarchy in Japan

A notable difference between Japanese and Western workplaces is the emphasis paid on the strict hierarchical structure of the work environment, or *'jo-ge kankei'*, which is based on unspoken rules for how to interact with superiors and the strict delineation of one's own social rank and responsibilities (Matsumoto, 2000). This often leads to many hours of unpaid overtime, not to mention the stress and tension experienced when in the presence of superiors in such a strongly hierarchical culture (Hadley, 1999). The strict hierarchical structure of the Japanese workplace opens the way for *ijime* or 'workplace bullying' (Meek, 2004; Treml, 2001), where superiors feel a sense of entitlement to demonstrate their higher rank over others and engage in unfair treatment of subordinates. Surveys indicate that the occurrence of *ijime* is a commonly experienced and widely accepted aspect of working life in Japan, and is a major factor in the high suicide rate in men and women of working age (Giorgi, Asakura, & Ando, 2008; Tanaka, 2001). Japanese people are more prone to tolerating workplace bullying because they hold the view that it will 'work out' if they are simply patient and cultivate the spirit of *gaman*, or 'enduring personal hardship' (Giorgi, 2010). Japanese society has developed in the face of much adversity, and the ability to endure through hardship is regarded as a positive character trait despite the disproportionately serious nature of the situation and the relative ease with which it could be changed. Furthermore, Japanese workers are less likely to challenge injustice as their culture is defined by stronger conformity to implicit rules and tradition (Giorgi, Asakura, & Ando, 2008). Japanese tradition engenders identification with the group culture and strong loyalty to the in-group (Giorgi & Majer, 2009). They are less likely to request support from others in the workplace for fear that their actions could disrupt the in-group harmony (Taylor, Sherman, Kim, Jarcho, Takagi, & Dunagan, 2004). In other countries, bullying, mistreatment, inequality and abuse of power have all been shown to lead to anger (Einarsen & Mikkelsen, 2003; Neuman & Baron, 1998). From the evidence presented, the Japanese working environment is an important setting in which to investigate the nature of the human anger experience.

Anger in Japanese culture

Anger is an issue in the modern workplace, with numerous negative consequences such as reduced levels of engagement and cognitive performance, increased frequency of counterproductive behaviour, errors in judgment and risk taking (Idris & Dollard, 2011; Mann, 1992; West, Elander, & French, 1993). In a rational culture like Japan, people are not inclined to express emotion (Bhagat & Steers, 2009). In fact, withholding the overt anger is a natural method of avoiding the negative consequences were it to be expressed (Averill, 1983). Further, in the case of bullying, Japanese people are likely to follow the generally observed practice of withholding anger towards others of a higher social rank (Allan & Gilbert, 2001). Nevertheless, the absence of overt expression of anger does not deny its covert existence. Previous studies by McLinton and Dollard (2010) have shown that anger does indeed exist in a Japanese sample, albeit at a slightly lower reported level than samples in western countries, in relation to anger experienced whilst driving. Rather than the measurement of overt anger and aggression, a better indicator of anger in such cultures may be self-reports of unexpressed anger. Anger as an internal and personal experience can only be measured via self-report, and evidence suggests that any self-report measure will be affected by social desirability, and thus an underreporting of actual anger levels (Arnold & Feldman, 1981). Despite concerns for social desirability and a standing belief that Japanese cultural influences would lead to underreporting of emotions and negative workplace conditions, Tsutsumi and colleagues (Kayaba, Theorell, & Siegrist, 2001) in fact found that in a questionnaire on work stress a significant number of participants expressed their anxiety over pay rates and job security.

In a culture with such strict hierarchical rules, we expect that anger-eliciting behaviour of others in the workplace to provoke different levels of anger from Japanese workers according to the perpetrator's relative social level (superior, co-worker or subordinate). Further, the anger experience in Japan could be compared with that of another country which has far more relaxed social rules for workplace roles, such as Australia. Due to the numerous significant differences between Australian and Japanese work environments, we expect to see significant differences in the levels of anger toward superiors, co-workers, and subordinates at work between the Japanese and Australian samples.

Anger toward different people in one's social environment can be measured by the recently developed McLinton Interpersonal Domain-specific Anger Instrument (MIDAI; McLinton & Dollard, 2011). Interpersonal Anger is defined as "a predisposition to feel anger

toward other individuals in our social environment" (McLinton & Dollard, 2011, p. 11). The concept of Interpersonal Anger originated whilst researching Driving Anger and observing that anger may be directed at the actions of other people on the road, according to disobeying road rules, speeding, discourtesy on the road, and so on (Hoggan & Dollard, 2007; McLinton & Dollard, 2010). It was suggested that if people felt anger toward the actions of others on the road, might they not feel anger in other interpersonal situations according to the behaviour of other people outside their cars? This prompted the development of the MIDAI, an instrument that was to measure whether people did in fact feel anger directed at others in their social environment. Importantly, this instrument answered the call for the development of new measures which dealt with more specific aspects of the human anger experience, as opposed to the multitude of general anger measures that are in common use despite their poor psychometric properties or conceptual development (Eckhardt, Norlander, & Deffenbacher, 2004). Outlined in McLinton and Dollard (2011) is the process of developing the MIDAI using the world-renowned Delphi technique which gives it a solid foundation of conceptual development and resulted in an instrument with strong psychometric properties. The five individual MIDAI scales are compared in this study; anger toward 1) family members; 2) superiors at work; 3) co-workers; 4) subordinates at work; and 5) strangers.

Interpersonal Anger Theory

The theory of Interpersonal Anger was developed with an expert panel of international anger researchers (see McLinton & Dollard, 2011). The fundamentals of Interpersonal Anger theory lie in Social Psychology, which uses a variety of social and cognitive theories to explain the nature of human social interaction (Allport, 1985). Social Psychology suggests that we evaluate the causes in behaviour of others according to numerous biases that affect the way we perceive the world and social relationships with the people around us (Heider, 1958), and likewise, other people in our social environment affect us through their presence and the influence of their behaviour (Allport, 1985). Two significant theories considered in the development of Interpersonal Anger were attribution theory and schemata theory. The former suggests how one explains the behaviour of others in their social environment (Kelley & Michela, 1980). According to fundamental attribution error, people are more likely to make an internal (dispositional) attribution for the behaviours of others. Without considering the influence of the environment on that individual's actions, one instead assumes that they are internally motivated, thus bearing more responsibility and are to blame for the intent behind

the action **(**Ross, 1977). By this reasoning, in Interpersonal Anger theory it is proposed that people have more potential to anger at the behaviour of others when they view that negative behaviour toward them is internally motivated. For example, consideration of the statement "How much anger would I feel if a superior at work: … causes significant delays when I have a schedule to keep." (MIDAI superiors scale: Item 8), is likely to result in the respondent attributing significant delays due to the disorganised personality of the supervisor or perhaps even intentional spiteful behaviour, rather than bearing in mind that their superior is also under significant pressures from higher up, or even that they might have experienced some personal situation that has resulted in the behaviour.

The other notable influence in Interpersonal Anger is Schema theory, which suggests that through personal experience, patterns of viewing the world have been established based on previous events (Axelrod, 1973). In this case, a person will have a schema established for how all superiors at work act toward them based on the way all superiors have treated them in the past, and likewise schema for co-workers, subordinates, family members, and so on. These schema lead to biases in the perception of those individuals in the future (Taylor & Crocker, 1981), so in Interpersonal Anger theory one would posit that a person who has been bullied or harassed by their boss in the past might attribute higher levels of anger when any kind of provocations or frustrating behaviours are engaged in by people in a superior position at work. Schema theory supports the notion that in Interpersonal Anger a person considers a number of characteristics of the target and how they fit into their existing schema when appraising the behaviour of others. So the degree of anger felt toward the target depends on how that target's characteristics fit in existing schema, thus accounting for biases toward gender, relative relationship, attractiveness, group membership, and so on.

As a general proposition, Interpersonal Anger consists of a number of trait predispositions to anger toward different people. This is where our instrument differs significantly from existing measures of anger; 'Interpersonal Anger' is a blanket term given to a number of independent constructs, that whilst correlated, are still different aspects of the anger experience measuring anger toward targets in the social environment with very clearly delineated differences. Individuals differ on the MIDAI scales in the amount of anger directed to each target, so a person may feel more anger toward a superior at work for the exact same behaviour that a family member might engage in. We confirmed this difference in the predisposition to anger toward different people in an Australian study (McLinton & Dollard,

2011). The study supported the notion that MIDAI measured anger is a trait with good test-retest reliability, and other strong psychometric properties including scale reliability, good convergent and divergent validity.

Aims and Hypotheses

The primary aim of the present study is to further validate the MIDAI psychometric properties in a community sample that is culturally different from the original study, followed by a secondary aim to examine the cross-cultural differences in the experience of interpersonal anger. Japan was selected to represent an Asian sociocultural population with a group-oriented national culture (Ralston, Holt, Terpstra, & Kai-Cheng, 1997) to compare with 'western' data from Australia, which represents the opposite end of the spectrum as an individual-oriented culture. Furthermore, as previously outlined Japan is renowned for its strict hierarchical work environment and *jo-ge kankei* where the lines of relative social status are clearly delineated and strongly influence social communication, so we expect to find a difference between Japan and Australia in how they anger toward others in the workplace. Within the Australian study, no significant differences were found in the levels of anger toward other people in the workplace according to superior, equal (co-worker) or subordinate positions. We will test this in the present study with a Japanese sample, expecting to find a difference in the anger levels according to how they evaluate the relative social relationship in the workplace.

Data will be compared with population data obtained from an Australian random stratified community sample (McLinton & Dollard, 2011). Data from Australia and a validation sample in Japan showed that the factor structure between a western and eastern country was identical, indicating the cultural invariance of the MIDAI. This makes the tool appropriate for use in comparison of samples from different countries. Accordingly, a number of hypotheses were made regarding the nature of the Japanese sample data:

Hypothesis 1: Within the Japanese sample, levels of anger in the MIDAI will differ significantly between at least two scales; this will confirm its capacity to discriminate between targets of anger.

Hypothesis 2: The Japanese sample will differ significantly when compared with the Australian sample in anger levels reported on the three MIDAI scales in the work domain (MIDAI superiors, co-workers, and subordinates scales).

4.2 Publication Two: Method

The procedure to obtain a random community sample in the previous Australian study (McLinton & Dollard, 2011) was replicated in Japan.

Sample and procedure

The MIDAI was administered to a random stratified community sample from residents in metropolitan Nagoya, Aichi-prefecture (Japan). Streets and suburbs were randomly selected using a number generator and metropolitan street map, and potential participants were approached in person using the doorknock method. A random stratified community sample was created by distributing evenly to low, middle and high socio-economic status suburbs as identified by the latest census data (*Japan Statistical Yearbook*, 2008). A personal introduction to each potential candidate elicited a good response rate of 78% of the original number approached. The sample consisted of 300 adults (119 males, 181 females) currently engaged in full-time employment. A similar number of participants from low (n = 109), middle (n = 96), and high (n = 95) socio-economic areas was obtained forming a random stratified community sample. The mean age was 43 years (SD = 16; range min. 18, max. 89). The project had full ethics approval from the University of South Australia Human Research Ethics Committee.

Measures

The McLinton Interpersonal Domain-specific Anger Instrument (MIDAI) was translated by the first author into Japanese and then sent to a professional translator for confirmation. After editing, the MIDAI was piloted with three native Japanese speakers for readability, revised, and then resubmitted to the translator for final adjustments. The MIDAI consists of five scales, each concerning the behaviour of a different target individual; Interpersonal Anger toward family members (MIDAI family scale: 12 items), Interpersonal

Anger toward superiors at work (MIDAI superiors scale: 12 items), Interpersonal Anger toward co-workers (MIDAI co-worker scale: 12 items), Interpersonal Anger toward subordinates at work (MIDAI subordinate scale: 12 items), and Interpersonal Anger toward strangers, i.e., anger toward recently met individuals with no family, work or hierarchical relation (MIDAI stranger scale: 12 items). Each scale includes 6 items that are common to all MIDAI scales to permit cross-scale comparisons of anger toward identical situations, and are referred to as the MIDAI Short Forms (6 items). Throughout all of the MIDAI scales, participants are asked to rate *how much anger* the hypothetical situation would elicit from them on a 5-point scale ranging from *0* (none at all) to *4* (very much). Also included is a measure of the *frequency* of each anger-eliciting behaviour experienced, answered on a 7-point scale ranging from *0* (less than once a year) to *6* (everyday). Each scale has a differing number of items common to all scales and unique items relevant to the individual in question or the domain it might occur (e.g. the workplace).

In addition to the five MIDAI scales, the questionnaire included: (1) the STAXI (State-Trait Anger Expression Inventory: Spielberger, 1996) to test the convergent validity of the new measure with a renowned anger instrument; and (2) the Reynolds (1982) 13-item version of the Marlowe-Crowne Social Desirability Scale to identify whether individual's responses on the MIDAI are likely to be affected by social desirability.

Analysis strategy

Data from the community sample was screened for normality and outliers. To enable a fair comparison of interpersonal anger toward different targets, each MIDAI scale contains six identical items general enough to apply to any situation (referred to as the MIDAI Short Form). When comparing anger between MIDAI scales, these common items should be used to ensure that certain domain scales do not consistently elicit significantly higher anger in comparison to others simply because they refer to more aggravating situations.

Next, the instrument was tested for convergent validity using bivariate correlations with the existing measure of anger, the STAXI. Further, we tested the difference in mean levels of anger on the MIDAI Short Forms using a related samples *t*-test to investigate whether it was significant in the Japanese community sample. Then we compared the nature of anger in the Japanese sample with the data previously gathered from an Australian sample

to explore cross-cultural differences in the experience of interpersonal anger using independent samples *t*-tests.

Last, bivariate correlations were conducted between the frequency of experiencing the listed anger-eliciting behaviour and the anger levels reported for it on the MIDAI. This would ascertain whether a relationship exists between frequency of occurrence and proclivity to experience anger.

4.3 Publication Two: Results

Descriptive Statistics

Descriptive data on reported anger on the five MIDAI scales is presented in Table 1 separated by demographics. A correlation matrix (Table 2 on page 148) displays bivariate correlations for each MIDAI scale, social desirability, and STAXI subscales for state anger, trait anger, and anger expression style.

As expected, all MIDAI scales demonstrate a significant correlation with the measures of convergent validity (all STAXI scales). According to Cohen (1988) the strength of correlations are said to be strong at .50, moderate at .30 and weak at .10. Interestingly, MIDAI measured anger positively correlates with outward anger expression on the STAXI at a weak-moderate level on all five interpersonal targets. Social desirability also displays a weak-moderate correlation indicating that anger may be underreported. In terms of reliability, according to Nunnally (1978) a scale is considered acceptable if it has a Cronbach's alpha of greater than .70, whilst more modern conservative estimates place a 'good' alpha to be .80 or greater (Henson, 2001; Loo, 2001). The Japanese sample held good reliabilities for each 12-item MIDAI scale (family .90; superiors .91; co-workers .93; subordinates .93; strangers .92).

Table 1

MIDAI Reported Anger level Means, Standard Deviations, and Alpha Coefficients for Working Adults in Nagoya, Japan

	Total Sample		Socioeconomic Status			Ages 18-29		Ages 30-49		Ages 50+	
	M (121)	F (179)	Low (109)	Mid (96)	High (95)	M (47)	F (49)	M (39)	F (54)	M (35)	F (76)
Anger toward Family											
Mean	28.22	29.09	29.83	28.30	27.95	30.32	29.94	26.38	28.31	27.41	29.11
SD	9.20	8.65	8.58	8.49	9.52	9.50	8.53	9.41	9.11	8.15	8.49
Alpha	.91	.90	.90	.90	.92	.92	.90	.91	.91	.90	.89
Anger toward Superiors											
Mean	26.81	24.77	26.46	25.57	24.61	30.80	29.89	25.82	25.39	22.10	21.01
SD	8.84	8.67	8.85	6.90	10.24	8.34	7.53	8.14	8.66	7.88	7.59
Alpha	.92	.91	.90	.86	.94	.90	.88	.91	.92	.89	.87
Anger toward Co-workers											
Mean	31.40	31.36	32.60	30.52	30.84	33.11	32.81	30.63	31.22	29.94	30.56
SD	8.71	9.10	8.77	7.78	10.05	9.04	8.55	8.52	9.13	8.33	9.42
Alpha	.91	.94	.92	.92	.94	.93	.93	.92	.94	.87	.94
Anger toward Subordinates											
Mean	31.03	29.64	30.87	29.71	29.96	32.06	29.58	30.38	30.33	30.30	29.21
SD	8.15	9.22	8.30	7.92	10.19	8.97	9.92	8.09	8.60	7.01	9.27
Alpha	.91	.94	.91	.92	.95	.92	.95	.92	.92	.86	.94
Anger toward Strangers											
Mean	32.68	32.04	33.84	31.66	31.18	31.70	28.39	31.59	31.85	35.20	34.54
SD	9.17	9.59	8.85	9.10	10.20	10.32	10.09	9.59	8.81	6.47	9.11
Alpha	.92	.93	.92	.92	.94	.92	.92	.93	.91	.86	.93

Table 2

Correlation Matrix for all Five MIDAI Scales, the STAXI Subscales, and Social Desirability

	MIDAI scales				STAXI subscales						
	Superior	Co-worker	Subordinate	Stranger	State Anger	Trait Anger	Control Out	Expression Out	Control In	Expression In	Social Desirability
MIDAI Family Scale	.58**	.67**	.60**	.63**	.20**	.41**	-.20**	.16**	-.15**	.20**	-.18**
MIDAI Superiors Scale	--	.74**	.68**	.59**	.20**	.38**	-.09	.12**	-.12*	.19**	-.26**
MIDAI Co-worker Scale		--	.76**	.71**	.23**	.38**	-.10	.18**	-.12*	.22**	-.19**
MIDAI Subordinates Scale			--	.71**	.19**	.44**	-.14*	.24**	-.13*	.16**	-.23**
MIDAI Stranger Scale				--	.20**	.41**	-.13*	.20**	-.15**	.27**	-.27**

Table 3

Comparison of Means and SD for Individual Anger Items and Reliability for 6-item Short Form versions of the MIDAI Scales

MIDAI Short Form (6-items common in each scale)	Self-reported anger on the MIDAI items									
	Family		Superiors		Co-workers		Subordinates		Strangers	
"How much anger would I feel if a (family member, superior, etc.)…"	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Item 7: Behaves in an unnecessarily aggressive manner toward me	2.59	1.11	2.44	0.97	2.88	0.97	2.80	1.06	3.10	1.10
Item 8: Causes significant delays when I have a schedule to keep	2.26	1.04	1.80	1.03	2.23	0.88	2.22	0.86	2.65	0.87
Item 9: Insults me on purpose	2.59	1.21	2.41	1.07	2.82	1.06	2.82	1.02	3.13	1.11
Item 10: Refuses to acknowledge my point of view	2.39	0.98	1.78	0.93	2.20	0.89	2.18	0.82	2.23	1.21
Item 11: Yells at me	2.54	1.14	2.60	1.06	2.84	1.13	2.84	1.10	3.14	1.15
Item 12: Doesn't give me the respect I deserve	2.40	0.93	1.89	1.04	2.50	0.93	2.30	0.97	2.46	1.01
Cronbach's alpha (6 items)	.81		.84		.88		.88		.87	
Core Item Total Score	14.77	4.62	12.91	4.55	15.47	4.61	15.15	4.60	16.70	5.05
Paired t-test: Family (6-item)				7.75**		-2.76**		-1.20,n.s.		-7.46**
Paired t-test: Superiors (6-item)						-12.63**		-10.63**		-14.38**
Paired t-test: Co-workers (6-item)								1.45,n.s.		-5.81**
Paired t-test: Subordinates (6-item)										-7.22**

Comparison of MIDAI Short Forms (common items)

Means and standard deviations for all items on the Short Form are presented in Table 3 (see previous page), along with reliability scores for the 6-item scales. Means and standard deviations for specific items in each of the five MIDAI scales can be provided upon request. However, in sum all individual items scored higher than a Mean of 1.5, indicating an appreciable level of anger worth further investigation (Lajunen, Parker, & Stradling, 1998). Paired *t*-tests with Bonferroni adjustments were performed to determine the significance of the differences between the anger elicited toward the five different targets (family members, superiors at work, co-workers, subordinates, and strangers), presented in Table 3. These comparisons used only the six items which are common between all five MIDAI scales in order to provide valid contrasts. The results of the *t*-tests are also included to delineate significant differences in anger toward each target.

Table 3 shows support for Hypothesis 1, demonstrating that the Japanese sample were more likely to anger toward strangers than people in the workplace or family members. Furthermore, superiors in the workplace received the least amount of anger despite evidence in the literature suggesting that superiors might be inclined to victimise employees of lower social rank. To further investigate this, an analysis of actual frequency of the anger-eliciting situation was conducted.

Frequency of Experience

The reported frequency of experience is presented in Table 4. A bivariate correlation was conducted to investigate the relationship between frequency of occurrence and proclivity to anger toward the perpetrator, presented in Table 5 (see page 152).

Despite the lowest reported anger toward superiors, in fact superiors are reported as engaging in these frustrating behaviours more than any other individual. The bivariate correlations indicate that overall, more frequently experienced situations are indeed correlated with higher proclivity to feel anger toward that situation, but the effect is not constant across all situations or targets, as evidenced by inconsistent individual item correlations. In particular, anger toward behaviours on the overt hostility factor does not consistently correlate with more frequent occurrence of those behaviours. However across all MIDAI scales, subjects are consistently more likely to feel anger toward the individual for covert provocations.

Table 4

Frequencies for Individual Anger Items from the 6-item Short Form versions of the MIDAI scales

MIDAI Short Form (6-items consistent in each scale)	Self-reported frequency of experiencing these situations				
"How much anger would I feel if a (family member, superior, etc.)…"	Family	Superiors	Co-worker	Subordinates	Stranger
Item 7: Behaves in an unnecessarily aggressive manner toward me	1.2	1.7	1.0	0.6	0.7
Item 8: Causes significant delays when I have a schedule to keep	2.2	2.2	1.5	0.9	1.1
Item 9: Insults me on purpose	1.3	1.7	1.0	0.6	0.4
Item 10: Refuses to acknowledge my point of view	2.0	2.2	1.4	0.8	0.7
Item 11: Yells at me	1.7	1.4	0.5	0.4	0.5
Item 12: Doesn't give me the respect I deserve	1.5	2.8	1.5	0.9	1.1

Frequency key: *3 = A few times a month; 2 = Once a month; 1 = A few times a year; 0 = Less than once a year*

Table 5

Correlation Matrix for Frequency of Experience of the Anger-eliciting Behaviour on the MIDAI Short forms, correlated with Intensity of anger

	Self-reported frequency of experiencing these situations				
"How much anger would I feel if a (family member, superior, etc.)…"	Family	Superiors	Co-worker	Subordinates	Stranger
Item 7: Behaves in an unnecessarily aggressive manner toward me	.03,n.s	.13*	.23***	.10,n.s	.06,n.s
Item 8: Causes significant delays when I have a schedule to keep	.26***	.29***	.13*	.12,n.s	.10,n.s
Item 9: Insults me on purpose	-.05,n.s	.14*	.11,n.s	.02,n.s	-.05,n.s
Item 10: Refuses to acknowledge my point of view	.25***	.05,n.s	.21***	.07,n.s	.22***
Item 11: Yells at me	.02,n.s	.25***	.09,n.s	.06,n.s	-.01,n.s
Item 12: Doesn't give me the respect I deserve	.15**	.13*	.30***	.30***	.12*
Overt Hostility Factor	.01,n.s	.22***	.17**	.09,n.s	-.02,n.s
Covert Provocation Factor	.22***	.21***	.26***	.20**	.21***
Total 6-item Scale	.15**	.23***	.26***	.17**	.12*

*Note: *p<.05, **p<.01, ***p<.001*

Cross-cultural Comparison of Scales

Total scores on each of the 5 MIDAI 12-item scales are provided in Table 6 for both Australian and Japanese data in order to facilitate cross-cultural comparison. Australian data comes from a random stratified community sample (N=301) used in the authors' seminal research (McLinton & Dollard, 2011). Results of t-tests are included in Table 6 to indicate whether differences in levels of interpersonal anger between cultural groups are significant.

Table 6

Cross-cultural comparison of Mean MIDAI scores

	Japan		*Australia*		
12-item MIDAI scale	***M***	***SD***	***M***	***SD***	***difference***
Anger toward Family Members	28.74	8.87	26.97	10.01	t(594) = 2.29*
Anger toward Superiors at Work	25.58	8.78	29.34	10.74	t(560) = 4.56**
Anger toward Co-workers	31.38	8.93	30.89	11.08	t(570) = .58,n.s.
Anger toward Subordinates at Work	30.20	8.82	30.16	10.28	t(565) = .05,n.s.
Anger toward Strangers	32.30	9.42	26.24	10.46	t(590) = 7.41**

Note. * $p < .05$; ** $p < .01$

Supporting Hypothesis 2, the Japanese sample displays significantly lower anger toward superiors than the Australian sample, whereas anger toward family members and strangers is significantly higher.

4.4 Publication Two: Discussion

The primary aim of the study was to collect and analyse data on the MIDAI from a more culturally divergent sample than the original Australian version and gain a deeper insight into the nature of the anger experience in Japan. Both hypotheses were supported, with MIDAI scales in the Japanese sample displaying significant differences in self-reported anger toward different targets (H1), and furthermore, exhibiting significant differences in reported MIDAI anger from a culturally different Australian sample (H2).

Best efforts were taken to conduct a valid cross-cultural comparison of MIDAI reported anger. Sample collection procedures were identical between the Japanese and Australian random stratified community samples and cultural invariance of the MIDAI has already been established (McLinton & Dollard, 2011). Furthermore, in these early stages of instrument development, significant efforts were made to gather random stratified community samples for the piloting and validation of the MIDAI rather than commonly used samples of convenience. Rigorous back translation techniques were used to ensure that we produced a bilingual tool, and the present study has gone to great lengths to perpetuate cross-cultural research.

The Japanese translation of the MIDAI displayed good reliabilities across all five of the 12-item scales, whilst the Short Forms (6-items common in all MIDAI scales) exhibited slightly lower reliability scores than their longer scale versions. The 12-item versions held Cronbach's alpha of higher than .90 and it is argued by Boyle (1991) that scales with a score of .90 may not actually indicate good reliability but rather a level of item redundancy, and good research practice is instead to reduce the number of items to avoid such inflated alpha scores. This offers more support for the utility of the 6-item MIDAI Short Forms, all five of which display Cronbach's alpha higher than .80 to indicate good reliability (Henson, 2001; Loo, 2001), but lower than .90 to avoid extraneous item redundancy (Boyle, 1991).

As predicted in hypothesis 1, the Japanese sample displayed significant differences between a number of the MIDAI scales, underlining that the anger experience is indeed different according to the characteristics of or relationship with the perpetrator of the anger-eliciting behaviour. This further corroborates findings of the previous Australian sample and underlines the utility of an instrument that can discriminate between targets of anger.

Most notably, Japanese participants consistently rated the anger they felt toward behaviour of strangers to be significantly more infuriating than the same behaviour from family members or anyone at their workplace. This is a particularly interesting finding, and we suggest that it is linked to Japan's implicit and explicit societal customs for courtesy that have set an expectation that all other strangers will uphold these to create a harmonious environment. These unspoken rules of etiquette are intimately woven into the fabric of Japanese culture, where one is expected to conduct themselves in a manner that avoids any intrusion into the lives of strangers. Perhaps violation of these customs is particularly anger provoking for Japanese people. Conversely, anger toward superiors at work was reported as significantly lower than in any other domain, including within the workplace but toward the actions of hierarchically equal or subordinate employees. This finding seems counterintuitive when Japan has been recognised in research as one of the most stressful and harshest work environments in the world, including a strong prevalence of workplace bullying (which is fundamentally driven by those in a hierarchically superior position), pressure to work overtime, and record suicide rates due to pressures from superiors (Amagasa et al., 2005; Kanai, 2009; Giorgi et al., 2008; Tanaka, 2001). Contrary to expectations, Japanese people actually report less anger toward superiors at work. The first conclusion that would be drawn is the assumption that social desirability has masked a certain level of anger reporting, however the existence of multiple scales used in the MIDAI is useful because social desirability is less of a factor when it is likely to apply to all other scales too. So when making a relative comparison, we can still assume that if the effect of social desirability is relatively constant, Japanese people still report lower anger toward superiors in comparison to co-workers, subordinates, family members and strangers. This is an interesting finding considering that the negative behaviours of superiors were most frequent in comparison to the others targets, with covert provocations such as the superior "refuses to acknowledge my point of view" (Item 10) occurring on average more than once per month, and "doesn't give me the respect I deserve" (Item 12) occurring on average a few times per month. The increased prevalence of superiors engaging in anger-eliciting behaviours is understandable in the socio-cultural context of *ijime* and *jo-ge kankei*, but anger directed at them for such actions is significantly lower than toward other people. Perhaps a reduction of attribution of blame to people in a superior role might alleviate the levels of anger they direct toward the superior despite the frequency with which the superior engages in the negative behaviours. Instead, it might simply be the sense of hopelessness that the hierarchical system of the Japanese workplace allows such behaviour, and that there is no use fighting what has been

established over centuries, a culturally inherited learned helplessness. Even the notion that eventually, when promoted to a similar position of management they in turn will fulfil the role of a superior might reduce the level of blame.

As predicted in hypothesis 2, anger on the MIDAI scales reported by Japanese people differed significantly from the Australian sample. Japanese have a higher proclivity to anger toward the actions of strangers and family members, but were less likely to anger toward superiors. A possible explanation for the latter can be the expectation of role fulfilment and the cultural understanding of *gaman* or 'enduring personal hardship'. Japanese employees may simply expect superiors to engage in such overt hostilities or covert provocations because that is their role, as they have seen repeated in workplaces across the country. It is an unavoidable state of affairs and instead they are expected to endure the situation if they are to be seen as having the favourable cultural trait of endurance. Further, Japanese employees may be desensitised to the actions of their boss due to their cultural feeling of loyalty to one's lord or superior which originates from the highest virtue of *Jukyo* (an ethical philosophy of Confucianism).

Whilst we must accept that social desirability may reduce the level of reporting anger overall, meaning the reduced anger toward superiors in Japan may not be as pronounced in comparison with Australians. Nevertheless, the correlation between MIDAI scales and social desirability is relatively equal in both Australian and Japanese samples. Beyond this, we must still account for the higher levels of anger toward strangers and family members in the Japanese sample, which is may even be underreported given the correlation with social desirability. As previously mentioned, Japan's strong cultural rules may provide a succinct explanation for stronger feelings of anger toward strangers when they act in a hostile or disrespectful manner. As for anger toward family members, one would expect that the stronger bonds of family in a collectivist over an individualist culture would diffuse levels of anger toward family members. Perhaps instead, the expectation of closeness when violated with an anger-eliciting behaviour prompts a stronger anger response. Alternately, despite the collectivist culture, Japanese families are less likely to see each other, particularly fathers in a male-centric work environment involving working long hours of overtime and a long daily commute time (Kanai, 2009). The reduced familiarity with parental figures might permit stronger angry feelings from children. Last, perhaps even the cramped living conditions and lower amount of personal space in the on average smaller Japanese household could affect the

propensity to anger toward family members, as opposed to the personal space afforded in the average Australian household.

Limitations and Implications for Future Research

This study has helped elucidate the nature of the anger experience in Japan. Until now, research had yet to explore anger in detail, let alone investigating the effects of Japan's strong hierarchical relationship in the workplace. Avenues have been opened into cross-cultural anger research with the MIDAI demonstrating its transnational relevance and again underlining that anger toward different interpersonal targets in one's social environment are indeed separate constructs worthy of further investigation. Furthermore, the correlations between frequency and anger level indicate that unlike overt hostility, covert provocations consistently exhibit weak-moderate positive correlations with anger across all five MIDAI scales. Perhaps the inconsistent nature of overt hostility frequency leading to anger may suggest that multiple factors are at work, such as some people experiencing learned helplessness when being yelled at on a regular basis whilst others boiling with anger each time. Covert provocations on the other hand suggest that the more one is exposed to the surreptitious disrespectful behaviours, the more likely they are to also feel anger toward the person engaging in those behaviours. Unfortunately, due to time constraints in the research project, only cross-sectional data was available for the Japanese sample, however a longitudinal study will be conducted in the future to ascertain whether there is a causal influence from frequency of experience to anger levels on the MIDAI.

Further investigation will also be made into how anger toward the three targets in the workplace domain relates to existing measures of work stress. For example, Effort-Reward Imbalance (ERI) could be related to anger toward superiors because of the violation of reciprocal rewards for their perceived efforts at work. Perhaps co-workers and subordinates are less likely to be involved in a perceived effort-reward imbalance. The MIDAI may also be used to observe interpersonal anger over time; whether it is a relatively stable trait, and whether work stress variables have an influence as work environments change. Further, whilst clear differences by country were found and this grouping method is common in research, cultural identification may actually be categorised in ways other than simply geographic representation. Evidence suggests that variable traits can be used to operationalize culture in the field of emotion research such as individualism and power distance (Matsumoto, 1989), dimensions that display a vast cultural divide between East and West. This could be employed

in future research, which may also see the study replicated in other countries to not only provide baseline cross-cultural data, but also to facilitate further cultural comparison in the nature of the world-wide anger experience.

Conclusion

The MIDAI has reinforced our notion that one's propensity to anger does differ according to the target in our social environment. With the Japanese sample also showing significantly different levels of anger between their family members, strangers and people in the workplace, it supports the utility of the MIDAI as a new measure of a specific aspect of the human anger experience. Further, the discovery of differences in interpersonal anger between Japanese and Australians indicates that our proclivity to anger toward others may be influenced by numerous socio-cultural variables, opening avenues for future research.

4.5 Publication Two Supplements

4.5.1 Personal Reflection

RDQ 7 – International perspectives: *In data collection for this publication I had the opportunity to continue my experience in living and conducting research abroad. I have always had an interest in languages and cultural differences, and this has been reflected in the PhD with a significant aspect of the study focussing on cross-cultural research. I enjoyed the data collection for this segment of the research as it gave me a great opportunity to meet new people in a foreign setting and to further develop my language skills through personal contact with each potential participant. I have a view to continue such research in the future and advance my interest in the investigation of cultural differences and linguistics.*

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5. Results – Publication Three

The following paper by McLinton and Dollard is in first review in the *Journal of Experimental Social Psychology* and concerns the SEM multi-group modelling to test the Interpersonal Anger Theory foundation of the MIDAI.

Title

Interpersonal Anger Theory: Testing the McLinton Interpersonal Domain-specific Anger Instrument (MIDAI) with Effort-Reward Imbalance and Anger Expression

Abstract

The present study explores stress experienced at work and how negative outcomes may contaminate other areas of life. Particular attention toward the disruptive influence of work stress on interpersonal relationships, specifically anger toward others is investigated, including the possibility of a cross-cultural phenomenon. Through research of Interpersonal Anger as a negative outcome of Effort-Reward Imbalance (ERI) work stress, the study attempts to underline the pervasive influence of chronic job stressors and how they can contaminate other areas of daily life. Furthermore, this relationship is also observed in two very different cultures, suggesting the existence of an underlying global phenomenon.

5.1 Publication Three: Introduction

The present study aims to further the research into the recently operationalised concept of Interpersonal Anger by testing the underlying theory using data collected from two culturally distinct samples, Australia and Japan. Interpersonal Anger refers to the anger that is directed specifically at other people in one's social environment, the levels of which are affected by the characteristics of that target, for example whether they are a family member or work colleague, and by their relative relationship at work (superior, equal, or subordinate). We proposed that Interpersonal Anger as measured by the new McLinton Interpersonal Domain-specific Anger Instrument (MIDAI; McLinton & Dollard, 2011), will be influenced by an imbalance in the perceived efforts and rewards at work (Effort-Reward Imbalance; ERI). In particular we expected that stress at work would lead to anger at work (i.e. towards superiors, co-workers and subordinates) and via spillover mechanisms also lead to anger in the family environment. Further, the internal anger experience is related to overt aggressive expression (Anderson & Bushman, 2002; Averill, 1983; Frijda, 1986; Geen, 2001; Kinney, Smith, & Donzella, 2001; Smits & DeBoeck, 2007), so we expected that MIDAI measured anger influences the outward anger expression.

The Workplace

Since the early 2000's, worldwide changes have been observed at work, including an increase in work intensity and of perceptions of work difficulty along with the decline of autonomy that is pushing the modern worker to their limits (Clark, 2005; Clarkberg & Moen, 2001; Gallie, 2005; Green & McIntosh, 2001). There has also been a rise in the number of dual income families with longer work weeks and less time at home to balance work and life (Clarkberg & Moen, 2001). In Australia, economic policies have influenced a trend for managers to push their employees for greater efficiency but without supplying a similar increase in associated job resources (Lonne, 2003). Despite a decrease in all other compensation claims in Australia, work stress induced claims in the 2007-08 period were 34% higher than ten years prior (Productivity Commission, 2010). Despite the increase in these adverse work conditions in Australia, Japan is still notorious for the harshest work environments worldwide. Japan's toxic work conditions have been the subject of a large body of research over the past two decades (for review, see Kanai, 2009). The issue of work stress in Japan has been compounded by the economic recession of the 90's, which has

changed the policies of life-long employment and seniority-based wage and promotion systems, leading to poorer job security (Tsutsumi, Kayaba, Theorell, & Siegrist, 2001). Job stability and tenure are decreasing in Japan, whilst the demand for service work and the cognitive requirements for many jobs are on the rise (Ebbesen, 1990; Goto, 2006; Yukihiro, 1999). Not only are stress levels significantly higher from year to year, but the degree of assistance received from Japanese superiors has seen a recent decline (Shima & Satoh, 2006). Rising incidences of death in Japanese workers from acute heart failure after prolonged high blood pressure, arteriosclerosis or cerebral haemorrhage alerted people to the existence of 'Karoshi' or 'death by overwork', which claims an estimated 10,000 lives each year (Kanai, 2006; Kawahito, 1998). Further, workplace intimidation and lack of support from superiors are among some of the social factors contributing to Japan's high work stress, poor health outcomes and prevalence of work-induced suicide (Meek, 2004; Nakao, Tamiya, & Yano, 2005). In previous studies comparing Japanese workers to employees from the west (i.e. USA), Japanese people consistently reported significantly higher levels of psychological distress and lower job satisfaction (Lincoln & Kalleberg 1990; deFrank, Ivancevich, Schweiger 1988). In understanding work stress and anger on the job, it is important to model relationships in different conditions; here we propose to study anger in samples from potentially different sociocultural contexts (i.e., East and West, collectivist vs individualist) that influence workplace environments, to draw out what is generalisable and specific in the emerging theory of Interpersonal Anger. First we explore possible antecedents to anger.

Effort-Reward Imbalance – an explanation for work stress

The Effort-Reward Imbalance (ERI) model attempts to explain the occurrence of work stress. It proposes that work plays a key role in self-concept, esteem, efficacy, worth and a feeling of belonging, as well as offering the opportunity for achievement and recognition (Siegrist, 1998). ERI theory proposes that employees undertake psychological and physical labour to further the company, and this effort is reciprocated by the organisation financially, psychologically (by boosting the individual's esteem through support and respect from colleagues and supervisors), and by offering job security and the opportunity for advancement. Any perceived imbalance in this reciprocal relationship is a violation of the individual's expectation and results in negative outcomes (Peter & Siegrist, 1999). The foundation of this model is the *social injustice theory*, wherein commonly held societal norms that are violated, resulting in feelings of injustice and thus ERI stress at work (Siegrist, 1998; Peter & Siegrist,

1999). Mental health can be jeopardised by such stress, leading to negative effects like depression, negative self-perception, psychosomatic disorders and overall dissatisfaction with work (Golden & Wiens-Tuers, 2006). Previous research using effort to reward ratios showed that 70% of a Japanese sample reported ERI greater than one, indicating that more effort was expended than rewards received. This ratio was significantly higher than in a comparison sample of Australian workers with ERI greater than one for just 40% of the sample. This significantly elevated risk for Japanese workers warrants additional attention in terms of how it manifests.

Outcomes of stress

The importance of researching stress at work and its influence over workplace health has been highlighted (Marmot, Siegrist, Theorell, & Feeney, 1999; Schnall, Belkic, Landsbergis, & Baker, 2000). Concern has focussed on the notable detrimental personal outcomes of workplace stress, including mental health problems, and also work related outcomes like reduced performance, and increased risk of accidents and absenteeism (Kawakami & Haratani, 1999; Rantanen, 1999; Holmes, 2001). Effort-Reward Imbalance (ERI) in particular has been linked to physical and psychosomatic ailments such as general physical health, musculoskeletal problems, and most dominant in the research, increased rates of cardiovascular and coronary artery disease (for a review, see van Vegchel, de Jonge, Bosma, & Schaufeli, 2005). Effort-Reward Imbalance (ERI) also has significant detriments to the organisation and employers, ranging from reduced productivity to increased rates of sickness absence and turnover, which ultimately affects the company's success (Peter & Siegrist, 1997). Whilst numerous studies have demonstrated the deleterious effects of ERI, only one study has linked such outcomes in a Japanese sample (Irie, Tsutsumi, Shioji, & Kobayashi, 2004). In fact, Kawakami and Haratani (1999) have shown that most other studies investigating work stress in Japan have been conducted with poorer quality measures which have too few items, poor psychometric properties, or little established validation research. Next we turn our attention to interpersonal anger as a probable outcome of work stress.

Interpersonal Anger Theory – the MIDAI

The McLinton Interpersonal Domain-specific Anger Instrument (MIDAI) was created to assess the propensity for anger according to the interpersonal target in one's social environment, specifically anger toward superiors at work, co-workers, subordinates at work,

family members, and strangers (McLinton & Dollard, 2011). It may be used to identify differences in the anger experience toward others according to certain defining features, for example, whether a participant has comparatively more propensity to anger toward their boss at work or to a family member. In a longitudinal study conducted to evaluate the reliability and validity of the MIDAI, population data was obtained from an Australian randomised community sample (McLinton & Dollard, 2011). Participants varied by the degree to which they felt anger toward the behaviours of others in their interpersonal environment according to the target (e.g., family member, superior at work), despite the anger-eliciting behaviour being identical, for example; "How much anger would I feel if a superior at work yells at me?" (McLinton & Dollard, 2011).

In this study we further advance the theory underlying Interpersonal Anger from inductive to deductive theory by testing the propositions generated during its development. The concept of interpersonal anger is grounded in social psychology and the notion that we have numerous filters that influence the way we experience our social world, and according to these, our propensity to anger is different toward each individual (Allport, 1985; Heider, 1958). The two major social psychology principles involved in influencing interpersonal anger are schema theory and attribution theory. In the former, people are bound to evaluate the behaviour of others that negatively affects them (the anger-eliciting behaviours) according to mental frameworks of past experience, or 'schema', which lead to biases in perception (Axelrod, 1973; Taylor & Crocker, 1981). In the case of interpersonal anger, an individual who has been bullied or victimised at work will have developed a schema involving superiors in the workplace, which will affect subsequent appraisal of their behaviour, so we can expect them to attribute a different level of interpersonal anger on the 'superiors at work' MIDAI scale as opposed to the 'co-workers' or 'subordinates' scales. Attribution theory on the other hand influences one's appraisal of the behaviour of others in their environment (Kelley & Michela, 1980). Most notably, fundamental attribution error leads to the attribution of the intent behind the target's behaviour since extraneous factors that might have motivated the behaviour are less salient to the observer (Ross, 1977). For example, one of the MIDAI items asks "how much anger would you feel if a superior at work gave you work at the last minute without considering your other time commitments?" (Item 2). The respondent is more likely to view their superior's behaviour in the context of how it negatively affects them, their plans, and the frustrations caused by it, rather than considering that the superior may not have intended this outcome. Perhaps the supervisor was pressured by another external deadline, or

experienced illness in the family, and therefore needed to delegate to another person. Humans are fundamentally biased not to consider the external influences on other person, which manipulates their perception of behaviour, and thus how one angers toward it. In sum the main psychological mechanisms theorised to underpin Interpersonal Anger experience are explained via schema and attributional bias processes, and the present study will examine the former concerning the schema of their work environment (specifically, stressors therein).

We further theorise that Interpersonal Anger influences other constructs too. Past research has demonstrated that various anger measures affect numerous outcomes, including physical health (e.g., cardio-vascular disease, blood pressure), behaviour (e.g., increased smoking), and personality (e.g., life satisfaction, depression). Of most interest in the present study are behavioural outcomes, and we theorise that raised levels of interpersonal anger toward people in one's life will in fact lead to raised proclivity for aggression or 'outward anger expression' (STAXI anger expression scale, anger-out; Spielberger, 1996). Thus for the present study we intend to test an aspect of the proposed Interpersonal Anger theory, with ERI to be tested as a factor influencing MIDAI, whilst outward anger expression as a behavioural outcome of MIDAI.

An imbalance between perceived efforts invested at work and the rewards received (ERI) leads to increased Interpersonal Anger in the workplace. Work stress has been shown to lead to general feelings of anger, because injustice surrounding effort reward imbalance may lead to frustration, and in turn anger. This is suggested by the Frustration-Aggression Hypothesis wherein stressors experienced in the environment, in this case the work environment, will lead to feelings of anger and propensity to aggress (Dollard, Miller, Doob, Mowrer, & Sears, 1939). We propose:

> *Hypothesis 1*: That there is a positive relationship between ERI and three MIDAI scales in the work domain (superiors, co-workers, & subordinates).

Chronic exposure to work stressors builds a schema for the workplace experience, and it is intuitive to suggest that repeated exposure to such frustrations and the resultant feelings of anger may affect the employee's life in a more pervasive and enduring manner. In fact, it has been observed that long term exposure to a stressful work environment can shape a worker's behaviour patterns and personality development to the extent that individual traits such as 'trait anger' may become more pronounced (Dollard & Winefield, 1998). Recent

studies have substantiated this proposal, finding not only correlations involving workplace stressors and trait anger, but also that work stress can be a predictor of trait anger (Fox, Spector, & Miles, 2001; Smith et al., 2005). The theoretical model of interpersonal anger will be tested in the present study, isolating two aspects of the above factors; effort-reward imbalance (ERI) will be tested for influences on Interpersonal Anger, whilst aggression as indicated by 'outward anger expression' (STAXI expression; anger-out) will be investigated as an outcome of Interpersonal Anger.

Interpersonal anger on MIDAI scales in the work domain leads to higher proclivity to outwardly express anger as conceptualised by the renowned STAXI anger expression (out) scale. The internal experience of anger has been shown to be related to its outward expression (Anderson & Bushman, 2002; Averill, 1983; Frijda, 1986; Geen, 2001; Kinney et al., 2001; Smits & DeBoeck, 2007). We propose:

Hypothesis 2: That the work domain (MIDAI superior, co-workers, and subordinate scales) exhibits a positive relationship with the STAXI Anger Expression (Out) scale.

Spillover

There is evidence that the effects of same-day job stressors may spillover to increased anger expression at home (Bolger, Delongis, Kessler, & Wethington, 1989; Repetti, 1994; Schulz, Cowan, Cowan, & Brennan, 2004; Story & Repetti, 2006). According to the *negative mood spillover model*, job stressors generate negative feelings such as frustration and irritability, which then endure even after returning home, increasing the probability of negative social interactions like marital conflict and aggression (Story & Repetti, 2006). Further, it has been shown that stressors at work on the interpersonal level lead to spillover, in particular the frustrating interpersonal interaction with others during the work day leads to the expression of anger toward spouses (Bakker, Demerouti, & Dollard, 2008). Beyond even same-day job stressors, there exists strong evidence to suggest that negative emotions in the workplace environment (work domain) 'spillover' into the family domain for both working men and women (Larson & Richards, 1994; Matjasko & Feldman, 2006). This research has measured the incidence of expressed anger and aggression in family life (Allan & Gilbert, 2001; Goos & Silverman, 2002), and it has been proposed that for every instance of anger expression there are likely to be many more cases of unexpressed anger (Averill, 1983;

Deffenbacher, Oetting, Lynch, & Morris, 1996). The anger may not be expressed in the workplace for numerous reasons, including the conscious or unconscious desire to avoid negative consequences (Averill, 1983), due to the workplace requirement to manage emotions which is commonly referred to as emotional labour (Dollard, Dormann, Boyd, Winefield, & Winefield, 2003). Another possibility is the tendency to reduce anger expression when in the presence of others of higher social rank which is often the case in the workplace (Allan & Gilbert, 2001). These 'bottled up' angry feelings are then carried to the home environment, and even simply work stress from longer work hours has been linked to this negative work-family spillover (Schor, 1991). Previous studies that have used specifically ERI to measure work stress have found it to be associated with anger outcomes. Research by Smith and colleagues (Smith, Roman, Dollard, Winefield, & Siegrist, 2005) was the first to explore this relationship, and found that ERI gave rise to transient feelings of anger ('state' anger), whilst an enduring predisposition to anger ('trait' anger) played a mediating role in the relationship between ERI and reports of cardiovascular disease symptoms. Further, two other studies on anger and ERI supported the relationship between the latter and angry ruminations on the road (or 'road rage') in Australia (Hoggan & Dollard, 2007) and in Japan (McLinton & Dollard, 2010). This relationship remained robust despite controlling for demographic variables. This research was pioneering in two respects. It provided the first evidence of the link between ERI and anger, and secondly it demonstrated the manifestation of ERI as anger in a non-work related domain. In other words evidence was found supporting the notion of a spillover effect of ERI. The present study aimed to extend this research by examining further the link between ERI and anger, and the spillover of ERI to the family domain.

High ERI has been shown to relate to proclivity to anger in a driving situation, demonstrating this spillover of anger into other domains of life. We expect that ERI stress at work leads to a spillover effect of increased Interpersonal Anger toward family members at home. We propose:

> *Hypothesis 3:* That there is a positive relationship between ERI and anger toward family members as assessed on the MIDAI family scale.

As per the theory mentioned previously in Hypothesis 2, the internal anger experience has been shown to lead to outward expression (Averill, 1983; Novaco, 2007; Smits & De Boeck, 2007). This leads to the proposal that:

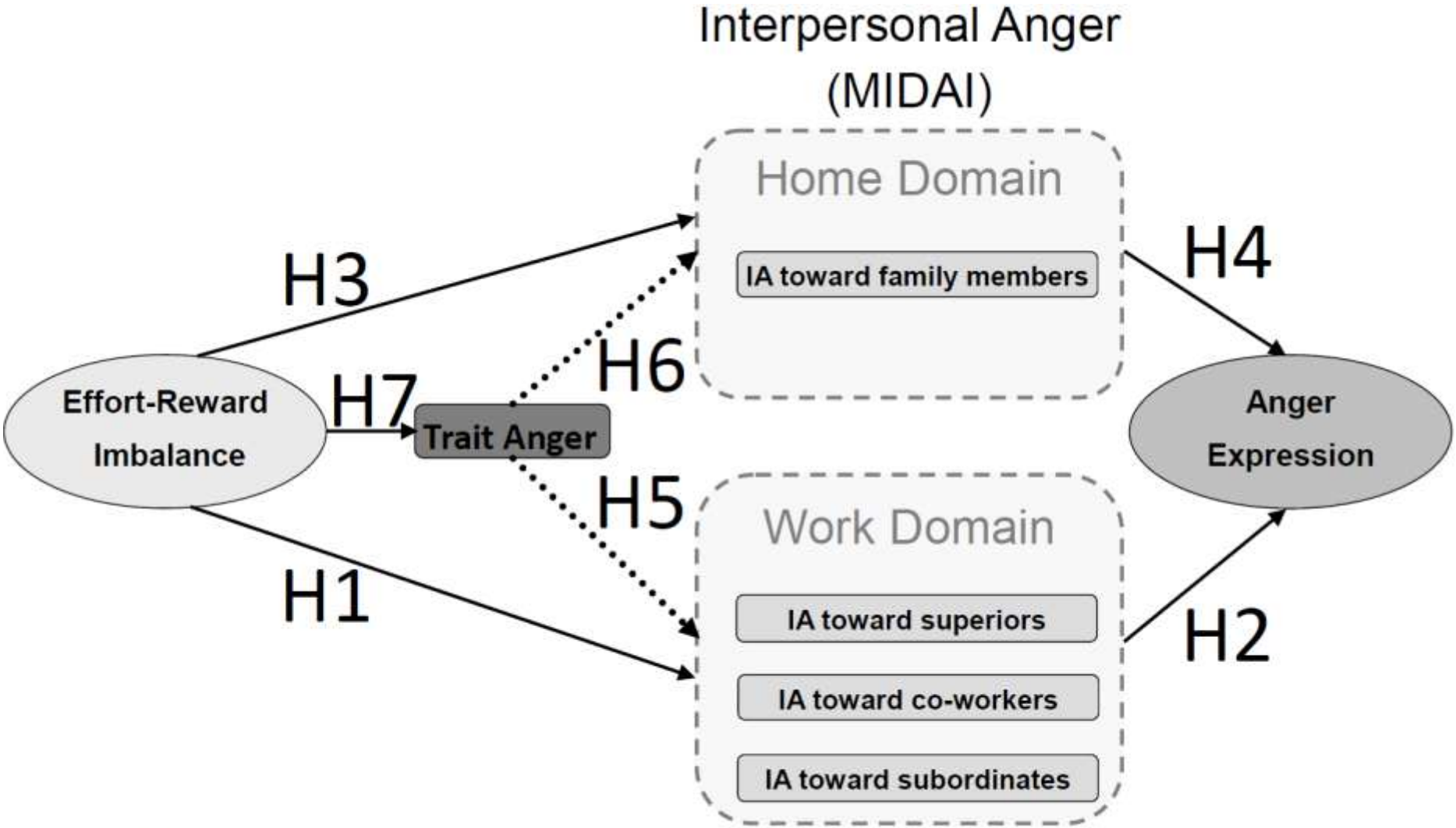

Figure 1

M1: Model for the spillover effect of Effort-Reward Imbalance on Interpersonal Anger in the Work and Home Domains

Hypothesis 4: That the home domain (MIDAI family scale) is positively related to outwardly expressed anger as assessed by the STAXI Anger Expression (Out) scale.

The individual characteristic of predisposition to anger in general was suggested to mediate the relationship between ERI and anger in the MIDAI scales. Past research has demonstrated that ERI spills over into other forms of anger in other domains such as when driving if the individual has a trait proclivity to anger in general (McLinton & Dollard, 2010; Hoggan & Dollard, 2007). We propose:

Hypothesis 5: That the relationship between ERI and anger on the MIDAI in the work domain (superior, co-workers, and subordinate scales) is mediated by trait anger (STAXI), and;

Hypothesis 6: That the relationship between ERI and anger in the home domain (MIDAI family scale) is mediated by trait anger (STAXI).

Last, in order to establish a mediation pathway, the ERI needs to be related to the mediator (trait anger). Previous research has shown the direct effects of ERI on trait anger when conducting mediation models with other measures of anger (Hoggan & Dollard, 2007; McLinton & Dollard, 2010), which suggests evidence for the proposition:

Hypothesis 7: That there is a positive relationship between ERI and trait anger.

The present work will endeavour to discover more about anger in an interpersonal context, and how it may be a negative behavioural outcome of chronic stressors in the workplace. Two different samples have been used to provide different contexts in which to model the work and anger experience. The proposed model for testing is presented on the previous page (Figure 1). The purpose of testing this effect in both countries is to validate the existence of the ERI-MIDAI-anger expression relationship in two samples with a distinct cultural divide, using multi-group modelling, and longitudinal data in the Australian sample.

5.2 Publication Three: Method

Sample and procedure

Identical methods of data collection were employed to gather participants in Australia and Japan and to generate two random stratified community samples. The doorknock method was used on randomly generated suburbs, streets, and houses across metropolitan Adelaide (South Australia, Australia) and Nagoya (Aichi Prefecture, Japan). Rather than simply a mail-out, a personal introduction was made to each potential candidate by the primary author which resulted in a good response rate from both countries (Australia 67%; Japan 78%). Overall similar numbers were achieved in both samples, Australia N = 301 (male 128, female 173) and Japan N = 300 (119 males, 181 females). Whilst the selection of suburbs was random, care was still taken to ensure fair inclusion of low, middle and high socio-economic status areas according to the latest census data by stratifying the sampling frame of suburbs initially selected by socio-economic status (*Australian Bureau of Statistics*: McGrath, 2008; *Japan Statistical Yearbook*, 2008). This yielded a roughly equal distribution in both samples, with numbers in the Australian sample divided according to low (n = 112), middle (n = 91), and high (n = 98) socio-economic status, and suburbs in Japan consisting of low (n = 109), middle (n = 96), and high (n = 95). General demographics were comparable in both the Australian sample (M = 42 years, SD = 17), and the Japanese sample (M = 43 years, SD = 16). In the Australian study, details were included about a follow-up study to be conducted 4 months later, and participants who wished to be included were provided a detachable slip for address details that were subsequently removed from their responses upon receipt. The second wave saw 68% of the original sample participate providing longitudinal data (N = 204, male 87, female 117). The socio-economic distribution was preserved in the longitudinal sample (low n = 76, middle n = 58, high n = 70). A drop-out analysis using an independent samples t-test (age) and chi-square test (SES) comparing demographic variables between the group retained in wave 2 and the drop-out group revealed that the demographic variables did not differ significantly between the two waves of Australian data. The project had full ethics approval from the University of South Australia Human Research Ethics Committee.

Measures

The questionnaire consisted of; the Effort-Reward Imbalance scale (6-item Effort scale, and 11-item Reward scale; ERI: Siegrist, 1996); the State-Trait Anger Expression

Inventory Anger Expression 'Out' (STAXI: 8-item scale; Spielberger, 1996), and the McLinton Interpersonal Domain-specific Anger Instrument (each 6-item MIDAI Short form for anger toward Family members, Superiors at work, Co-workers, and Subordinates at work: McLinton & Dollard, 2011). Answers to the ERI and STAXI scales are made on a Likert response format ranging from *1* (strongly disagree) to *4* (strongly agree). Responses to the MIDAI scales ask participants to rate the amount of anger they would feel in each situation on a five-point ranging from *0* (none at all) to *4* (very much). A Japanese version of the questionnaire distributed in Japan was translated by the primary author and then confirmed by a professional translator. Following this it was piloted on three native speakers independent from the study in order to identify readability and language nuances.

Analysis strategy

Data from both samples were screened for normality and outliers. Descriptive statistics were obtained for key variables of interest using SPSS. For more advanced analyses the program AMOS 17 (Analysis of Moment Structures: Arbuckle, 2005) was employed for Structural Equation Modelling (SEM), in order to test the hypothesised relationships proposed in the Interpersonal Anger theoretical model presented in Figure 1. We compared a number of competing models and tested the progressive model fit using the chi-square difference test. We used a total of five absolute fit indices (Joreskog & Sorbom, 1986): the chi-square (χ^2), Comparative Fit Index (CFI), Goodness-of-Fit index (GFI), Adjusted Goodness-of-Fit Index (AGFI), and the Tucker-Lewis index (TLI). Values greater than 0.90 are acceptable for GFI, CFI and TLI, whereas AGFI being a more conservative measure of fit is considered acceptable from 0.80 and higher (Byrne, 2001; Bollen & Long, 1993). We followed the well-supported convention of comparing multiple goodness-of-fit indices to provide a cohesive view of model acceptability (Bollen & Long, 1993).

To test the theoretical model, particularly the mediation process we first tested the null hypothesis model (M0), followed by a test of the proposed mediation model (M1) as shown in Figure 1 (page 173) which simultaneously included all Hypotheses 1 through 7. Mediation which is specifically addressed in H5 and H6 is indicated if Baron and Kenny's (1986) four steps are supported; 1) ERI significantly correlates with MIDAI indicating that an effect exists that is worth investigating; 2) ERI correlates with the mediator, trait anger; 3) trait anger relates with MIDAI in a regression controlling for ERI, and; 4) full mediation of trait anger in the ERI-MIDAI relationship is confirmed if the direct effect of ERI on MIDAI is

reduced to zero in Step 3. If this condition is not met, it indicates partial mediation rather than full mediation. Translating these requirements to the model tests as described below, step 1 is confirmed in a direct effects model; step 2 and 3 confirmed in a fully mediated model; and step 4 confirmed in a partial mediated model.

We also investigated alternative models. We tested effects at work using a separate model for the work domain and progressively investigated a model of direct effects (M2), a full mediation model (M3) and a partial mediation model (M4). The direct effects model M2 examined the hypotheses H1 and H2 using the paths: ERI-MIDAI(work), and MIDAI(work)-anger expression (out). Recall that the study is testing Interpersonal Anger theory wherein MIDAI Scales also have a direct effect on outward anger expression, hence the inclusion of the MIDAI-anger expression (out) direct path in every model. The full mediation M3 tested H2, H5, and H7 using the paths: ERI-trait anger, trait anger-MIDAI(work), and MIDAI(work)-anger expression(out). The final work model for partial mediation M4 tested H1, H2, H5, and H7 using the paths: ERI-trait anger, trait anger-MIDAI(work), ERI-MIDAI(work), and MIDAI(work)-anger expression (out).

We examined progressive models for the home domain with a model of direct effects (M5), a full mediation model (M6) and a partial mediation model (M7). The direct effects model M5 examined the hypotheses H3 and H4 using the paths: ERI-MIDAI(family), and MIDAI(family)-anger expression (out). The full mediation M6 tested H4, H6, and H7 using the paths: ERI-trait anger, trait anger-MIDAI(family), and MIDAI(family)-anger expression (out). The final work model for partial mediation M7 tested H3, H4, H6, and H7 using the paths: ERI-trait anger, trait anger-MIDAI(family), ERI-MIDAI(family), and MIDAI(family)-anger expression (out).

To further test indirect effects, we used bootstrapping because of the expected non-normal distribution of the product of the effects of the paths that comprise it (Hayes, 2009; Preacher, Rucker, & Hayes, 2007). We used 95% confidence intervals (CI), and these were significant if the interval did not include the value of 0. Further, we conducted M3 and M6 using multi-group analysis in order to investigate whether the final full mediation models differed between the Australian sample and the Japanese Sample. If there is no significant improvement between the constrained and unconstrained models, it can be assumed that the model is equivalent and thus invariant between the two culturally divergent samples.

5.3 Publication Three: Results

General Descriptives

Descriptive statistics for waves 1 and 2 Australian data and Japanese cross-sectional data are presented below (Table 1).

Table 1

Means and Standard Deviations for ERI, MIDAI and STAXI for Working Adults in Adelaide (Australia) and Nagoya (Japan)

Variable	Australian Sample				Japanese Sample	
	Wave 1 (n=301)		Wave 2 (n=205)		(n=300)	
	M	*SD*	*M*	*SD*	*M*	*SD*
Effort-Reward Imbalance (ERI)	0.98	0.36	1.07	0.37	1.19	0.33
Interpersonal Anger (MIDAI) toward						
Family members	13.85	5.23	14.46	4.71	14.77	4.62
Superiors at work	15.18	5.86	15.66	5.02	12.91	4.55
Co-workers	14.99	5.70	15.30	5.10	15.47	4.61
Subordinates at work	15.22	5.53	15.26	4.79	15.15	4.60
State-trait Anger Expression Inventory (STAXI)						
Trait Anger	17.55	5.04	17.40	4.78	19.41	5.07
Anger Expression Out	14.19	3.51	15.38	3.79	13.36	3.71

An independent samples t-test was conducted to identify whether the mean Japanese ERI scores were significantly higher than in the Australian samples. The Japanese sample scored higher ERI than both the Australian sample wave 1 with $t(520) = 6.95$, $p < .001$, and the Australian sample wave 2, $t(444) = 3.55$, $p < .001$. Interestingly, a paired samples t-test also revealed the Australian wave 2 ERI to be significantly higher than ERI reported in wave 1, $t(164) = -5.92$, $p < .001$. In Australia 40% (97 people) were at risk with ERI > 1 ($M = .98$). This is identical to what was found in two previous ERI tests in an Adelaide metropolitan community sample (Hoggan & Dollard, 2008; Smith et al, 2005). The former found a mean of .99 whilst the latter 1.01, and this consistency between studies of ERI further validates our our sampling. Previous research by the present authors conducted in the same city (Nagoya, Japan) found a mean ERI of 1.12 with over 70% of the sample at risk of stress with an ERI exceeding one (McLinton & Dollard, 2010). The present study found a comparable 77% at risk (213 people).

In an independent samples t-test, the Japanese sample showed significantly higher trait anger than the Australian sample (wave 1), with $t(587) = 4.47$, $p < .001$. Despite elevated levels of anger, the Japanese sample displayed significantly lower outward anger expression (STAXI anger expression out) than the Australian sample (w1), $t(586) = 2.79$, $p < .01$. Whilst in some cases our Japanese participants hold a stronger propensity to feel anger when compared with Australians as expressed by the trait anger measure, they are less likely to express it overtly.

Structural Equation Modelling. Measures of goodness-of-fit in successive models are presented in Table 2 overleaf for ease of reference.

As expected the null hypothesis model (M0) demonstrated poor fit in both samples with $\chi^2(42) = 1816.77$ *ns* (Australia), and $\chi^2(41) = 1620.89$ *ns* (Japan), and similarly poor fit across other goodness-of-fit indicators, none of which achieved acceptable fit (see analysis strategy for cut-off values). We then tested the mediation model (M1) that included paths for both the home and work domains as proposed in Figure 1, and it was found to be a significant improvement over M0 in both Australia $\Delta(17)\ \chi^2 = 1320.71$, $p < .001$, and in Japan $\Delta(18)\ \chi^2 = 1113.44$, $p < .001$. However according to other goodness-of-fit indices the M1 was not ideal in either the Australian sample or in Japan, with all four other goodness of fit indices (CFI, GFI, AGFI, & TLI) falling short of acceptable values.

The fit of M1 improved when considering two different domain models; work and home domain. Thus M2, M3, and M4 represent models for the work domain (H1, H2, H5, H7), testing the relationship of ERI on MIDAI scales at work through trait anger (via direct effects M2, fully mediated M3, and partially mediated M4), and then MIDAI scales at work on Anger Expression (Out). The results of the final model with best fit (M3) are presented in Figure 2 (see page 181).

The M2 model was tested in both the Australian and Japanese samples separately (Figure 2), and both demonstrated the direct effect between ERI and MIDAI(work) supporting H1, and direct effect between MIDAI(work) and anger expression(out) supporting H2. The mediation effect of trait anger between ERI and MIDAI anger at work, was then tested with M3 and M4, and these both supported H5. The mediation models M3 and M4 both showed ERI's significant relationship with trait anger, supporting H7.

Table 2.
Comparison of Alternative Models

Model	χ^2	*df*	CFI	GFI	AGFI	TLI	CMIN/*df*	Δ(*df*), χ^2	Comparison
Australia									
M0. Null model	1816.77	42	.00	.43	.24	.00	43.26		
M1. Partial mediation model (work & home)	496.06	25	.74	.79	.47	.49	19.84	(17), 1320.71***	M1 vs M0
Work Domain Models									
M2. Direct effect model	281.62	24	.80	.87	.70	.58	11.74		
M3. Fully mediated model	211.12	23	.90	.90	.73	.70	9.18	(1), 70.50***	M3 vs M2
M4. Partial mediation model	209.08	22	.90	.90	.70	.66	9.50	(1), 2.04 *ns*	M4 vs M3
Home Domain Models									
M5. Direct effect model	203.11	24	.62	.86	.79	.78	8.46		
M6. Fully mediated model	130.63	23	.93	.93	.86	.82	5.68	(1), 72.48***	M6 vs M5
M7. Partial mediation model	129.40	22	.93	.93	.83	.82	5.88	(1), 1.23 *ns*	M7 vs M6
Japan									
M0. Null model	1620.89	41	.00	.48	.30	.00	39.53		
M1. Direct effect model	507.45	23	.72	.80	.53	.55	22.06	(18), 1113.44***	M1 vs M0
Work Domain Models									
M2. Direct effect model	279.92	23	.78	.86	.75	.62	12.17		
M3. Fully mediated model	199.88	22	.89	.90	.79	.73	9.09	(1), 80.04***	M3 vs M2
M4. Partial mediation model	198.27	21	.89	.90	.76	.71	9.44	(1), 1.61 *ns*	M4 vs M3
Home Domain Models									
M5. Direct effect model	165.31	23	.62	.89	.83	.85	7.19		
M6. Fully mediated model	99.90	22	.94	.97	.91	.90	4.54	(1), 65.41***	M6 vs M5
M7. Partial mediation model	99.38	21	.94	.97	.89	.89	4.73	(1), 0.52 *ns*	M7 vs M6

Note. Australia $N = 301$, Japan $N = 300$. CFI = comparative fit index; GFI = goodness-of-fit index; AGFI = adjusted goodness-of-fit index; TLI = Tucker–Lewis index; CMIN/*df* = minimum discrepancy divided by the degrees of freedom; M = model; *** = $p < .001$.

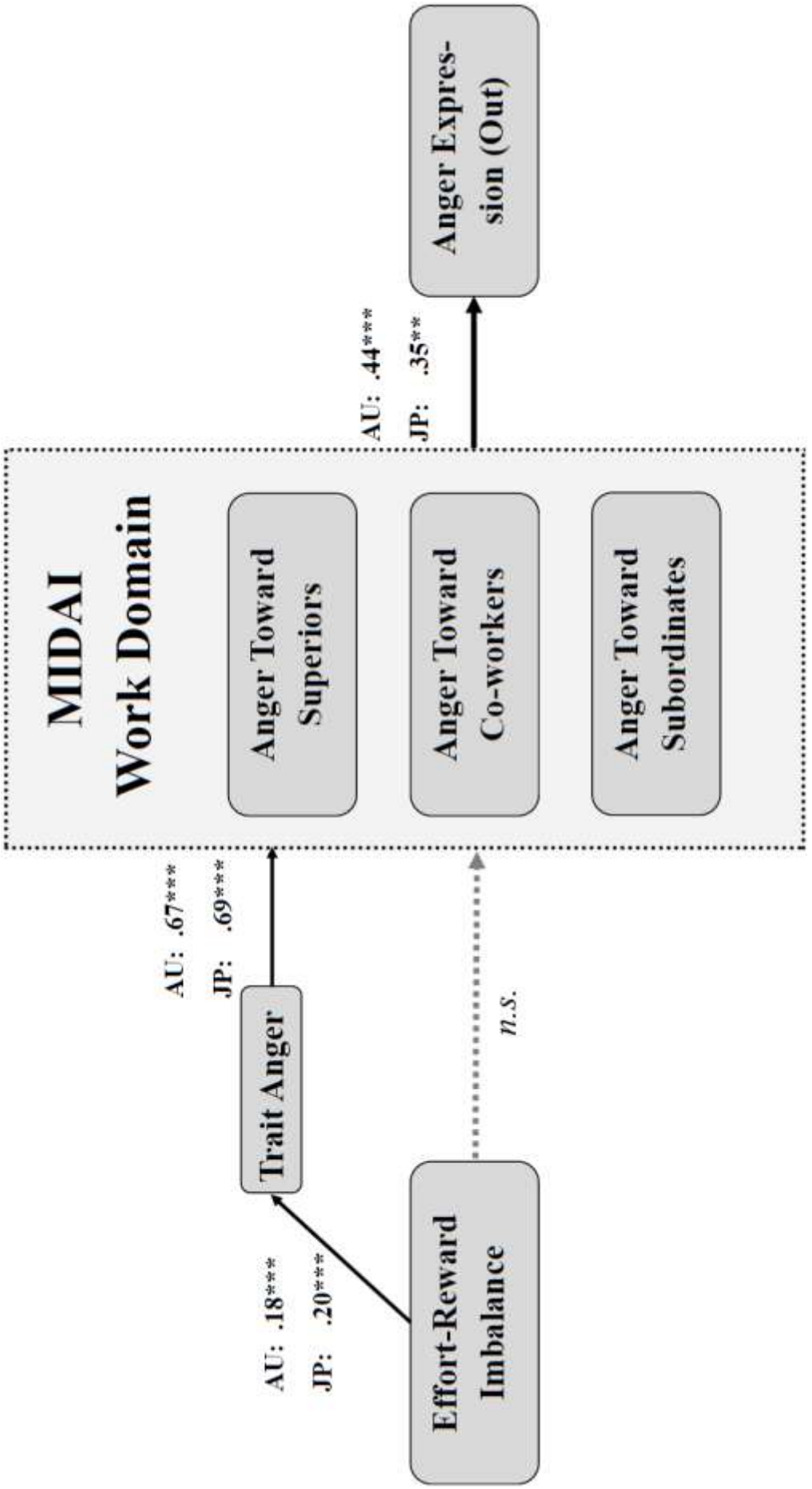

Figure 2

M3: Effort-Reward Imbalance and its influence on Anger toward others in the work domain (MIDAI) and anger expression.

The M3 (Australian sample) model of full mediation exhibited a significant improvement from the M2 model of direct effects (see Table 2 presented previously on page 180), and M4 was tested to see if partial mediation proposed a better solution. M4 did not exhibit significantly better fit than M3, so the full mediation model (M3) was accepted due to it being a more parsimonious explanation. M3 displayed good fit on χ^2, CFI and GFI, with AGFI approaching good fit. However TLI indicated poorer fit, underlining the importance of considering multiple fit indices for an overall view of the model (Bollen & Long, 1993). In Australia, M3 also displayed a significant improvement over a theoretical null model with $\Delta \chi^2$ (15) = 1256.76, $p < .001$. Further, in a test of indirect effects in the Australian sample, ERI demonstrated a significant indirect effect on outward Anger Expression through its effect on the work domain (MIDAI superiors, co-workers, and subordinates scales), with CI 95% at LL= .007, UL= .096, $p < .05$.

Model fit for the full mediation model M3 was similar in the Japanese sample as it demonstrated a significant improvement over the direct effect model M2 (see Table 2). M4 was suggested for partial mediation but it did not display a significant difference from M3 suggesting that the full mediation model (M3) be accepted as the explanation of effects is more parsimonious. The χ^2, CFI, GFI and AGFI values for M3 in Japan all suggested good fit or approaching good fit, whilst the last (TLI) was problematic similar to the Australian sample. Further, just like the Australian sample, the Japanese M3 displayed a significant improvement over its theoretical null model version, with $\Delta \chi^2$ (12) = 1153.57, $p < .001$. The same indirect effect was found in Japan from ERI to anger expression through MIDAI work domain scales; CI 95% at LL= .030, UL= .105, $p < .01$.

The full mediation model M3 was compared between the Australian and Japanese samples simultaneously using a multi-group analysis, with the constrained model being labelled as M8, and unconstrained as M9 (see Table 3). Results revealed no significant difference between the Australian and Japanese samples (M8 versus M9), $\Delta \chi^2$ (3) =4.19 *ns*, suggesting a commonality in the ERI-Interpersonal Anger relationships between both cultures.

Table 3.
Comparison of Partial Mediation Models for Work and Home Domain in a Multi-group Analysis of Australia and Japan

Model	χ^2	*df*	CFI	GFI	AGFI	TLI	CMIN/*df*	$\Delta(df)$, χ^2	Comparison
Work Domain									
M8. Constrained	212.27	18	.90	.92	.79	.67	11.79		
M9. Unconstrained	208.08	15	.90	.92	.80	.67	13.87	(3), 4.19 *ns*,	M8 vs M9
Home Domain									
M10. Constrained	131.39	17	.93	.95	.90	.90	7.73		
M11. Unconstrained	127.41	14	.93	.95	.90	.89	9.10	(3), 3.98 *ns*,	M10 vs M11

Note. Australia $N = 301$, Japan $N = 300$. CFI = comparative fit index; GFI = goodness-of-fit index; AGFI = adjusted goodness-of-fit index; TLI = Tucker–Lewis index; CMIN/*df* = minimum discrepancy divided by the degrees of freedom; M = model; *** = $p < .001$.

In relation to the home domain model, M5, M7, and M7 models testing the home domain hypotheses (H3, H4, H6, H7), we considered the relationship of ERI on the MIDAI family scale through trait anger (via direct effects M5, fully mediated M6, and partially mediated M7), which is then related to Anger Expression (Out). The best fitting model was the full mediation model, (M6) and results of standardized regression weights are shown is presented in Figure 3 below.

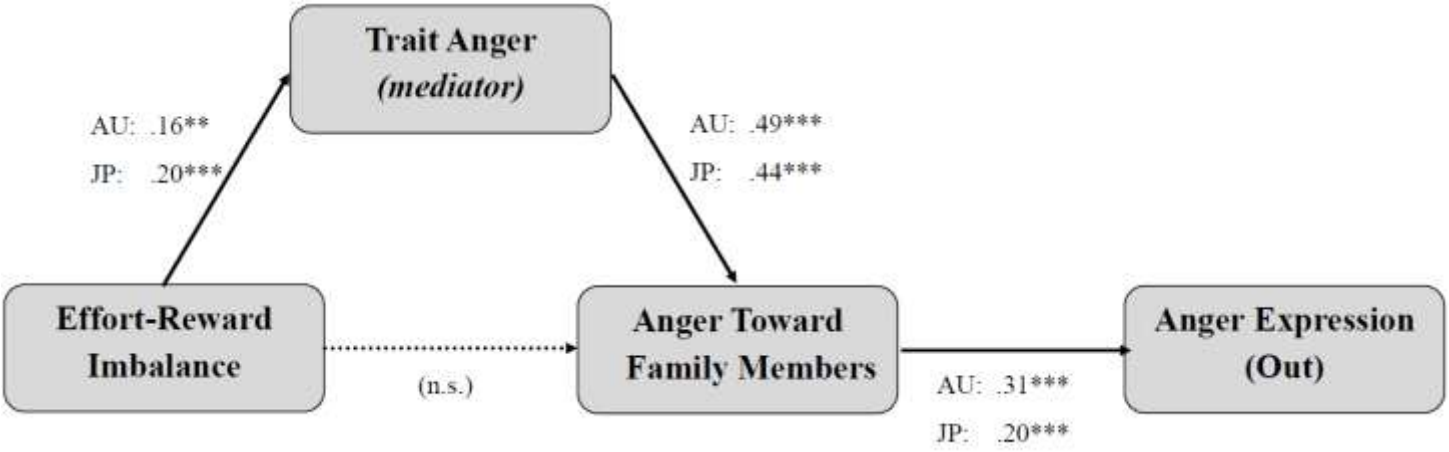

Figure 3

M6: Effort-Reward Imbalance and its spillover into the family domain (Australia and Japan)

Both Australian and Japanese samples were used to test M5 for the home domain (Figure 3) in separate SEM analyses, and both demonstrated the direct effect between ERI and MIDAI Family Scale (home) supporting H3, and direct effect between MIDAI Family (home) and anger expression(out) supporting H4. In M6 and M7 the mediation effect of trait anger between ERI and MIDAI Family Scale (home) was found, which supported H6.

As per Table 2, M6 in Australia showed that the full mediation model was a better solution than the model of direct effects (M5), and the partial mediation model (M7) showed no significant improvement over M6. This lead to acceptance of the more parsimonious M6 as the superior model. M6 in the Australian sample demonstrated good fit with χ^2, CFI and

GFI, which was similarly represented in AGFI and TLI which both approached acceptable fit. The Japanese M6 model also displayed consistently good fit in all those five indicators. The M6 for Japan and Australia both displayed a significantly better fit than their theoretical null model counterparts, with $\Delta \chi^2$ (18) = 989.47, $p < .001$ in Australia, and $\Delta \chi^2$ (15) = 1056.48, $p < .001$ in Japan. Trait anger as a mediator in the model suggests that effort-reward imbalance at work can spillover into the family domain if there is a conduit via a natural tendency for anger. In fact, ERI demonstrated a significant indirect effect on outward Anger Expression through its effect on interpersonal anger at home (MIDAI Family Scale), an effect that was consistent in both the Australian sample (CI 95% at LL= .005, UL= .089, $p < .05$), and the Japanese sample (CI 95% at LL= .016, UL= .112, $p < .05$).

Next, M3 for the work domain and M6 for the home domain were tested in multi-group analyses to compare their fit across the Japanese and Australian samples. First, for the work domain a multi-group analysis comparing the fit of the full mediation model (M3) the constrained model was labelled M8 and the unconstrained M9 (see Table 3 on page 183). No significant difference was found between M8 and M9, $\Delta(3) \chi^2 = 4.19$ *ns*, which suggests that the model fits in both culturally distinct samples. Next, for the home domain the full mediation model M6 was tested with the constrained model labelled M10 and the unconstrained M11. Again, with no significant difference between them, $\Delta(3) \chi^2 = 3.98$ *ns*, it indicates that the model represents an invariant phenomenon across both Australia and Japan.

In the final tests of relationships in the models, both MIDAI family anger and MIDAI toward others in the work domain in the fully mediated models M3 and M6 exhibited significant additional direct effects on outward anger expression, supporting H2 and H4, and the notion that the internal interpersonal anger experience fuels the external expression of it. Also, using longitudinal data from wave 1 and wave 2, in M6 the ERI variable from the first wave was found to significantly predict the trait anger mediator in the second wave (.25***), and demonstrated a significant indirect effect in the resulting wave 2 outcomes of MIDAI Family Anger (95% CI LL= .020, UL= .202, $p < .05$) and in STAXI Anger Expression Out (95% CI LL= .004, UL= .061, $p < .05$).

Longitudinal data was further used to trial M4 however the three areas of interest demonstrated significant stability over time (ERI .75, MIDAI .89, and outward anger expression .89). The latter are considered traits, however ERI displayed abnormally high stability, possibly due to the short, four-month testing interval. This became problematic since

without a change over time, variability in prediction was reduced. We tested whether ERI Time 1 would predict MIDAI or anger expression Time 2 but no significant relationships were found. Further, relationships between the other strongly related variables were removed in order to reduce the amount of variance that was consumed by these stronger relationships, but still no significant relationship could be found from the ERI Time 1 and the outcomes at Time 2. However, all the MIDAI scales for the work domain in Time 1 exhibited an indirect effect on outward anger expression at Time 2, with CI 95% at LL= .087, UL= .328, $p < .05$, indicating that interpersonal anger at work has a significant lagged influence over overt anger expression. Further, this effect was also found from Time 1 MIDAI family scale to Time 2 outward anger expression, CI 95% at LL= .060, UL= .263, $p < .05$, suggesting that interpersonal anger toward close others in the home domain is also a lagged predictor of anger expression over time.

5.4 Publication Three: Discussion

The present study further investigated anger in an interpersonal context, building on theory suggested in its seminal works. Most importantly, it was found that interpersonal anger is not only a negative behavioural outcome of chronic stressors in the workplace resulting from ERI, but it in turn influences the outward expression of anger. H1 and H3 were supported as ERI had a direct effect on the MIDAI scales for either the work or family domains, however support for H5 and H6 offered a far stronger argument that the ERI-MIDAI relationship is better conceived as being meditated by trait anger. Although a direct relationship does exist, the effect of ERI is an indirect influence on MIDAI anger in both the home and work domains through the mediating influence of trait anger. This suggests that stress resulting from ERI may only influence interpersonal anger toward others in the workplace if the individual already holds general anger inclinations as a personality trait. In order to facilitate mediation, ERI exhibited a direct effect on trait anger supporting H7 in both the work domain (M3) and home domain (M6) models. Last, both H2 and H4 were supported, with the MIDAI family scale and the three MIDAI scales in the work domain (superiors, co-workers, and subordinates) having a direct relationship with outward anger expression on the STAXI. Further, the hypotheses were supported in both Australia and Japan, and a multi-group analysis reveals that the relationships may be invariant across cultures, suggesting the

possibility of a global phenomenon. The indirect relationship between ERI and MIDAI family anger and anger expression was significant in both cross-sectional and in longitudinal data analysis, indicating that an imbalance in efforts and rewards at work plays a causal role in persistent feelings of anger toward family members, and subsequent expression of that anger.

The removal of trait anger from the model invalidates the relationship between ERI and MIDAI family anger, suggesting that individual dispositions in anger proclivity influence the spillover of stress from the workplace into anger in the home environment. Further, with anger toward family members on the MIDAI representing a strong predictor of outward anger expression, the suggestion that interpersonal anger may manifest as acts of interpersonal aggression is supported. This is also consistent with the transition from anger toward others in the workplace to anger expression. Interestingly, the relationship between each interpersonal anger construct and anger expression is lower in the Japanese sample when compared with Australia, suggesting that interpersonal anger may not be such a strong predictor, perhaps due to a cultural inclination for the withholding of overt anger expression.

Overall one of the most notable findings is the support for the notion of negative spillover from the workplace into the family domain. It was found that ERI displayed a significant indirect effect on outward anger expression when tested through the anger scales. Previous studies have found a similar effect from same-day job stressors to anger and conflict in the home, but our research adds to the support for the notion that chronic work stress at work (resulting from ERI) can result in persistent anger in the household, and even the general tendency to express it overtly. Of immediate interest in the development of the MIDAI is this consistent support given for the influence of MIDAI scales on the outward expression of anger. It has been suggested that the link between anger and aggression is not as clear as once hypothesised, and in its development questions arose as to the utility of developing the MIDAI if it could only concern internal processes rather than actual influence on the outside world. However the present study has demonstrated that not only is the internal anger experience related to the over expression if it, but that the relationship is consistently strong in the Australian sample, even over time. With our measures of target-specific interpersonal anger predicting outward anger expression and the well-established notion that the vast majority of anger is directed at others in a social environment, the MIDAI presents a unique opportunity to identify anger precursors to overt interpersonal aggression, which may include expression of anger toward family members (domestic violence, child abuse),

expression of anger toward co-workers (workplace harassment, victimisation), and toward subordinates (workplace bullying).

Not only are negative outcomes spilling over into other domains but a notable finding is that stress outcomes within the work domain include interpersonal anger toward superiors, co-workers and subordinates. It is logical to suggest that these anger outcomes on the job may be detrimental in the workplace environment seeing as it has been established that anger in itself (without even outward expression) has numerous negative consequences. The presence of such angry ruminations in management may lead to a loss of capital through clouded judgement and poor planning. The company may see a reduction in productivity and an increase in turnover due to frustrated employees, along with an increase in risk taking behaviours that may have especially dire consequences in dangerous work environments such as construction sites. The key however is the discovery of interpersonal anger in the work domain also leading to overt anger expression style. This not only suggests that those stressed at work will feel anger toward others in the workplace, but also that they may act out this aggression with significant consequences to the other employees and the company. Workplace conflict may manifest in verbal abuse, psychological harassment, victimisation or bullying, and even as far as the concept of the 'office meltdown' when pent-up unexpressed rage is finally released. The detrimental outcomes of anger and its role as an underpinning factor for overt aggression make it an important area for research, and the results of the present study indicate that interpersonal anger and the MIDAI play a significant role in the stress-anger expression relationship.

Cultural differences

In selecting both Japan and Australia we aimed to not only look at the cultural differences between the work and anger relationships, but also the commonalities between samples. One notable difference was the sheer proportion of workers at risk of stress from a perceived imbalance in efforts invested and rewards received (ERI). Finding two in five Australians to be at risk of stress (a number which has been consistently replicated in previous studies) is already a considerable and unacceptable level for a country which values its relaxed work atmosphere, but to see over three-quarters of Japanese participants in the same situation indicates the staggering consequences of their notoriously unhealthy work environment. Another difference is the slightly lower strength of the relationship between MIDAI anger and its expression, indicating that although the link exists, Japanese people are

less likely to express their anger outward. Nevertheless, despite vast differences in workplace culture and stress risk, a common link was found between ERI, MIDAI scales, and anger expression in both Japan and Australia. Observing support for the same relationship in the anger experience consistently across two countries with a vast cultural divide both in work environment and general social-cultural norms may support the existence of an underlying pervasive global phenomenon.

Theoretical and Practical Implications

Results have further highlighted that negative outcomes of work stressors can be found in the workplace are not confined therein. It also draws attention to work and life wellbeing by underlining the importance of workplace interventions to reduce stress and the resultant spillover of negative behavioural consequences such as anger outside the workplace. In terms Interpersonal Anger Theory, results support for the validity of the influence of experience on levels of the interpersonal anger traits, and also that it results in behavioural outcomes, namely anger expression. The most notable support for MIDAI development it the consistent ability to predict outward anger expression from MIDAI scales for anger toward a variety of different targets. It is possible that in the field of family counselling the MIDAI will provide an easy to administer self-report measure of interpersonally directed anger which may serve as an indicator of the precursors of future aggressive behaviours such as spousal abuse, domestic violence and bullying.

Limitations and Future Research

A major limitation of the present study was spacing only a 4 month interval between waves of data collection in the Australian sample. This limited our findings in longitudinal SEM analyses as the variables of interest were all highly correlated between the first and second waves. Whilst this is expected for the traits like MIDAI and STAXI anger, ERI did not see significant enough variation between waves to elucidate the effect of different work-stress levels on resulting anger. Whilst previous studies have demonstrated that 4-month intervals between waves are valid for data collection, future MIDAI research will employ longer intervening periods of time to further investigate longitudinal relationships. Another point of interest is that the Australian second wave displayed a higher ERI risk percentage than the 40% found in the baseline first wave data. It is rationalised that a response bias exists in the smaller cohort of participants who decided to participate in the second wave. Those who

continued to participate may have been experiencing poor job conditions and stress which lead them to find the opportunity to discuss these in the study cathartic, or even a means to implement change in their situation. This retention of only those with high ERI in the second wave may have influenced our longitudinal findings and so should be interpreted with caution.

Conclusions

Anger outcomes in specific areas of the human anger experience can result from a perceived imbalance between extrinsic efforts and job rewards. Further, these interpersonal anger outcomes are not solely linked to the workplace but can spillover into other areas of life like the family domain, and may even result in outward anger expression. Cultural differences exist in the degree of anger felt toward others according to their relative relationship, as do differences in the strength of the link between ERI work stress and interpersonal anger, and in the outward manifestation of that anger. The utility of the new MIDAI scales is evident, and the present study has further illuminated a specific aspect of the human anger experience and how it relates to different life domains.

5.5 Publication Three Supplements

5.5.1 Personal Reflection

RDQ 6 – Communicates effectively: *Throughout the PhD research I have been eager to report my findings in peer-reviewed journal articles, not only for the opportunity to generate new knowledge, but also for the feedback in the review process to help further expand my skills as a researcher. Overall, through this and previous publications I have learned the importance of effective communication, and I feel that my more recent publications were far more refined on first submission than my earlier papers. Further, I believe that this portfolio is an exercise in effective communication, and I am confident that the skills I have developed will serve me well in future research.*

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6. Discussion

6.1 Major Findings

For ease of reference, the hypotheses in the publications are referred to in this discussion by their publication number and hypothesis number acronym. Thus the two hypotheses from Publication 2 are referred to as P2-H1 and P2-H2 respectively (see 3.2.1 for hypothesis details), whilst the six hypotheses from Publication 3 are labelled P3-H1 through P3-H6 (see 3.3.1). Outside of the published material, there are no specific hypotheses in the PhD portfolio itself due to the nature of the goal (to develop a measure and test it), so more focus is placed here on discussion of the aims and whether they were achieved. A summary of the aims follows, after which the major findings related to those aims are discussed in more detail.

6.1.1 Summary of Aims

Aim 1 – *development of a new measure* was achieved; The MIDAI was developed using the Delphi technique as detailed in the Method section, and it fills a gap in existing measures by assessing differences in anger directed toward other people.

Aim 2 – *validation of the new measure* was achieved through the results of publication 1 wherein the MIDAI was established using random stratified community samples in both Australia and Japan. It was shown to have good psychometric properties in terms of scale alpha scores, test-retest reliability, and strong evidence for convergent and divergent validity. Further, the factor structure established in the Australian sample was confirmed in the Japanese sample.

Aim 3 – *investigation of interpersonal anger differences* was achieved in the results of publication 2. Anger-eliciting behaviour of others in the workplace was found to provoke different levels of anger on the MIDAI within the Japanese sample according to the perpetrator's relative social level (superior, co-worker or subordinate), which confirmed P2-H1. In a comparison with Australia, the countries were shown to significantly differ in the levels of anger they attributed to others in the workplace according to relative social level, supporting P2-H2.

Aim 4 *– testing relationship with work stress* was achieved by Structural Equation Modelling (SEM) in publication 3. Results supported the selected aspect of the model proposed in Interpersonal Anger Theory development that was to be tested, finding that Effort-Reward Imbalance (ERI) has a relationship with MIDAI Scales through the mediated influence of trait anger (P3-H5 and P3-H6). This spillover of ERI work stress into interpersonal anger in both the home and work domains was found to be consistent across culturally different samples (Australia and Japan).

Aim 5 *– testing relationship with outward anger expression* was achieved during SEM analyses in Publication 3. MIDAI Scales toward others in the home domain and work domains were found to be significantly related to proclivity to aggress through the outward expression of anger (supporting P3-H2 and P3-H4).

6.1.2 Establishing the MIDAI – a Summary of Psychometric Properties

A range of methods were employed to ensure our final instrument was not only a comprehensive measure of the Interpersonal Anger experience, but was also parsimonious. This section details the psychometric properties that were uncovered in the analyses in order to produce a valid and reliable new measure. Psychometrics that are covered include scale alpha, test-retest reliability, factor structure, convergent and divergent validity, along with how these psychometrics held in the Japanese version of the MIDAI. The efficacy of the new measure over other existing measures was not conducted because no other instrument exists at present to test the same construct (Interpersonal Anger).

Scale reliability

The results of the first two publications provide strong support for the reliability of the MIDAI Scales. Each of the five 12-item MIDAI scales displayed good internal consistency with a Cronbach's alpha of .92 or higher in the English instrument and .90 in the Japanese version. Further, test-retest reliabilities were all very good at .85 or higher, indicating both a relatively stable trait and consistency in measurement. With scale reliability commonly held to be acceptable when the coefficient alpha exceeds .70 (Nunnally, 1978; de Vaus, 1991), and 'good' at .80 or higher (Henson, 2001; Loo, 2001), the new Interpersonal Anger instrument

greatly exceeds minimum requirements for a sound measure. Interestingly, it has been argued that scales with an alpha coefficient of higher than .90 may not actually indicate good reliability but rather a level of item redundancy, and good research practice is instead to reduce the number of items to avoid inflated alpha scores (Boyle, 1991). This offers additional support for the utility of the 6-item MIDAI Short Forms which include only common items that are consistent in each MIDAI Scale to permit comparison. Evidence suggests that the 6-item MIDAI Short Forms are in fact better measures of Interpersonal Anger than their 12-item counterparts as they all occupy the ideal spot between good reliability with an alpha higher than .80 (Henson, 2001; Loo, 2001) and lower than .90 to avoid extraneous item redundancy (Boyle, 1991). Discussion of retaining the full 12-item scales randomised with Short Form items to prevent respondents from recognising the motivation of the test to measure differences in anger toward targets is discussed later (see section 4.5.1). These reliability scores were observed in both the Australian and Japanese samples, and overall the reliability results indicate that the MIDAI holds strong psychometric properties.

Factor Structure

Results supported a two factor solution for each of the five MIDAI Scales. This was first established in the Exploratory Factor Analysis (EFA) on the Australian community sample (wave 1) uncovering an *overt hostility* factor and *covert provocation* factor. The former concerns situations where the respondent was the target or witnessed an act of obvious outward hostility, whereas the latter covers victimisation of a more subtle and insidious manner. The two-factor solution from the EFA was supported with a Confirmatory Factor Analysis (CFA) in a culturally divergent sample (Japan), indicating that the conceptualisation of Interpersonal Anger on the MIDAI is consistent across two different countries. Not only did the two factor solution prove to be significantly better than a single factor solution, but between the five MIDAI scales there were an average of four-out-of-five individual measures of goodness of fit that met at least the minimum required values for acceptable fit. This indicates that overall the model is a decent explanation of the proposed two-factor interpersonal anger experience. Research bringing together evidence from expert consensus in the Delphi process to statistical analysis of a community sample suggests that overt hostility and covert provocation together represent strong theoretical themes in the experience of anger.

Convergent and Divergent Validity

As expected, the MIDAI was not significantly associated with an unrelated construct (extraversion from the EPQ-BV) thus supporting divergent validity. Conversely, the five MIDAI scales displayed good convergent validity with the well-established STAXI. Not only does each scale demonstrate similar strong and moderate-to-strong correlations with trait anger, but they also display markedly lower correlations with state anger. This suggests that interpersonal anger is more closely related to stable general anger than to transient feelings. This lends support to the notion that Interpersonal Anger is an enduring personality trait – a predisposition to anger toward others. Furthermore, moderate and weak-to-moderate significant correlations were found with the anger expression subscales of the STAXI; specifically the two anger expression subscales were positively correlated with MIDAI Scales, whilst the two anger control subscales were negatively correlated. These directions were consistent across all five MIDAI Scales, suggesting a common manner of anger coping style among people with Interpersonal Anger issues. It suggests that individuals who have a predisposition to feel more anger toward other people are not only more likely to also express their anger, but are also ill equipped at controlling it. Together these results underline the convergent validity of the MIDAI with an existing anger measure.

Cultural invariance of the MIDAI

The two factor structure proposed in the Australian study was also supported in the Japanese sample. Whilst loadings were marginally smaller than in the Australian sample, the structure still conformed to the suggested two factors of overt hostility versus covert provocation. Despite large cultural and environmental differences, this finding indicates that there may be universal qualities in the anger experience and suggests the cultural invariance of the MIDAI.

Overall, the new instrument has exhibited good internal consistency, is reliable over time, its factor structure is invariant across culture, and it has good construct validity from its grounded theory development in the Delphi. This establishes the MIDAI as an up-and-coming new measure for anger in an interpersonal context.

6.1.3 Comparison of MIDAI levels within Australia

Unlike existing measures of general anger, the utility of the MIDAI is its ability to differentiate interpersonal targets in the social environment and identify whether people hold varying levels of anger depending on the target person. By comparing the MIDAI Short Forms (6-items common to each Scale) it was possible to observe that Australians reported different levels of anger toward the behaviour of others according to the target despite the anger-eliciting behaviour that others engage in being identical. Australians were least likely to feel anger toward the actions of a stranger than family members or any other people in the work environment, perhaps suggesting a societal trend for giving recent acquaintances 'the benefit of the doubt' when they engage in anger-eliciting behaviour. On the other hand, the behaviour of individuals in the workplace domain showed higher levels of propensity to anger, with the actions of superiors, co-workers and subordinates at work eliciting more anger than family or strangers. Interestingly, all three MIDAI scales within the workplace domain (superiors, co-workers and subordinates) elicited more anger than family or strangers but none significantly higher than the other. It appears that regardless of hierarchical position in the Australian workplace, disrespectful, aggressive or inconsiderate behaviour from anyone in that domain elicits similar levels of anger. This could be a reflection of Australian culture where the social barriers between 'the boss' and colleagues are not as strong as other countries such as Japan with its delineation of *jo-ge kankei*. Further, the workplace has long been recognised as a highly stressful environment (Terkel, 1972), which could explain why the propensity to feel anger toward anyone on the job is higher than in the family environment or when meeting strangers outside of work. Although the behaviours engaged in by the target individual are identical, it is possible that social norms in each domain do influence anger. Perhaps a number of situations elicit more anger when a superior, co-worker or subordinate engages in the act because it is a less acceptable social norm in the workplace.

Looking solely at the common item Short Forms in the Australian sample it is evident that people's reaction to the behaviour of others will differ according to the target's relationship and the environment. This underlines the importance of context and characteristics of the target in the anger experience which have up until the advent of the MIDAI remained untested.

6.1.4 Comparison of MIDAI levels within Japan

Publication 2 aimed to gain a deeper insight into the nature of the anger experience by employing the MIDAI in a culturally divergent country. It was shown that Japanese people hold varying anger levels toward different targets in their social environment, particularly in the workplace (supporting P2-H1). This further corroborates findings of the previous Australian sample that individuals differ in how much they anger toward other people based on certain characteristics, which underlines the utility of an instrument that can discriminate between targets of anger. Japanese participants consistently rated the anger they felt toward the anger-eliciting actions of strangers to be significantly more infuriating than the same behaviour from family members or anyone at their workplace. This could be due to Japan's implicit societal customs for courtesy which involve the reciprocal expectation that all people extend more courtesy to others than they would to even their family. These unspoken rules of etiquette are intimately woven into the fabric of Japanese culture to create a harmonious environment where one is expected to conduct themselves in a manner that avoids any intrusion into the lives of strangers. Perhaps violation of these customs is particularly anger provoking for Japanese people. Conversely, anger toward superiors at work was reported as significantly lower than anger toward other people in the workplace, including others that might hold a hierarchically subordinate position. This finding seems counterintuitive when Japan has been recognised in research as one of the most stressful and harshest work environments in the world, including a strong prevalence of workplace bullying (which is fundamentally driven by those in a hierarchically superior position), pressure to work overtime, and record suicide rates due to pressures from superiors (Amagasa, Nakayama, & Takahashi, 2005; Giorgi, Asakura, & Ando, 2008; Kanai, 2009; Tanaka, 2001). Contrary to these expectations, Japanese people actually report less anger toward superiors at work. One could be quick to jump to the conclusion that social desirability has masked a certain level of anger reporting, however the existence of multiple scales used in the MIDAI is useful because social desirability is less of a factor when it is likely to apply to all other scales too. So when making a relative comparison, we can still assume that if the effect of social desirability is at least somewhat constant across scales, Japanese people still report lower anger toward superiors relative to co-workers, subordinates, family members and even strangers. A better explanation would be tied to the Japanese culture and their perception of superiors. Due to the strong *jo-ge kankei* when a person has a higher social rank (age or workplace hierarchy, the two of which are strongly linked in Japanese seniority workplace culture), they are awarded

certain entitlements that they may exert their higher rank over others. In the case of age the old adage 'respect your elders' is far stronger in Japanese culture, and in the workplace superiors are entitled to talk down to, command respect from, and even ridicule those of lower rank. Although from western eyes one would assume these behaviours would elicit *more* anger, in Japan's case the role of a superior is something so inherently bound to the culture that perhaps anger toward their behaviour is seen as an unwarranted reaction. Not only the expectation of role fulfilment but also the cultural understanding of *gaman* or 'enduring personal hardship' may play a part in the reduced anger toward superiors. Japanese employees may simply expect superiors to engage in such overt hostilities or covert provocations because that is their role, as they have seen it repeated in workplaces across the country. It is an unavoidable state of affairs and instead they are expected to endure the situation if they are to be seen as having the favourable cultural trait of endurance. This aspect of learned helplessness might be a factor of the sample with the mean age being early 40's, but this adherence to long-held social customs and tolerance of what would be unacceptable behaviour (from a western point of view) by superiors is changing with the new generation of Japanese youth entering the workforce.

As previously mentioned, Japan's strong cultural rules may provide a succinct explanation for stronger feelings of anger toward strangers when they act in a hostile or disrespectful manner. As for anger toward family members, one would expect that the stronger bonds of family in a collectivist over an individualist culture would diffuse levels of anger toward family members. However, results from the Japanese sample indicate a higher propensity to anger toward family members than superiors at work, to the same degree that they would anger toward subordinates at work. Perhaps instead, the expectation of closeness when violated with an anger-eliciting behaviour prompts a stronger anger response. Alternately, despite being a collectivist culture, Japanese families are less likely to see each other, particularly fathers in a male-centric work environment involving long hours of overtime and a long daily commute (Kanai, 2009). The reduced familiarity with parental figures might permit stronger angry feelings from children, resulting in higher Interpersonal Anger toward family members.

Last, Japanese consistently scored higher anger toward the *overt hostility* of other people. This may be due to the indirect nature of Japanese communication which leads the culture to be less conditioned to being on the receiving end of outward aggression (Masataka,

2002; Miyazaki, Komaki, Tsuboi, Kobayashi, Shimizu, Fujita et al., 2003). Overall, the Japanese sample displayed significant differences between a number of the MIDAI scales, underlining that the anger experience is indeed different according to the characteristics of or relationship with the perpetrator of the anger-eliciting behaviour as the MIDAI seeks to test.

6.1.5 Cross-cultural comparison of MIDAI levels between Australia and Japan

Results show that levels of interpersonal anger on MIDAI Scales differ significantly by country in a comparison of Australian and Japanese samples (confirming P2-H2). In order to facilitate valid cross-cultural comparison between the samples the collection procedure was identical between the Japanese and Australian random stratified community samples. The cultural invariance of the MIDAI instrument itself had already been established. Furthermore, significant efforts were made to gather random stratified community samples rather than commonly used samples of convenience. With this in mind, Australians and Japanese people were found to differ on the anger toward certain targets in their social environment, as well as the types of anger eliciting situations that were found most aggravating.

Interpersonal Anger levels reported by Japanese people on the MIDAI scales differed significantly from those in the Australian sample, supporting P2-H2. Japanese have a higher proclivity to anger toward the actions of strangers and family members, but were less likely to anger toward superiors. However, the two samples shared the same level of anger toward co-workers and subordinates in the workplace. The lower levels of anger toward superiors despite the toxic work environment has been discussed in the previous section, as has the higher anger toward strangers. These explanations seem to hold in comparison with the Australian sample since the Australian culture does not involve such a strict social hierarchy (*jo-ge kankei*) in the work place, nor does it have as strong socio-cultural rules of conduct with strangers. However the significantly higher anger toward family members reported by the Japanese sample is indeed an interesting finding. It was assumed that Japan with its culture of in-group collectivism would result in participants being more likely to respond with a less extreme anger level than individualist Australia (Iwata, Okuyama, Kawakami, & Saito, 1989). Perhaps the difference lies in the Japanese perception of what is ‘in-group’ to them. As mentioned earlier, Japan differs from other Eastern collectivist countries like China in that their definition of in-group is more likely to fall in the company rather than the close others,

creating loyalty to a 'work-family' (Ralston, Holt, Terpstra, & Kai-Cheng, 1997). This leads Japanese people to have a relatively low benevolence for others outside the company since their workplace becomes the point of reference for an in-group. This could mean the collectivist culture buffer that was expected to insulate the feelings of anger toward other family members is instead applied to the superiors in their workplace as they play a 'parental' role in the *jo-ge kankei* of the work-family. Another explanation for higher MIDAI Family anger than Australians could even be the cramped living conditions and lower amount of personal space in the on average smaller Japanese household, leading to a higher propensity to be aggravated by the behaviour of family members.

Regardless of differences in the anger experience between Japan and Australia it appears that the behaviour of the five different targets still elicit anger from individuals despite their cultural background. In fact, all items elicited at least 1.5 on the response scale, and previous studies using the same five-point scale response format for self-assessed degree of anger have indicated this as the minimum number to be an appreciable amount of anger, and thus worthy of further study (Lajunen, Parker, & Stradling, 1998). Although the mean scores differed, Japanese and Australian workers both rated actions on the *overt hostility* factor as more anger-eliciting than those on the *covert provocations* factor, which may suggest that there exists a shared understanding that transcends culture of social etiquette or simply a biological function that generates anger in the face of a patently open threat.

6.1.6 Evaluation of the Model and Relationships Tested

It was important to not only establish the MIDAI as an instrument, but also to evidence some of its underlying theory and show relationships with other constructs of interest. The deleterious effects of work stress are wide ranging and spillover to other domains like the family environment (Bakker, Demerouti, & Dollard, 2008). In demonstrating interpersonal anger's relationship with effort-reward imbalance (ERI) the present study will assist in organisational awareness of the long-term detriments that ERI can have on the individual and society as it spills over into interpersonal anger. Further, there is an opportunity to show the true cost of interpersonal anger beyond simply an internal state that in itself has negative outcomes, but its manifestation in the more popular notion of outward interpersonal

aggression. Further, to observe these relationships in two divergent cultural samples elucidates the possibility of an underlying phenomenon across culture.

The following is a discussion of the confirmation of hypotheses P3-H1 through to P3-H7 in both the Australian and Japanese samples.

Effort-Reward Imbalance (ERI) and trait anger

The notion that a relationship exists between ERI and trait anger as found in other studies (Hoggan & Dollard, 2007; McLinton & Dollard, 2010) was reinforced by the results of the present study. This was initially supported by a weak to moderate positive correlation between the two variables, and then further confirmed during SEM analysis (P3-H7). Not only was this relationship significant in a cross-sectional analysis of Australia and Japan, but it also persisted over time in the Australian longitudinal data, with ERI in the first wave predicting trait anger in wave 2. The relationship between persistent stressors at work and the sculpting of chronic personality traits has been suggested in past research (Dollard & Winefield, 1998), and these findings underline the pervasive effect of poor work conditions on the individual.

Effort-Reward Imbalance (ERI) and Interpersonal Anger (MIDAI)

Results indicated a direct relationship between ERI and the MIDAI Scales in the work domain (Superior, Co-worker, and Subordinate Scales; P3-H1) and the home domain (Family Scale; P3-H3). These findings indicate that individuals who suffer from stress at work resulting from the feeling that the rewards received are disproportionate to their efforts, also have a tendency to experience elevated levels of anger toward other people, both in the work environment and at home. This is consistent with the forerunning research in both Australia and Japan suggesting that ERI results in non-general anger outcomes for specific situations, in this case driving anger which is suggested as the internal precedent for ‘road rage’ (Hoggan & Dollard, 2007; McLinton & Dollard, 2010).

Trait anger and Interpersonal Anger (MIDAI)

The notion that trait anger is related to interpersonal anger was supported. Originally a moderate correlation was found to exist between the two, and subsequent SEM analyses revealed the strong and significant relationship between trait anger and MIDAI both in the

work and home domains. These findings support the intuitive notion that stable characteristics play a role in how individuals deal with daily life. In this case it suggests that individuals with a high proclivity to be angered (trait anger) and who experience more intense anger are also likely to experience elevated levels of anger toward other people in their lives (Interpersonal Anger). This is corroborated by a number of existing studies that have found a relationship between general measures of trait anger and anger in a more specific aspect of the human anger experience; driving anger (Deffenbacher, Huff, Lynch, Oetting, & Salvatore, 2000; Deffenbacher, White, & Lynch, 2004; Hoggan & Dollard, 2007; Starkweather, 2002).

Trait anger as a mediator of ERI and MIDAI

Loehlin (1987) states that a mediator model describes a relationship wherein the independent variable affects the dependent variable via a third variable, the 'mediator'. The most parsimonious model of the mediation relationship with best fit was that of trait anger's full mediation in the relationship between ERI and MIDAI Scales (P3-H5 and P3-H6). The inclusion of the mediating influence of trait anger provides a stronger prediction of interpersonal anger from ERI than simply a direct relationship between the two, suggesting that individual predispositions in anger proclivity influence the spillover of work stress into anger toward other people in the workplace, and even into anger toward people in the home environment. Another possible explanation is that employees who feel stress at work from an imbalance in the high efforts invested in their company and the low rewards they receive, might develop higher levels of trait anger over time, which influences their propensity for (and intensity of) anger toward other people in the form of Interpersonal Anger. This could be an equally valid interpretation as evidence suggests that long term exposure to a stressful work environment can shape a worker's behaviour patterns and personality development to the extent that individual traits such as 'trait anger' may become more pronounced (Dollard & Winefield, 1998).

Interpersonal Anger (MIDAI) and outward anger expression

Anger toward family members as assessed by the MIDAI Family Scale represented a strong predictor of outward anger expression (P3-H4), so the suggestion that interpersonal anger may manifest as acts of interpersonal aggression is supported. This is also consistent with the transition from interpersonal anger toward others in the workplace to outward anger expression (P3-H2). This is an important finding for the MIDAI as during its development the

criticism of interpersonal anger not being necessarily related to interpersonal anger expression was mentioned. However results now support the notion that the MIDAI measures the internal anger experience that contributes to aggressive expression of that anger. This is particularly important because anger expression is easy to measure whilst its antecedents are far more elusive, making it difficult to measure in a cultural sample like Japan where the inhibition of emotional expression is a social custom. The relationship between each MIDAI and outward anger expression is slightly lower in the Japanese sample when compared with Australia, but still highly significant, most likely due to a cultural inclination for the withholding of overt anger expression. Australians have a higher propensity to express anger outwardly from the MIDAI, and it could also be suggested that the increased expression may represent the small aspect of the anger expression experience that is a healthy release of constrained aggression, whilst this pent-up frustration is playing a role in the rising incidences of cardiovascular disease and high blood pressure in Japan. Nevertheless, despite vast differences in workplace culture and societal norms, the relationship between MIDAI and outward anger expression style is still highly significant.

The overall model of spillover (home and work domains)

Results provide good support for the model illustrated in Figure 5 (see 2.3.5). Both ERI and trait anger exhibit direct effects on Interpersonal Anger on the MIDAI, and ERI exhibited a direct effect on trait anger. Furthermore, the role of trait anger as a mediator in the relationship between ERI and MIDAI Scales is strong, suggesting that people with a general proclivity to anger may carry their work stressors into the way they anger toward others in the workplace, and worst of all back to the home environment in interpersonal anger toward loved ones. The most worrying aspect is the final result of this spillover is a release of anger as it is overtly expressed as aggression toward other people. The link elucidates the importance of stress resulting from ERI, and how it can be associated with the development of maladaptive emotional and behavioural changes that can affect everyday life.

Further, the model was supported in both Australia and Japan, and a multi-group analysis reveals that the relationships may be invariant across cultures. In selecting both Japan and Australia we aimed to not only look at the cultural differences between the work and anger relationships, but also the commonalities between samples despite their vast cultural differences in workplace and personality. Observing support for the same relationship in the anger experience consistently across two countries with a vast cultural divide both in work

environment and general social-cultural norms may support the existence of an underlying pervasive global phenomenon.

Indirect effects over time

Longitudinal analysis in the Australian sample indicated that ERI exhibits an indirect relationship through the model above over time. ERI in wave 1 indirectly predicted Interpersonal Anger on the MIDAI (and thus outward anger expression) in wave 2 four months later. This finding is notable as it suggests that an imbalance in efforts and rewards at work does indeed play a causal role in persistent feelings of anger toward family members and other people at work, and subsequently the expression of that anger. Previous studies have found a similar effect from same-day job stressors to anger and conflict in the home, but our research adds to the support for the notion that not just incidental daily situations but chronic work stress at work (resulting from ERI) can result in persistent anger in the household, and even the general tendency to express it overtly.

6.1.7 Section Summary

All five aims of the present research were achieved. The results support the new measure of Interpersonal Anger, the MIDAI, to present a significantly better option over other existing and commonly used measures that have been shown to fall short with poor psychometric properties, construct validity issues and inadequate validation data. Beyond the strong conceptual development techniques, the MIDAI's psychometric properties demonstrate good internal consistency for each of the five 12-item MIDAI scales, as well as in the five 6-item MIDAI Short Forms. The Japanese translation of the MIDAI displayed similar levels of internal consistency for all scales. Good construct validity was indicated with significant correlations with STAXI trait anger for convergent validity, and non-significant correlations with extroversion for divergent validity. Australian longitudinal data demonstrated high test-retest reliability, further indicating that Interpersonal Anger may be a stable and enduring trait; a predisposition to anger toward specific types of people or their roles in one's social environment. Both samples show significantly different levels of anger according to the target,

which supports the utility of the MIDAI as a new measure of a specific aspect of the human anger experience. Further, significant differences were found in interpersonal anger levels between Australian and Japanese people, indicating that proclivity to anger toward others across cultures may be influenced by socio-cultural variables. Research into Interpersonal Anger and the MIDAI is nascent, but from the seminal study in Australia it is evident that people are more likely to feel anger toward others in their workplace than those at home or strangers. On the other hand, in Japan workers report different levels of interpersonal anger, with significantly lower anger toward superiors, whilst anger toward strangers was higher than for all other targets. Furthermore, the factor structure holds in both Australian and Japanese cultures. From the first stages of its validation, the MIDAI has been employed in both a western and a non-western sample and in a language other than English. There was a specific view to create a cross-cultural measure rather than one developed from homogenous samples of convenience and then later tested internationally (with no real desire to revise a measure that has grown to be institution in its present form). In testing the relationships between MIDAI and other variables, it was found that those experiencing the stress of ERI at work are likely to anger more toward other people in their social environment, but only if they are already inclined to anger in general (trait anger). Further, consistent support was shown for the influence of MIDAI scales on the outward expression of anger. There was also support for the notion of negative spillover from the workplace into the family domain, as ERI displayed a significant indirect effect on outward anger expression when tested through the MIDAI.

6.1.8 Personal Reflection

RDQ 2 – Lifelong learning: *In analysing the results I had to master numerous new techniques including factor analysis and structural equation modelling. I noticed that there was a learning curve in studying and then putting those new skills into practice, so results seemed to take longer than I had planned. However it was very rewarding to see the outcome of that work, and the large amount of evidence to support the MIDAI as a valid new anger instrument with strong psychometric properties. Further, this was my first opportunity to*

develop and then test theory, and with the SEM I was able to move from descriptive to normative theory. I look forward to testing and evolving this theory in my future research.

RDQ 7 – International perspectives: *In establishing the measure in both Australia and Japan I found that the MIDAI factor structure and psychometric properties hold strong in both countries, suggesting that our approach to instrument development had been valid. The relationships between variables to test Interpersonal Anger Theory were robust in both Australia and Japan, suggesting a common underlying phenomenon. I also found interesting differences between the nature of the Interpersonal Anger experience in both countries. The investigation of socio-cultural differences has been a passion of mine for a long time, and having the chance to further study these in my PhD has been very rewarding.*

6.2 General Discussion

A discussion of general findings ensues. This covers material beyond the validation of the MIDAI's psychometric properties and factor structure.

6.2.1 On the Delphi Method

The Delphi technique (as described in detail in the Method section) allowed us to not only gather information and opinions from researchers in a wide variety of backgrounds, but also to achieve a consensus between those experts on a topic with diverse viewpoints. Although researchers differed in terms of approach to the construct, unearthing common themes between qualified informed opinions is what makes the MIDAI a comprehensive measure of Interpersonal Anger. Beyond a simple grounded theory approach by a researcher, use of the Delphi panel provided a platform for grounded theory to be discussed in a forum, using the old 'two minds are better than one' adage, and in this case 15 minds. Most importantly, by the author facilitating the Delphi process and removing identifying information when compiling everyone's answers to be presented back for consensus in each iteration, it allowed the ideas of a minority to be presented to the group for possible inclusion. Although time consuming, this process has produced really good construct validity for the Interpersonal Anger construct and resulting MIDAI, with consideration of numerous expert viewpoints rather than just those of the primary researcher.

As expected, a number of common items were suggested by most if not all experts, suggesting numerous commonalities in the way Interpersonal Anger is immediately conceived. On the other end of the spectrum, items mentioned by only a minority were also found to receive strong support from other experts when they were returned for feedback, in particular the notion of some anger-eliciting behaviours involving 'practical barriers' that cause delays and thus frustrate the individual. Interestingly in the Delphi method a couple of similar themes emerged common to the NAS-PI Provocation elements; namely the notion of injustice or unfairness and frustration. This overlap may provide validation for some highly relevant trends in the anger experience, opening the path for future research. The MIDAI however goes further than the NAS-PI by identifying overt and covert anger eliciting behaviours that include a malleable perpetrator and domain-specific element. The use of the postgraduate

psychology student sample also assisted with the refinement of the measure. Having not been involved in the creation of the instrument from the ground up but still holding a working knowledge of psychological instruments from their own research, the postgraduate student opinions were important in identifying whether the questionnaire would read easily and had good face validity.

International perspectives are of great interest to the author, and a major motivation behind use of the Delphi method and expert panel was to create a measure that brings together cross-cultural perspectives. The Delphi incorporated experts from such culturally diverse backgrounds as Israel, Italy, Germany, Iceland, Australia, the UK and USA, providing varied cultural viewpoints on the construct and its theory. However this leads to a fundamentally western interpretation of Interpersonal Anger. Although cross-cultural differences were accounted for in the framing of the construct, experts in the field of anger research are almost exclusively from western countries. Despite the lack of Asian perspectives on the development of the MIDAI, with the Japanese validation sample it was evident that the factor structure of the MIDAI established in the Australian sample still held in such a culturally divergent Eastern sample.

6.2.2 The Interpersonal Anger Theory – Schema and Attribution

The development of the theory of Interpersonal Anger represented a collaboration of international experts on the Delphi panel. The Schema Theory and its influence on reported Interpersonal Anger is tentatively supported simply by the fact that respondents do indeed report different levels of anger according to the characteristics of the perpetrator. Despite the situations being identical, some mechanism must exist that influence the judgment of the target and rationalises the anger toward them, and it has been suggested that the existing schema in the mind of the individual plays a role. According to past experiences with individuals of the same characteristics, schemata for processing future information about those individuals are established, and these frameworks influence their propensity to anger. If differences in any of the reported anger levels on the MIDAI were not found at all, it would disprove the theory that schema influence how one feels anger. Fundamentally all human experience is influenced by past experience, so one can surmise that any significant difference in propensity to anger toward other people is at least in part influenced by their schema of that

individual. A good example would be the Japanese sample, where it was suggested that superiors at work elicit less anger because of social norms where they are entitled to act in such a manner, and the feeling of learned helplessness when superiors act this way to their employees throughout numerous workplaces in Japan. Japanese people have established a schema for the way superiors act toward them based on this experience, and so attribute less anger to them due to the behaviour being commonplace, or because of being accustomed to these situations.

The theory also suggests that Interpersonal Anger is influenced by fundamental attribution error, wherein the individual is more likely to evaluate the behaviour of other people as internally motivated. Thus interpersonal anger is elicited from this higher level of blame and responsibility attached to these negative behaviours. The closeness of relative relationship reduces the influence of dispositional attributions in fundamental attribution error (Fiedler, Semin, Finkenauer, & Berkel, 1995), and this was observed in the results of both Australian and Japanese samples. Significantly higher levels of anger were attributed to relative social equals in the workplace, in comparison to close others (social equals) at home. Attribution theory explains that closer individuals (family) are seen as less likely to have intent behind the anger-eliciting actions, and the observer is more likely to consider extraneous variables that have led to their actions and thus experience a reduced level of anger toward family. People in the workplace are more distant in level of familiarity, and thus their actions are evaluated as less likely to be due to external causes and more internally motivated, so the observer attributes more anger toward them.

Attribution theory also offers a suggestion as to why Interpersonal Anger levels differ based on social hierarchy in the workplace. In both Australian and Japanese samples, anger toward subordinates did not rate significantly higher than anger toward co-workers. Attribution theory proposes that when observing the behaviour of people in a relatively lower social status, the observer is more likely to attribute other people's actions as influenced by external factors (Thibaut & Riecken, 1955). This logic is based on the notion that if an outside force is present, someone in an inferior position must follow the external influence of that force and thus it is less likely that their action was internally motivated (Michotte, 1963). For a subordinate in the workplace, their negative behaviours in the workplace may be due to the influences of others or their situation, alleviating some level of blame for their actions and thus not eliciting significantly higher levels of anger from the observer, in comparison to

people in an equal hierarchical level in the workplace. Results have demonstrated support for the Interpersonal Anger theory using the schema and attribution mechanisms by which the anger experience varies according to the target of anger.

6.2.3 The Capacity to Discriminate

The results of this research have successfully demonstrated the capacity for the MIDAI to discriminate between targets of interpersonal anger, which was the fundamental motivation for developing the instrument. This capacity to discriminate is important to the inherent nature of the MIDAI in order to underline its utility as a new measure, and fill a niche that other anger instruments cannot. In addition, results further support the notion that has only recently been acknowledged that anger is a multidimensional aspect of human personality rather than simply a general one-dimensional trait. Evidently, the MIDAI Scales each measure a separate trait predisposition to anger toward a particular target, which are linked in the same overarching construct of Interpersonal Anger. Whilst anger toward different targets is correlated (for example, there is some degree of baseline anger; an 'angry person' is likely to have elevated levels of interpersonal anger to all targets) there are still significant differences in the actual levels of anger toward different targets. Previous studies have shown the variability in the expression of anger, such as in the way that people express anger more when it is toward a person that they like and are familiar with (Porter, Stone, & Schwartz, 1999), and toward a person of lower rank (Porter et al., 1999), and when they are in a private setting rather than public (Bongard & al'Absi, 2003). Despite the higher propensity to express anger toward such individuals, attribution theory suggests that the actual internal anger toward familiar or close others and people of lower social rank would in fact involve less potential to anger (as detailed in section 4.2.2). Up until the present Interpersonal Anger study, researchers have been unable to investigate such differences in internal anger and external expression toward specific individuals. Existing instruments could not ascertain whether this anger phenomenon truly differs, or whether anger is the same toward each person but expression is inhibited based on the relative relationship with the target. The ability for the MIDAI to discriminate between targets of interpersonally-directed anger is a significant step forward in research of the human anger experience.

6.2.4 Interpersonal Anger leads to Interpersonal Aggression (Domestic Violence)

MIDAI Scales all demonstrated moderate to strong correlations with the propensity for outward anger expression, suggesting that say MIDAI Family Scales measure anger felt toward close others at home, which is directly related to the expression of that anger. So in measuring interpersonal anger as opposed to expressed aggression, it may be possible to ascertain the risk of aggressive manifestations of anger toward other people such as bullying and domestic violence. Since this has the potential to be done prior to the event, it makes identification of this directed anger just as important as measurement of incidences of overtly measureable outcomes. Applying the 'prevention is better than cure' aphorism, the ability for the MIDAI to identify someone with high propensity to anger toward their spouse would possibly be even more important than identifying the potential for a spouse abuser to reoffend.

Whilst it is not completely viable to use the MIDAI to predict the actual aggressive retaliation in interpersonal situations, we gain insight into the nature of the internal anger experience and what may fuel those aggressive expressions. It can be surmised that this aspect of the internal anger experience which we direct specifically at other people may be involved in those overtly expressed aggressive acts toward others in our social environment. General measures of anger have exhibited a relationship with overtly expressed aggressive acts like domestic violence and child abuse, so we contend that a specific measure of anger that considers only the anger directed toward an individual would be similarly if not demonstrate a stronger relationship with this such interpersonal aggression. In fact, if domestic violence was not fuelled in some significant part by anger and propensity to anger, then anger management classes would not be the most common treatment for domestically violent men (see, for example, Hamberger, 1996). It is only logical to intuit that instruments currently being used to measure anger to identify progress in therapy and also people at risk of becoming domestic abusers would be strengthened by a far more honed instrument that identifies biases in the perception of close-other behaviour in terms of anger, than general anger measures. The utility of the MIDAI is evident, and with its recently established psychometric properties which far exceed other commonly used anger and hostility measures, and its cross-cultural universality, and its ability as the first measure to conveniently be able to identify anger biases in people according to perpetrators, and measure anger directed specifically at a target.

6.2.5 Frequency of Experience is Related to Interpersonal Anger

In Publication 2 an analysis was conducted to see whether the frequency of experiencing certain anger-eliciting behaviours on the MIDAI Short Form was related to the anger people attributed to the target in that situation. It was interesting to note that although Japanese report lower levels of anger toward superiors than any other target, the negative behaviours of superiors were most frequent in comparison to the others targets, with covert provocations such as the superior "refuses to acknowledge my point of view" (Item 10) occurring on average more than once per month, and "doesn't give me the respect I deserve" (Item 12) occurring on average a few times per month. The increased prevalence of superiors engaging in anger-eliciting behaviours is understandable in the socio-cultural context of *ijime* and *jo-ge kankei*, and the fact that Japanese people attribute lower interpersonal anger toward them despite its prevalence has been suggested (see 4.1.4), such as a culturally inherited learned helplessness. Nevertheless overall it was expected that the frequency of experiencing the pressures and frustrations from others in the social environment would be associated with increased levels of anger toward that target. The results of Publication 2 showed that when totalled, all situations are more likely to be accompanied with higher anger toward that individual the more that the subject has to endure the anger-eliciting behaviour. However, anger levels toward *Overt Hostilities* are not as consistently correlated with the frequency of those openly aggressive behaviours, whilst anger toward *Covert Provocations* are consistently correlated with their frequency. This might suggest that the more one is exposed to surreptitious and insidious anger-eliciting behaviours by other people (such as not being given respect), the more inclined they are to develop anger toward those situations and the people who perpetrate them. On the other hand, the experience of more frequent overtly aggressive behaviour (say for example, being yelled at) does not necessarily always make one feel more anger because of becoming conditioned or accustomed to being yelled at, or developing a sense of learned helplessness. The significant relationship between frequency of occurrence and resultant anger indicates support for the notion that schema theory explains the way that interpersonal anger is based on past experiences, and could be an interesting avenue for further research. Further, the relationship between frequency of the incidents in the workplace and the development of higher interpersonal anger toward people at work is congruent with the notion that chronic work stressors can lead to the development of persistent personality characteristics like trait anger (Dollard & Winefield, 1998). So there is more evidence to suggest that the newly operationalised concept of Interpersonal Anger may in fact represent a

stable personality trait, a predisposition to anger toward certain people in one's social environment.

6.2.6 On Social Desirability

Due to the use of a self-report measure, Interpersonal Anger in the present research may well be underreported, which is a worrying fact considering the high levels of anger that were found. All five MIDAI scales displayed a weak but significant correlation with social desirability, indicating that individuals reporting lower anger levels may instead be conforming to social pressures to exhibit favourable behaviour instead of portraying themselves as a less desirable 'angry person'. It is intuitive to suggest that countries may differ in the degree to which social desirability affects the reporting of anger, particularly in individualist versus collectivist cultures. Australia and Japan differ on one major socio-cultural characteristic, with Australia being a capitalist individualist culture whilst Japan has been defined as a capitalist collectivist culture (Ralston, Holt, Terpstra, & Kai-Cheng, 1997). Despite these cultural differences, the correlation between MIDAI scales and social desirability is relatively equal in both Australian and Japanese samples. Whilst self-report may be affected by social desirability, that does not offset the fact that it presents the most convenient and readily available data (Gupta & Beehr, 1982). Furthermore, it is theorised that comparison within groups could be more robust under the pressure of social desirability bias. Although social desirability has a significant correlation with the MIDAI self-reported anger, if its effect is relatively consistent across all reporting of anger then it permits valid comparisons for the same individual on their levels of anger from one MIDAI scale to another. Further research is required as to whether social desirability does indeed exert the same force over responses to all MIDAI scales.

6.2.7 Comparison of Effort-Reward Imbalance in Australia and Japan

A staggering proportion of workers in the present research were found to be at risk of stress from an imbalance in efforts invested and rewards received (ERI). 40% of the Australian sample were found to be at risk of stress, already a considerable and unacceptable level for a

country which values its relaxed work atmosphere. Yet to find 76% of Japanese participants in the same situation indicates the shocking consequences of their notoriously unhealthy work environment. Since Japanese culture promotes hard work to avoid losing 'face', its workplaces are characterised by high productivity, job loyalty and low absenteeism. In the presence of problems like poor salary or lack of support, the Japanese mindset is to simply 'endure', which may explain why workplaces in Japan possess many characteristics conducive of a satisfied and productive workforce in spite of its problems. Whilst they appear to be intrinsically motivated to perform well, the critical issue may be the lack of extrinsic rewards. These extrinsic rewards could be the woefully inadequate average salary and poor job prospects due to promotion being based on seniority (age) and not performance or skill level. These extrinsic rewards may be more important than one would suggest in other Eastern countries because although Japan is classified as collectivist in terms of national culture, research suggests that they are individualistic in their economic ideology (Whitehill, 1992).

Unfortunately, these overwhelming levels of ERI risk are not an isolated phenomenon, with previous studies finding very similar levels in community samples from the same cities in Australia (Hoggan & Dollard, 2007; Smith, Roman, Dollard, Winefield, & Siegrist, 2005) and Japan (McLinton & Dollard, 2010). Another existing study by Tsutsumi and colleagues (2002) had found a lower rate of ERI with only around one in five men and around one in four women in their study at risk (representing between 20% and 25% risk of ERI). However the lower prevalence may be due to an underrepresentation of the actual population as their data comes from a very specific occupational sample of a recently downsized company. By extent, the respondents were the remaining employees that retained their jobs after downsizing, so perhaps this has an effect on their apparent reduced levels of Effort-Reward Imbalance. There is also the distinct possibility that since 2002, ERI in Japan has increased both due to the global financial crisis and the fact that data in our study was collected around a month before Lehman's fall in Japan which was a period of severe financial volatility. Regardless of discrepancies, existing research certainly identifies avenues for further investigation of ERI in Japan.

6.2.8 Section Summary

The strengths of the Delphi method are evident in producing a new measure with good construct validity, including international perspectives of experts from multi-disciplinary fields in the research of anger. The final MIDAI that was created has the capacity to discriminate between targets of anger, and with its relationship with outward anger expression might lead to the ability to measure outward aggression toward specific targets, like domestic violence. The frequency of experiencing interpersonal anger-eliciting provocations from others is also correlated with the level of reported anger toward that target. There is a social desirability bias in anger reporting, which leads us to expect that MIDAI levels of interpersonal anger may in fact be underreported. Cultural tendencies in social desirability must be kept in mind whilst interpreting cross-cultural comparisons, such as Japanese reputation for 'face' and cultural allegiance to the company family. Although vulnerable to social desirability, the benefit of the relative comparison of different targets is to alleviate the influence of social desirability on responses within subjects. Last, levels of ERI in both Japan and Australia indicate a large proportion of both populations are at risk of work stress.

6.2.9 Personal Reflection

RDQ 1 – Research based knowledge: *The theory of Interpersonal Anger appears congruent with existing research and further extends into new ground. I am thankful for the opportunity that I have had through the PhD to be able to contribute to existing knowledge, and I am excited about the opportunities that this study might open up in future research. Beyond the MIDAI itself, the results of ERI in Japan has further underlined this tool as an avenue for explaining the socio-cultural stress risks at work.*

RDQ 6 – Communicates effectively: *One interesting aspect of the PhD was sorting through information that was relevant for reporting in the publications and portfolio. Whilst on a number of occasions it saddened me to have to remove an analysis or literature review section, I soon realised that I had to be ruthless in order to present a parsimonious finished work. I feel confident that this final portfolio and the publications accurately represent the volume of work I have conducted, presented in an economical manner.*

6.3 Methodological Limitations

Most potential problems were anticipated and countermeasures were employed to avoid any reduction in the generalisability of the findings. However, some caution should be taken when interpreting the results of the present study due to a few methodological limitations.

6.3.1 Sampling Limitations in both Australian and Japanese Sample

One major limitation of past studies in developing and validating new anger measures is the use of a highly homogenous sample of convenience, such as that used in the development of one of the only other anger instruments that measure a specific aspect of the human anger experience (DAS: Deffenbacher, Oetting, & Lynch, 1994) wherein the sample consisted of first year students at a Colorado university. It is questionable how representative this sample may be of the general population, and it can be suggested that participants were likely to have been of similar age. The present study attempted to avoid such limitations in generalisabilty by acquiring a more representative sample through random stratified selection from the general community. However, it could be argued that the results are generalisable only to mid-range population density cities of their relative countries (Adelaide, Australia; Nagoya, Japan), and may not apply to rural areas.

Income statistics

The suburbs that were randomly selected were within a stratified sampling frame to ensure that the dwellings represented a range of socio-economic levels. However we cannot be entirely certain that different socio-economic statuses were reflected by the suburb they lived in. In the end, no analyses were conducted on actual socio-economic status relationships in the sample, and we only claim it to be an inclusive sample rather than drawing strong conclusions about socio-economic status. Previous studies have employed an item concerning the participant's income to denote socio-economic status, however this was not included in the present study since income is a more sensitive matter in Japan than most western countries. Since such a question would overstep many boundaries in Japanese culture it was removed from the questionnaire to avoid a possible reduction in response rate. Unfortunately without

this information it is not possible to see if the sample was normally distributed in relation to socio-economic status.

Response bias

Although the samples were collected through random selection of suburbs and streets, there appears to be an overrepresentation of women in both. This may be due to a response bias wherein women are more inclined to complete questionnaires (Sax, Gilmartin, & Bryant, 2003), and it is especially interesting that this response bias was consistent across both cultural samples. By the same token, another response bias concerns the possibility that participants who returned the questionnaires may have only done so due to their strong opinions about work stress or anger, thus providing a sample with skewed opinions and feelings about the matter. However, the response rate was very high, with only 33% of individuals not returning the questionnaire in the Australian sample, and 22% in Japan failed to return. Out of the proportion of people who initially agreed to participate this represents only a small amount of the potential participants originally approached, which slightly alleviates concerns of a response bias. It can be concluded that even if the respondents held opinions that were extreme opposites of the remainder who did respond, it is unlikely that it would have significantly affected the results.

Another point of interest is that the Australian second wave displayed a significantly higher ERI risk percentage than the 40% found in the baseline first wave data. It is rationalised that a response bias exists in the smaller cohort of participants who decided to participate in the second wave. Those who continued to participate may have been experiencing poor job conditions and stress which led them to find the opportunity to discuss these in the study cathartic, or even a means to implement change in their situation. The retention of only those with high ERI in the second wave may have influenced our longitudinal findings and so these should be interpreted with caution. Nevertheless, taking the aforementioned limitations into account, the present study still used a random stratified community sample and retained a very high response rate, good cohort continuation, and a sample size comparable to existing studies in the literature, and thus it can be accepted that the sample remains fairly representative of the target population.

Communication in collection of participants

Last, language barrier was anticipated to be a problem and appropriate preparations were made for personal unscripted communication with potential participants. Although the researcher has fluency in the Japanese language and personally back-translated all instruments before professional sources were employed to revise them, cross-cultural miscommunications were still unavoidable. As previously mentioned, the questionnaire itself was subjected to review by three independent native speakers and finally pilot tested on a fourth native speaker to ensure the instructions and items were easily understood. Whilst this provided a sound instrument, the administration posed another possible problem. The researcher ensured that he was well read on all psychology and topic-related vocabulary in Japanese so he could fluently communicate the aims and subject of the thesis when approaching potential participants. However some individuals posed unpredicted questions and occasionally unavoidable communication issues existed. This is not considered to have affected results since the cover sheet and questionnaire were soundly translated, and would have been consistent for each participant.

6.3.2 Measurement Limitations

There are a number of issues with the questionnaire employed in the present study that must be considered before drawing strong conclusions from the data.

Reliance on self-report

As mentioned in a discussion of social desirability (4.2.6), one possible limitation is the reliance on self-report measures in the present study, and whether this type of response actually corresponds with true scores. Self-report was selected over other methods since these measures are easier to administer, less intrusive and provide higher generalisability (Gupta & Beehr, 1982). However, as with other Asian countries, in Japan ‘face’ or reputation is an important concept along with the desire to appear polite and humble. Thus participants may have had a tendency toward social desirability bias. In order to counteract the effect, the participants’ anonymity was reassured by the researcher. Nevertheless one must keep this cultural tendency in mind whilst interpreting scores on the MIDAI in cross-cultural

comparison of Interpersonal Anger levels with other countries. Nevertheless, comparison of scales within the MIDAI should offer a more robust measure than just general anger instruments because the MIDAI accounts inherently for the nature of social desirability bias in that the Scales only have meaning in their relative nature to each other. Assuming the influence of social desirability bias is relatively consistent (correlations appear to be of similar strength across all five MIDAI Scales), we can assume that the under-reporting of anger is consistent across all targets of Interpersonal Anger.

Another criticism is the use of sample situations that do not call upon actual experience, but rather the anger that would be attributed were the hypothetical situation to occur. It should be noted that the situation-reaction format has in fact been strongly supported in the measurement of reactions toward events as the ease of visualisation permits the respondent to focus solely on the variables of the hypothetical situation rather than attempting to recall a past experience, wherein actual emotional and cognitive reactions at the time may not be retrospectively recalled (Pekrun, Goetz, Perry, Kramer, Hochstadt, & Molfenter, 2004). The use of self-report of emotions and cognitions toward fictitious scenarios or vignettes is an approach that has been employed by a few studies in the past to identify underlying motivation for interpersonal aggression (review by Holtzworth-Munroe, Bates, Smutzler, & Sandin, 1997). This situation-reaction hypothetical has been used in measurement of domestic violence where the individual may only aggress toward a very specific person (a wife, a child, etc.) or in a specific environment (the home domain). Such measures have attempted to measure spouse-specific anger and hostility with ad-hoc adaptations of existing instruments, but have not undergone psychometric review or construct validity testing like the MIDAI has in its development. Nevertheless, the utility of hypothetical situations over problematic event-recall type measures has been recognised in existing research on anger.

Stability of the variables over the 4 month interval

A limitation of the present study is not being able to further investigate other relationships between variables in the SEM analysis in longitudinal data due to the variables of interest being highly correlated with their first and second waves. Whilst this is expected for the traits like MIDAI and STAXI anger, ERI did not see significant enough variation between waves to elucidate a direct effect on resulting MIDAI anger. Nevertheless, an indirect effect was still found through the mediator (trait anger) which links these highly important issues in a causal relationship, opening the avenue for further study. Whilst

previous studies have demonstrated that four-month intervals between waves are valid for data collection, future MIDAI research will employ longer intervening periods of time to further investigate longitudinal relationships.

Limitation of using ERI with the Japanese sample.

The use of the ERI model in Japan may be hindered by one criticism of Siegrist's model. Whilst logic would dictate that the stress arising from an imbalance is expected to motivate the individual to make efforts to change their behaviour or circumstances in order to produce more favourable conditions, this is not necessarily always the case (Schönpflug & Batmann, 1989). Exceptions exist wherein the individual may be encouraged to, or have no other choice but to stay in the unfavourable situation. This may occur when few better options exist within the available labour market, or when the dissonance experienced from receiving a low reward are alleviated by promises of future gains. Thus social and culturally determined factors must be taken into consideration, such as *gaman* in Japan as a socially encouraged notion of persistence in the face of adversity. Upon inspection of each item, it was found that the omission Item 14 ('My current occupational position adequately reflects my education and training') from the scale would increase the reliability considerably. This may be linked to the structure of Japan's workforce, where regardless of education an employee is always given the lowest position in the company and is expected to earn more prestigious positions and management roles according to the duration of service (Tokyo Declaration, 1999; Tsutsumi, Ishitake, Peter, Siegrist, & Matoba, 2001). This is known as the seniority system. If a university graduate is young, regardless of qualifications or training there is no chance they would be granted a position higher than another employee who is either senior in age or has worked at the company for longer. Furthermore, he will never earn a senior position to that individual until that individual retires. Thus in the Japanese culture, it is unlikely that the concept of 'reward' would be linked to education history, and perhaps the structure of that ERI subscale should be reconsidered for a Japanese sample.

6.3.3 Limitations in Methodology

The Delphi method which was used to develop the MIDAI and Interpersonal Anger Theory is not without its shortcomings, particularly as we conducted this development via email to

facilitate international collaboration. Email participation may receive less cognitive attention than in person and correspondence is very time consuming to keep all participants on track to work toward the goal of the project. Nevertheless, the use of the Delphi method lends credit to the construct and face validity of the MIDAI.

6.3.4 Section Summary

We acquired a representative heterogeneous sample through random selection of a stratified community sample to overcome limitations in generalisability, however a few limitations must be taken into consideration. Although collection was conducted within a stratified sampling frame by suburb, actual socio-economic status cannot be confirmed without a question related to income. Further there may be a response bias in gender based on the larger proportion of female respondents, and also in people who are more stressed continuing with the study in the second wave. The reliance on self-report was also a limitation, as was the short interval between waves which restricted the ability to draw conclusions in the longitudinal SEM models due to lack of variability. These limitations are mitigated by the significant practical and theoretical implications of Interpersonal Anger research.

6.3.5 Personal Reflection

RDQ 2 – Lifelong learning: *I learnt that some shortcomings cannot be addressed in research despite the desire to present a perfect product. In these cases, a researcher simply has to deal with it, like the reliance on self-report. Particularly with a measure like mine (which relies on measuring internal processes rather than the arguably more objective overt behaviour), the internal anger state can only effectively be measured with self-report. Other limitations make themselves apparent only after the fact, for example the issue of stability of variables over the four-month longitudinal data collection. Prior to conducting the second wave after four-months, all signs in existing research indicated that time period to be a valid approach to*

longitudinal measurement, and given time constraints it seemed an efficient method. Little did I know that the measures employed would be so stable across time. ERI work stress had little time to vary over the intervening period which limited the predictive ability of our results. Further, Interpersonal Anger is far more trait-like than I had originally thought. This limited our ability to test the longitudinal direct relationships between variables in the first and second waves, and if I were to conduct the study again I would certainly address this by orchestrating a longer lag time to investigate variability. This is an example of how despite all of your efforts and previous research that points to a certain way of doing things, there are always factors beyond your control. At the end of the day, errors like this are acceptable as they are the only way we learn and grow, so this has helped me recognise how to approach longitudinal research in the future.

RDQ 3 – Effective problem-solver: *Over the time that the PhD was conducted, I encountered numerous instances wherein I could have opted for the easier alternatives. For example, selecting student populations rather than random stratified community sampling, or using my own grounded theory development rather than the Delphi method. On the whole, I decided to take the more difficult and time consuming alternative in order to improve the reliability and validity of the MIDAI to establish it as a high quality new measure. Especially with the development of new measures, the result can often be open to criticism and I wanted to pre-empt any readers who might deride my instrument. In reading publications on existing instrument development, it was clear to me that so many had been created with student samples, without validation data, or just with dubious construct validity through poor theoretical development, and as such it was always on my mind to avoid these possible shortcomings to allow my new measure to excel beyond the rest. This is why I had such a vested commitment in using the famous Delphi method, and randomised community samples.*

6.4 Implications

There are both theoretical and practical implications from the research, the development of the new Interpersonal Anger tool, and the results of analyses.

6.4.1 Implications for the Measure Itself

The development of a domain-specific anger instrument provides a tool for researchers in the field of anger and answers the call for new measures to investigate specific areas of the human condition rather than simply general measures of anger, expression and hostility (Eckhardt, Norlander, & Deffenbacher, 2004). Most notably, the capacity to test an individual's propensity to anger toward certain people allows us to look deeper at the nature of biases toward other individuals in the social environment. Conceptualising anger in this manner, and the development of a new and easy to use instrument with sound psychometric properties has the potential to draw new attention to anger research that goes beyond simply general measures and traits. When manipulating the characteristics of the antagonist as opposed to the environment, we can test predisposition to anger toward specific types of people, or people sharing a group membership. For example, if a MIDAI scale was used to study anger toward specific ethnic groups, it could identify the underlying angry feelings that are not necessarily expressed overtly, since racial aggression and violence are easily observable whereas anger biases are not.

Other research has also shown that anger mediates or is even a notable cause of spouse and child abuse (Mammen, Kolko, & Pilkonis, 2002; Norlander & Eckhardt, 2005), and the MIDAI can present a measure of anger that is specifically directed at close others in a home environment as the antecedent predispositions to the expression of that targeted anger (aggression and abuse of that target individual). Results have shown that Interpersonal Anger on the MIDAI does indeed result in a proclivity for overt anger expression, and future research will help elucidate whether our interpersonally-directed measure predicts such acts as domestic violence. Certainly, now that a specific measure exists to test propensity to anger toward such individuals, it is another step forward in further understanding these phenomena. Further, the findings demonstrate that the instrument can be successfully employed in at least

two different languages and socio-cultural contexts, suggesting that the MIDAI is not just limited by such constraints and could play a role in future international research.

6.4.2 The Relationship of Interpersonal Anger with Outward Anger Expression

There are significant implications from the consistent support given for the influence of MIDAI scales on the outward expression of anger. It had been suggested that the link between anger and aggression is not as clear as once hypothesised, and in its development questions arose as to the utility of developing the MIDAI if it could only concern internal processes rather than actual influence on the outside world. However the present study has demonstrated that not only is the internal anger experience related to the overt expression if it, but that the relationship is consistently strong in the Australian sample, even over time. With our measures of target-specific interpersonal anger predicting outward anger expression and the well-established notion that the vast majority of anger is directed at others in a social environment, the MIDAI presents a unique opportunity to identify anger precursors to overt interpersonal aggression. The MIDAI Family Scale may give insight into the internal anger precursor to expression of anger toward family members (domestic violence, child abuse), and likewise the MIDAI Co-workers Scale into expression of anger toward co-workers (workplace harassment, victimisation), and MIDAI Subordinates Scale into expression of anger toward subordinates (workplace bullying).

A key discovery is that interpersonal anger in the work domain leads to overt anger expression style. This not only suggests that those stressed at work will feel anger toward others in the workplace, but also that they may act out this aggression with significant consequences to the other employees and the company. Workplace conflict may manifest in verbal abuse, psychological harassment, victimisation or bullying, and even as far as the concept of the ‘office meltdown’ when pent-up unexpressed rage is finally released. The detrimental outcomes of anger and its role as an underpinning factor for overt aggression make it an important area for research, and the results of the present study indicate that interpersonal anger and the MIDAI play a significant role in the nature of anger expression. These findings suggest more serious attention be invested toward the reduction of the internal and less observable influences behind the sensationalised overt aggression that are popularised in the media (youth violence, domestic abuse, workplace bullying, etc.). By

instead targeting the feelings and rumination of anger rather than a 'band-aid' solution to managing the more observable aggressive outcomes, there is good potential to reduce the prevalence of such incidences of expressed anger.

6.4.3 Spillover of Work Stress into Interpersonal Anger

Implications of the spillover results have further highlighted that there are negative outcomes of work stressors in the workplace, but they are not confined therein. Not only is stress at work leading to outcomes within the domain, but it is also spilling over into other domains like the home environment, with the imbalance in efforts and rewards at work resulting in increased anger levels toward close others at home. This draws attention to work and life wellbeing by underlining the importance of workplace interventions to reduce stress and the resultant spillover of negative behavioural consequences such as anger outside the workplace.

Stress from ERI at work also leads to a higher propensity to anger toward other people within the work domain, and it has been shown that chronic stressors can shape attitudes and behaviour in enduring ways. The correlations between frequency of experience of the MIDAI situations and the resultant anger level add further support to the argument that negative experiences in the workplace lead to a change in personality, specifically interpersonal anger proclivity. Specifically, it was found that the more one is exposed to the surreptitious disrespectful behaviours (*covert provocations*), the more likely they are to also feel anger toward the person engaging in those behaviours.

These findings emphasise the importance of continued research into work stress, specifically ERI, which until recently was limited in Japan (McLinton & Dollard, 2010; Tsutsumi, Kayaba, Nagami, Miki, Kawano, Ohya et al., 2002) despite it being world famous for the most stressful of work environments. It is logical to suggest that these anger outcomes on the job may be detrimental in the workplace environment seeing as it has been established that anger in itself (without even outward expression) has numerous negative consequences (Idris & Dollard, 2011; Mann, 1992; West, Elander, & French, 1993). The presence of such angry ruminations in management may lead to a loss of capital through clouded judgement and poor planning. The company may see a reduction in productivity and an increase in turnover due to frustrated employees, along with an increase in risk taking behaviours that

may have especially dire consequences in dangerous work environments such as construction sites. Further knowledge of the enduring result of ERI in the workplace and its effect on anger could modify the manner in which governments and corporate bodies approach the development of stress-relieving interventions.

Even simply having people with high Interpersonal Anger in the workplace would not be considered advantageous when bearing in mind the effect they may have on their co-workers, who may have to endure working alongside (or collaborate with) such aggressive individuals. Considering that individuals with high MIDAI are more inclined to act in an overtly aggressive manner and engage in the very same behaviours on the *overt hostility* factor, the issue may become compounded with an ever increasing cycle of interpersonal anger toward each other. If MIDAI levels were to be reduced, it may see a decrease in the numbers of people who engage in the actual anger-eliciting behaviours, and thus break the cycle of interpersonal aggression. The irony of the MIDAI to outward anger expression and the spillover effect is that individuals who become angry at work due to the anger-eliciting behaviours of others in their workplace are likely to be bringing that home and engaging in the same anger-eliciting behaviours to their loved ones, generating interpersonal anger in those close others and perpetuating the vicious cycle.

6.4.4 Effort-Reward Imbalance findings in Japan

Significant implications exist for the future of work stress research in Japan as well as the practical means to improve their toxic workplace environment. For the second time, a random stratified community sample in metropolitan Japan has provided evidence that the Japanese condition is far more volatile than hypothesised, with more than 70% of the sample in both studies being at risk of work stress with their reciprocal rewards paling in comparison to their efforts invested (McLinton & Dollard, 2010). Although work stress has been acknowledged as an issue in Japan in previous research, investigations into ERI have been relatively limited, and the present study underlines the seriousness of ERI in Japan. Most importantly, it demonstrates the potential for stress from ERI to spill into other domains in the form of negative behavioural outcomes, thus extending ERI theory to encompass its influence outside the workplace.

It has been widely accepted that work stress poses detriments to the individual, organisation and the economy. The present study has identified ERI to be a major problem in a Japanese sample, and if this stress is seen to originate from a disparity in efforts and rewards, then either of these may be targeted to bring relief to the workplace. Since Japanese culture promotes hard work to avoid losing 'face', its workplaces are characterised by high productivity, job loyalty and low absenteeism. In the presence of problems like poor salary or lack of support, the Japanese mindset is to simply *gaman* or 'endure', which may explain why workplaces in Japan possess many characteristics conducive of a satisfied and productive workforce in spite of its problems. Whilst they appear to be intrinsically motivated to perform well, the critical issue appears to be the lack of extrinsic rewards. The Japanese employment system often bases its reward structure on length of service and seniority rather than actual explicit efforts. The present study draws attention to the imbalance in the reciprocal relationship that may be rectified by providing more rewards for employees who exert greater efforts in the workplace. Previous studies have made Japanese workplaces well aware of the pervasive work stress problem and its costly outcomes, but Effort-Reward Imbalance provides an avenue through which to actively reduce work stress. The perceived effort-reward imbalance may be mitigated by reducing demands and promoting a more supportive work environment and providing greater opportunities for career advancement based on the individual's contribution to the workplace, rather than based on seniority. Also, by employing additional staff the workload can be spread more evenly across employees, thus reducing the extrinsic efforts required of them. Although this may pose an initial cost to the organisation, the expense may be recuperated through the increase in productivity usually found in a satisfied workplace, and may help reduce the prevalence of health-related consequences like cardiovascular disease (Smith, Roman, Dollard, Winefield, & Siegrist, 2005).

6.4.5 Implications for Theory

Interpersonal Anger Theory links both the areas of general anger research with the processes of social psychology, and also relationships with workplace factors and the social dynamics of occupational health. Even without testing all relationships, by expanding the theory of anger research we aim to fulfil Pfeffer's (2010) assertion about the value of theory development and the generation of new knowledge, because theories matter and help to draw attention to an issue, shape public policy, and promote a research agenda in the area. With the influence of

the modern media, the layperson is more inclined to see the pop psychology concept of 'violence' and domestic abuse. However Interpersonal Anger Theory and the findings of the present research are designed to encourage more serious attention to be invested in the influences behind the sensationalised overt aggression and to turn toward their covert origins, lying in the internal experience of anger. By targeting the less observable but more prevalent issue of Interpersonal Anger, there is great potential to reduce the incidence rate of the outward expression of this phenomenon. Results show support for the validity of the Interpersonal Anger Theory, including the influence of experience (schema) on levels of the MIDAI Scales, and also that it results in behavioural outcomes, namely outward anger expression. The most notable support for MIDAI development is the consistent ability to predict outward anger expression from MIDAI scales for anger toward a variety of different targets. It is possible that in the field of family counselling the MIDAI will provide an easy to administer self-report measure of interpersonally directed anger which may serve as an indicator of the precursors of future aggressive behaviours such as spousal abuse, domestic violence and bullying. In addition, the research has helped elucidate the nature of the anger experience in Japan, which until now had yet to be explored in detail. For the first time we have been able to observe the effects of Japan's strong hierarchical relationships of *jo-ge kankei* in the workplace. Avenues have been opened into cross-cultural anger research with the MIDAI demonstrating its transnational relevance and again underlining that anger toward different interpersonal targets in one's social environment are indeed separate constructs worthy of further investigation.

6.4.6 Section Summary

The utility of the new MIDAI scales is evident, and the present study has further illuminated a specific aspect of the human anger experience and how it relates to different life domains. The present study alerts people that interpersonal anger should not be accepted as simply an emotional and affective change, but rather a pervasive and influential factor with tangible outcomes. It has been widely accepted that work stress poses detrimental effects on the individual, organisation and the economy. Work stress effects spillover to other life domains, including anger toward others, and the relationship has been demonstrated in both western

and eastern cultures. This highlights that the workplace is an area where people are more likely to be angered by the behaviour of others, and underlines the importance of workplace relations and social norms for etiquette on the job and prevailing levels of anger.

6.4.7 Personal Reflection

RDQ 1 – Research based knowledge: *I wanted to make something generative from the opportunities that my PhD offered, and to give back to the academic community by adding to existing knowledge. I feel like I have achieved this goal to some degree as outlined in the implications section for both the practical and theoretical domains. Whilst all outcomes of my contribution are not immediately apparent, I hope that I have paved the way for future research by myself or other academics to further investigate the negative outcomes of the MIDAI, its utility in predicting them, and the nature of ERI in the global workplace. Further, by answering the call for new measures I feel that I have demonstrated the potential gaps in current knowledge that could be filled by new research from innovative future researchers. I hope that I have inspired others to undertake the daunting task of instrument development that challenges institutionalised constructs and measures, and to show that there is always room for improvement and innovation.*

RDQ 7 – International Perspectives: *Implications of the cross-cultural study have also shown me that I can contribute to existing knowledge and be generative. By demonstrating the existence of a pervasive and enduring relationship within two vastly different cultures it presents findings that have the potential to be applied across the globe. As an international citizen, I felt that it was important for me to make a contribution that is not simply limited by national boundaries.*

6.5 Future Directions

The present study highlights a number of possible avenues for future research.

6.5.1 Revision of the MIDAI

The primary direction for future research is the administration of the MIDAI scales in a much larger sample which will serve two purposes; the first is to identify any further refinements of the instrument itself, and the second is to generate population norms. We used a random community sample to emulate this and provide generalisable results, but a larger sample size is required to better investigate societal trends. Population norms will also provide the basis for cross cultural comparison.

With respect to revision, it was found that the MIDAI Short Forms (6 common items) display good alpha reliability scores, and it is suggested that they provide a shorter and thus more parsimonious measure of interpersonal anger than their 12-item counterparts. Whilst the Short Forms may provide a useful abridged measure of Interpersonal Anger, some items need to differ between each MIDAI scale for practical reasons. Further research will be conducted into the validity of simply using the Short Forms instead, or whether there is a necessity for confounding items to ensure that the goal of measurement is not immediately obvious. Since common items (7 through 12) are identical in every MIDAI scale, administration with multiple scales, changing only the characteristics of the situation or perpetrator will increase likelihood of the respondent answering with knowledge of the intent of the research, which would affect the findings. For researchers wishing to investigate significant differences within groups in their attribution of higher levels of anger depending on the characteristics of the perpetrator, a certain level of transparency will be obvious when administering only the common six items identical in two or more MIDAI scales, and the respondent may identify the true nature of the bias being tested. Thus, having up to six other different items forming the 12 item measure serves to reduce the transparency of research aims to the subject. Common items are of course important to permit valid comparison between different MIDAI scales, for example when comparing the Family Scale to the Superiors Scale, hence the importance of retaining the Short Forms of six common items. This ensures that certain scales do not elicit significantly higher anger simply because they contain items representing more

aggravating situations in general. Furthermore, keeping particular items consistent in every scale removes the possibility of phraseology or other nuances affecting the comparisons. Thus it is a difficult balance to strike between retaining the ability to reliably compare Scale to Scale scores without giving away the biases being tested to the participant. The final conclusion was to use of randomisation of the 12 items to prevent the common items from being easily recognisable (the versions provided in section 5.2 have been ordered for readability; however randomisation was employed during data collection). Further research is required to determine whether the other six items outside the short form are redundant, or whether simply use of the Short Forms with randomisation of only those six items is a valid approach in employing the MIDAI.

6.5.2 Testing in Other Countries and MIDAI Scales on Other Targets

The MIDAI Short Form items are thematically general enough to concern an individual with any characteristics the research desires. The strength of our new measure is its flexibility, and any researcher can potentially investigate the nature of anger in the environmental context of their choice, or explore the characteristics of interest in the target individual. Future research will investigate the utility of the MIDAI with other targets of interpersonal anger beyond the core five that were tested in this seminal study (family members, superiors at work, co-workers, subordinates at work, and strangers). It could investigate targets based on physical characteristics like ethnicity, group membership such as religious or political affiliation, relative relationship to the subject such as social hierarchy or familiarity, and so on.

In the factor analysis during development of the final MIDAI version, we experimented with the removal of lower loading items but none showed a significant improvement in the model fit, suggesting that the current factor structure is the best fit for our notion of Interpersonal Anger. However, further refinement may be necessary if a larger sample produces poor model fit. As it stands, the present version represents a consistent model that fits in two largely divergent samples of Eastern and Western cultural populations, so we expect the model to hold in future studies. The goal was to create a measure that could be employed equally in Western and Eastern settings from its inception, rather than development and validation extensively in one country, and then porting over to another culture and realising that the conceptualisation of the construct and its operationalisation

simply do not fit. Item Response Theory (IRT) can be employed to establish instrument consistency between countries (Emberson & Reise, 2000). Item differential function analysis will be used to ascertain whether the fundamental meaning of the instrument is common between both languages, as has been conducted when translating instruments into Japanese in recent research (Shimazu, Schaufeli, Miyanaka, & Iwata, 2010).

Future research will determine whether we have been successful in developing a truly international measure by administering the MIDAI in validation samples of more divergent socio-cultural settings. For example, whilst Australia and Japan differ on one dimension of national culture (individualist versus collectivist), they both share capitalism as an economic ideology (Ralston, Holt, Terpstra, & Kai-Cheng, 1997). It would be interesting to further extend cross-cultural research by validating the MIDAI in countries with divergent economic ideology and national culture, for example China as an iconic socialist-collectivist culture and Russia as socialist-individualist. Ideally this future research will validate the extent of time and labour put in to creating a valid construct and reliable measure, but it is entirely possible that a vastly different factor structure from the existing Australian-Japanese research may exist in countries with a more an economic ideology that leans toward socialism.

Further, whilst clear differences by country were found and this grouping method is common in existing research, cultural identification may actually be categorised in ways other than simply a geographic representation. Evidence suggests that variable traits can be used to operationalise culture in the field of emotion research such as power distance (Matsumoto, 1989), which is a dimension that displays a vast cultural divide between different countries. Characteristics such as power distance could be employed in future research rather than simply a country identifier to see whether the broad generalisation of country of residence is a valid assumption in future MIDAI research. Nevertheless, our fundamental interest in the nature of the interpersonal anger experience and international perspectives will see future research replicated in other countries to not only provide baseline cross-cultural data, but also to facilitate further cultural comparison in the world-wide anger experience.

6.5.3 Further Testing the Interpersonal Anger Theory

In publication 3 there was enough existing development and validation to make the move from developing descriptive theory to testing and establishing normative theory. A significant step forward from inductive to deductive theory was made in establishing causation in the ERI-trait anger-MIDAI-expression relationship over time, with ERI having an indirect effect over time through each variable down to the final outcome of outward anger expression. However, direct relationships between a number of intervening variables were weak and this was primarily due to the stability of the measures over time. Future research will be conducted with anger expression and the MIDAI over a much longer period than four months in order to see how the variables fluctuate over time, and this is expected to aid in the identification of strong longitudinal relationships. This future research will help solidify the role of interpersonal anger as a causal factor on outward anger expression and establish normative Interpersonal Anger Theory.

Outcome variables will be taken a step further to test the relationships of the MIDAI with overt interpersonal aggression, for example, to see whether Interpersonal Anger is a good predictor of spouse abuse and domestic violence. This research could easily take the Short Form or the MIDAI Family Scale (relabelled with partner or spouse as the target) and ask convicted spouse-abusers "[How angry would I feel if my spouse]…doesn't give me the respect I deserve" (Item 12). This will help further test not only the deductive theory development of the Interpersonal Anger concept, but also elucidate ability for the MIDAI to predict a behavioural outcome with chronic negative results.

Overall the testing of the relationships in Interpersonal Anger Theory have shown a domino effect of stressors in the workplace or stressors from the perceived anger-eliciting behaviours that others can create in the home environment like outward anger expression toward loved ones. By underlining the fact that such negative spillover is not simply a same-day event and this exposure can lead to chronic changes in personality and in how they perceive and interact with other people, future research might investigate possible interventions to target these factors. In the case of the workplace, strategies might be devised to dissipate the spillover of work stress into interpersonal anger toward other employees by alleviating stress with paid recreational breaks and team-building exercises. Further workplace strategies could attempt to alleviate the strong effect ERI has on interpersonal anger toward family members when the individual returns home. Perhaps a rest and relaxation

period directly after work as an opportunity to 'cool off' before returning to the home environment might mitigate same-day spillover. In the case of the development of chronic interpersonal anger toward family members at home, other tactics might be necessary such as 'shock' advertising campaigns that tell people not to bring their anger home to the people they love.

6.5.4 Section Summary

Future research will further test the utility of the MIDAI Short Forms in place of the 12-item scales, as well as possible revisions required when testing in other culturally diverse samples. Further, the Short Form of six common items can be employed in other settings toward different targets beyond the original five employed in this seminal research. Research will further test other aspects of the Interpersonal Anger Theory to validate the construct that has been developed and continue the move from descriptive to normative theory.

6.5.5 Personal Reflection

RDQ 1 – Research based knowledge: *Through the PhD I have not only gained a deeper level of understanding, but also added to the body of knowledge in anger research. Future directions provide a number of avenues for the development of the MIDAI, and I have appreciated the opportunity to generate new theory and contribute to the body of knowledge. I look forward to continuing this in the future, and have great desire to further facilitate cross-cultural comparison of other countries to create a transnational measure and fuel my interest in languages.*

RDQ 2 – Lifelong learning: *Further, the PhD has helped me develop skills that are undoubtedly useful for my future career as a researcher, including new statistical analysis*

techniques that I aim to employ for further testing of the Interpersonal Anger theory. The research has also encouraged ongoing personal development to increase my future employability.

6.6 Conclusions

6.6.1 Formal Conclusion of the Study

Using the Delphi method for scale development we have created and refined the McLinton Interpersonal Domain-specific Anger Instrument (MIDAI). Great care was taken by the author to include international perspectives on anger and to develop the instrument through the combined efforts of an expert panel to alleviate bias in grounded theory. The MIDAI exhibited strong psychometric properties and exceeds other existing measures of anger that are criticised for their poor construct validity, reliability, questionable development and validation data. In this inaugural research we have found people to differ in their attribution of anger according to the perpetrators of anger-eliciting behaviour, underlining the notion that characteristics of the target individual and their environment play a significant role in how we experience anger. Furthermore, finding invariance in the factor structure across Eastern and Western samples suggests an underlying cross-cultural trend in multiple dimensions of the human anger experience. In addition, the discovery of differences in interpersonal anger between Japanese and Australians indicates that our proclivity to anger toward others may be influenced by numerous socio-cultural variables, opening avenues for future research. Cultural differences exist in the degree of anger felt toward others according to their relative relationship, as do differences in the strength of the link between ERI work stress and interpersonal anger, and in the outward manifestation of that anger. The present study has supported the existence of a link between the stress resulting from a disparity in perceived efforts and rewards at work, and the development of aggressive behavioural outcomes. This finding is in accord with the notion that prolonged exposure to factors at work can shape an individual's long term stable personality traits. In essence, the mediator model highlights the spillover of stress in the workplace into other apparently unrelated domains like anger in the home toward close others and may even result in outward anger expression. What was once thought to be a problem of the workplace has been shown to have a more pervasive influence in everyday life, underlining the importance of reducing ERI. Further, the translation of ERI into Interpersonal Anger in both the work and home domains appears to be a generalisable phenomenon by culture. Since a connection has been established between these two troubling phenomena, hopefully more attention will be turned to how they can be resolved.

6.6.2 Personal Closing Statement

Looking back over this final portfolio, I am struck by the fact that all of this research originally started based on a hunch. I recall looking at a blank document with no idea where to proceed, and then looking back at my past research with anger on the road and wondering whether directional anger would exist in other circumstances too. I was surprised to find that no one had conceptualised anger with a valence toward other people. Researchers already know that in almost nine-out-of-ten situations, anger is directed at other people, but as yet no measures had been developed to investigate that notion further. Seeing Eckhardt's call for the development of new measures for specific aspects of the human anger experience was enough to spur me into action and set me on the four year task of developing and refining a new anger construct and an instrument with which to measure it. Something that really surprised me was the prevailing opinion that existing measures other than the STAXI are riddled with flaws in conceptual development, and yet they had become an institution, being employed on a wide scale in research despite their poor construct validity and woeful reliability. I vowed to go to the greatest lengths to ensure that if I were to develop a new instrument it would not fall foul of the same traps that these existing measures did. In the course of establishing the background for Interpersonal Anger, I contacted distinguished research professor Charles Spielberger. It was very encouraging to have an esteemed professional in the field tell me that in the thousands of publications he had read or been involved in, none had conceptualised anger specifically in an interpersonal context before, and most of all that my idea was worthy of further investigation. This very moment marked my desire to do it properly, and to set forth on a four-year marathon into the perilous path of instrument development. During the course of this research I have attempted to address all seven Research Degree Graduate Qualities (RDQ); 1) Research based knowledge *in the background to the development of the MIDAI; 2)* Lifelong learning *through the numerous new statistical analysis techniques I have mastered; 3)* Effective problem solving *in the instrument development phase; 4)* Autonomous and collaborative researcher *whilst co-ordinating a Delphi panel of experts; 5)* Ethical action and social responsibility *during administration of the questionnaire in a random stratified community sample; 6)* Effective communication *through the writing of peer-reviewed publications, and; 7)* International perspectives *shown through cross-cultural comparison and validation. However most importantly, I have* enjoyed *my study. Making a contribution to existing knowledge is simply icing on the proverbial cake, but through the PhD I have learned to really love research.*

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8. Appendices

8.1 Publication Four

The following paper is published in Accident Analysis and Prevention (hence the difference in referencing format). This publication deals with the antecedent concepts that promoted the development of the MIDAI by testing an anger instrument that deals with a specific aspect of the human anger experience and also with the translation of the instrument and cross-cultural comparison of anger.

Title

Work stress and driving anger in Japan. (doi:10.1016/j.aap.2009.07.016)

Abstract

We investigated the relationship between work stress arising from effort-reward imbalance at work (ERI) and driving anger in a community sample of workers in Nagoya, a mid-sized city in Japan. We hypothesised that ERI would exert a positive effect on driving anger via its influence on trait anger. The study also pioneered the use of the Driving Anger Scale (DAS) in a non-western country and explored cultural differences in the experience of anger on the road. A random sample of 215 (N = 138, 64% females; N = 77, 36% males) full-time Japanese workers was obtained through random selection of one participant per household in three randomly selected suburbs (response rate 71% of each eligible participant approached). Participants completed a confidential self-report questionnaire. Japanese motorists reported significantly higher levels of ERI than all comparative western samples, and lower total driving anger and anger on all DAS subscales compared with American and Australian samples. British and Japanese drivers did not differ significantly on total driving anger. The findings indicate that Japanese may possess a different acceptance and expression of anger on the road. Hierarchical multiple regression analyses supported our hypothesis. Stress experienced in the workplace originating from a perceived disparity in extrinsic efforts and

rewards was associated with increased enduring feelings of anger in employees, and through this anger an elevated level of aggressive feelings on the road. Stress from ERI may spill over into other domains, and changes at work are necessary to alleviate the impact on the individual, organisation and economy.

8.1.1 Publication 4: Introduction

Japan is well known for its significant road problems, ranging from severe traffic congestion to an alarming number of traffic accidents. In 2008 alone over eight million violations were recorded against the Road Traffic Law with nearly a million road casualties (Traffic Bureau, National Police Agency, 2008). Despite a recent slight downturn in the number of road accidents, deaths and casualties, Japan still sees an average of 2099 accidents and 2590 casualties daily, costing as much as 2% of the country's annual gross domestic product (Peden, Scurfield, Sleet, Mohan, Hyder, Jarawan et al., 2004). Japan is also known for high stress work environments. In this study we explored the link between work stress and anger behind the wheel, a factor that has been shown to increase the risk of road accidents (Deffenbacher, Deffenbacher, Lynch, & Richards, 2003; Deffenbacher, Lynch, Filetti, Dahlen, & Oetting, 2003; Deffenbacher, Lynch, Oetting, & Swaim, 2002).

Since the mid 1990s, the media has drawn attention to the problem of anger on the road, and research in Britain, Australia, New Zealand, Canada and the USA indicates that the occurrence of road aggression is on the rise (Burns & Katovich, 2003; Fumento, 1998; Lawton & Nutter, 2002; Smart & Mann, 2002). Indeed 87% of young drivers in the UK and around 90% in Canada have witnessed, experienced or been a victim of abuse on the road, a factor attributed to the recent increase in accidents and dangerous driving (Asbridge, Smart, & Mann, 2003; Oliver, 2003). Whilst the focus of media attention is drawn to the most extreme examples of hostility on the road such as physical assault or assault with a vehicle, for each incidence of explicit violence there are many other situations where drivers harbour excess levels of anger (Hoggan & Dollard, 2007). This un-manifested anger may still lead to dangerous outcomes for the driver, passengers and others on the road. Drivers with high levels of anger are in a highly aroused state, which in turn increases propensity for errors in judgement (Derryberry, 1988). Studies have highlighted the relationship between angry ruminations and the expression of aggressive driving, leading individuals to take needless

risks, drive dangerously and consequently display an increased probability of being involved in a road accident (Deffenbacher et al., 2003a; Deffenbacher et al., 2003b; Deffenbacher et al., 2002). Whilst the nature of the angry driving phenomenon has been studied in numerous western countries, surprisingly few studies have investigated driving anger in an Asian context.

Japan is also noted for its harsh work environments (Shima & Satoh, 2006). Japanese researchers have demonstrated a strong relationship between work stress and health complaints, including headaches, nausea, muscle pains and more serious outcomes such as cardiovascular and coronary artery disease (Li, Yang, & Cho, 2006; Shima & Satoh, 2006). Rising incidences of death from acute heart failure after prolonged high blood pressure, arteriosclerosis or cerebral haemorrhage has alerted people to the existence of 'Karoshi' or 'death by overwork'. Karoshi claims an estimated 10,000 lives each year (Deeken, 1995; Meek, 2004).

A significant body of research into work stress has focused on the Effort-Reward Imbalance (ERI) model (Siegrist, 1996). According to the model employees undertake psychological and physical labour to further the company goals. In exchange they expect to be reciprocated by the organisation financially and psychologically through support and respect from colleagues, job security and the opportunity for advancement. An imbalance in this reciprocal effort to reward relationship is a violation of the worker's expectations and results in negative consequences such as frustration, bitterness and demoralization (Kuper, Singh-Manoux, Siegrist, & Marmot, 2002); depression and emotional exhaustion (Pikhart, Bobak, Pajak, Malyutina, Kubinova, & Topor, 2004; Sanderson & Andrews, 2006); cardiovascular disease, muscular pains or tension, and deterioration in general health and wellbeing (Peter, Hammarström, Hallqvist, Siegrist, & Theorell, 2006; Theorell, 1999). Research on work stress in the context of ERI is almost non-existent in Japan, and although the majority of work stress studies conducted in Japan have focussed on its physiological outcomes, none have yet investigated its effect on anger.

Two previous studies have explored anger as an outcome of ERI at work. Research by Smith and colleagues was the first to explore this area, finding evidence that indicates ERI may be related to anger (Smith, Roman, Dollard, Winefield, & Siegrist, 2005). In particular they found that ERI was associated with an individual's level of state anger, which in turn played a mediating role in the relationship between ERI and cardiovascular disease.

Subsequently Hoggan and Dollard (2007) confirmed a relationship between ERI and anger on the road and observed that it was meditated by the effects of trait anger thus linking work stress to its eventual manifestation as anger behind the wheel. Trait anger was chosen due to previous research indicating that high stress jobs can be related to stable and enduring characteristics such as trait anxiety (Dollard & Winefield, 1998; Mikkelsen, Saksvik, Eriksen, & Ursin, 1999). This makes sense as stress at work is often a chronic ongoing condition that does not vary on a daily basis, so it is logical to investigate its relationship with more stable and enduring outcomes that are captured in trait measures that assess how the person generally feels.

In this research we aimed to test the veracity of Hoggan and Dollard's (2007) Australian findings in an eastern culture. As yet no studies have explored the nature of driving anger in Japan or its link with work stress despite the fact that Japan is widely acknowledged for its workplace problems, high levels of stress and negative outcomes (Meek, 2004; Nakao et al., 2005). In light of this we predicted that;

H1: Japanese participants will score significantly higher on ERI when compared with the Australian sample. Previous studies in western samples; UK, France, Germany, Sweden, Belgium and Australia have found the mean ERI to vary between .54 and 1.08 (Godin & Kittel, 2004; Goldberg, Chastang, Leclerc, Zins, Bonenfant, Bugel et al., 2001; Hoggan & Dollard, 2007; Johnston, Beedie, & Jones, 2006; Siegrist, Starke, Chandola, Godin, Marmot, Niedhammer et al., 2004; Smith, et al., 2003). Although a previous Japanese study by Tsutsumi and colleagues (2001) found an ERI ratio of only .65, their sample of 105 male dental technicians was not particularly representative of Japanese workers. Only one other study employing the ERI instrument has been conducted in an Asian country, with a Chinese sample of hospital-based physicians exhibiting a mean ERI of only .63 (Jian, Wenjie, & Sung-il, 2006). Again, this shows that ERI has only been tested in Asian countries within occupational samples, which may not be as diverse and generalisable as a random community based sample.

Empirical differences in driving anger have been observed between a number of western countries, including Britain, America, Australia, New Zealand, Finland and the Netherlands (Deffenbacher et al., 1994; Hoggan & Dollard, 2007; Lajunen et al., 1998; Parker, Lajunen & Summala, 2002; Sullman, 2006). Given that higher levels of work stress were predicted to exist in the Japanese sample and that these were expected to be related to driving

anger, we anticipated that levels of driving anger would be higher in Japan than in western samples. Accordingly we predicted that;

H2: Japanese participants will show (a) significantly higher levels of driving anger compared to western samples and (b) significantly higher levels of trait anger compared to an Australian sample (Hoggan & Dollard, 2007).

Finally we expected that the process through which ERI would affect driving anger would be mediated by trait anger.

H3: Effort-reward imbalance will exert an indirect effect on driving anger through the mediating influence of trait anger.

8.1.2 Publication 4: Method

Participants

The population targeted were adults from the age of 18 who possessed a full driver's licence, were currently engaged in paid full time employment, and were living within the metropolitan area of Nagoya (Aichi Prefecture, Japan). Participants were obtained by identifying households at random within three randomly selected metropolitan suburbs of Nagoya city, spanning a range of socio-economic status. Of the 302 individuals initially approached, 249 agreed to complete the questionnaire. The researcher collected the questionnaire 3 weeks later, or participants returned them by mail within 6 weeks. A total of 215 questionnaires were completed and returned, resulting in a response rate of 86.0% (71% of those potential participants initially approached). The age range of the sample spanned 18 to 73 years (M = 37 years, SD = 12 years). There were more female respondents, with a total of 138 females (64.0%) and 77 males (36.0%) in the sample. Descriptive statistics are outlined below, in Table 1 overleaf.

Table 1

Descriptives for Continuous and Catagorical Variables

Variable	N	%	*M*	*SD*	Range	Alpha
Life Satisfaction	215	100	4.54	1.59	1-7	
ERI	215	100	1.12	.33	.44-2.77	
Effort	215	100	16.63	3.40	8-24	.70
Reward	215	100	22.98	3.47	13-31	.70
Trait Anger	215	100	11.90	2.50	5-19	.64
Driving Anger	215	100	69.19	19.94	10-116	.90
Age	215	100	37.18	12.25	18-73	
Months in job	215	100	105.39	97.36	1-600	
Gender						
Male	77	35.8				
Female	138	64.2				
Job Category						
Managerial/ Administrative	9	4.2				
Professional/ Semi-Professional	36	16.7				
Tradesperson	4	1.9				
Clerical/Sales/Service	156	72.5				
Labourer	10	4.7				

Measures

Effort-Reward Imbalance. We used Siegrist's (1996) ERI scale, translated into Japanese using a back translation method. The questionnaire was then reviewed by three independent native Japanese speakers and finally pilot tested on a fourth native speaker to ensure the instructions and items were easily understood. The response scale was modified to reflect a more objective response format, shown previously to have good reliability and validity (Hoggan & Dollard, 2007). Respondents were asked to indicate the extent to which they agreed or disagreed with the statements on a four point Likert scale, ranging from 'strongly disagree' (scored as one point) to 'strongly agree' (four points). Extrinsic effort was measured by six items relating to the employee's perceived demands in the workplace, for example, 'I have constant time pressure due to a heavy workload' ($\alpha = .70$). Job rewards were measured using 11 items, such as 'I receive the respect I deserve from my colleagues' ($\alpha = .70$).

To calculate ERI, the degree of perceived disparity between an individual's efforts at work and rewards, we divided the average extrinsic effort score by the average reward score.

A score higher than 1 indicates that worker's perceived efforts outweigh their job rewards, indicating strain.

Driving Anger. This was assessed using the 33-item Driving Anger Scale (DAS) developed by Deffenbacher and colleagues (Deffenbacher, Oetting & Lynch, 1994), translated as described above. Two items translated to duplicates of other items, and thus became obsolete and were removed to avoid repetition. The removed items came from the illegal driving and the discourtesy subscales. To compare the total DAS score to that of other countries, a dummy score was generated for both removed items by taking the average score from the subscale in which that item originally resided. Analyses were then run a second time without the inclusion of dummy scores to test the effect of the reduction of variance. Results were found to be the same.

The DAS is comprised of six subscales concerning different aspects of driving; discourtesy, where the actions of other drivers are considered impolite but not illegal (α = .78); illegal driving, concerning the breach of road traffic laws (α = .83); hostile gestures, where another driver indicates disapproval or is aggressive toward the driver (α = .67); slow driving, when traffic is impeded by the actions of another driver or pedestrian (α = .66); traffic obstructions, where the traffic flow is hampered by a factor outside the driver's control, including road works, traffic congestion and the presence of larger vehicles (α = .72); and police presence, where police are involved on the road (α = .84). Items describe possible anger-eliciting situations such as 'Someone is driving right up on your back bumper' (Item 5). The response required related to the intensity of anger that the participant would experience in that situation on a five point scale. The level of anger was rated from 'none at all' (scored as zero points) to 'very much' (four points). All items were summed to form the total DAS score (α = .90).

To facilitate cultural comparison of the scale between the Japanese sample and the western samples in terms of driving anger, confirmatory factor analysis was used to establish the underlying factor structure originally proposed by Deffenbacher (et al., 1994), and hence the validity of the Japanese translation. A six factor model corresponding to the aforementioned six subscales provided the best fit, χ^2 (284) = 658.2, $p < .001$, compared with a one factor model, χ^2 (299) = 1184.7, $p < .001$. A chi-square difference test showed that the difference was statistically significant, $\Delta\chi^2$ (15) = 526.5, $p < .001$.

Trait Anger. Trait anger was selected as a measure of general and enduring feelings of anger that may be related to chronic poor work conditions measured through ERI. A concise 5-item scale was employed to measure participant's levels of trait anger, based on the State-Trait Anger Expression Inventory (STAXI; Spielberger, 1996), using the highest loading factor items from Hoggan and Dollard (2007). The Japanese version of the instrument was used, as translated by Suzuki and Haruki (1994). Responses ranged from 'strongly disagree' (scored as one point) to 'strongly agree' (four points) ($\alpha = .64$).

Demographic Information. Demographic details were obtained from participants, including gender, age, the number of months spent at their current job in a full time capacity, and occupational category (Managerial/Administrative, Professional/Semi-professional, Tradesperson, Clerical/Sales/Service, or Labourer).

Life Satisfaction. This item was employed to control for variance in anger from general life sources. A single item measure of life satisfaction was used, 'Taking everything into consideration, I am satisfied with my job'. Participants responded on a seven point scale, ranging from 'very strongly disagree' (scored as one point) to 'very strongly agree' (seven points). Evidence suggests that the global measure of satisfaction is a good proxy for more expanded scales (Scarpello & Campbell, 1983).

Procedure

Full ethics approval was obtained. The study commenced with the random selection of three metropolitan suburbs within Nagoya city in Aichi prefecture, Japan. Areas were designated low, middle or high socio-economic status according to the latest Japanese census (Ministry of Internal Affairs and Communications, 2006) and the suburbs therein were allocated numbers. Within each economic grouping suburbs were selected through random number generation to produce a stratified sample. Within each suburb a selection of streets were randomly designated and a number of households on each street were targeted using random number generation. Within each household where multiple potential candidates resided, only one was selected for participation at random using a die. Distribution and collection of surveys was carried out regularly between 6pm and 9pm on Monday and Friday evenings, and Sunday afternoons between 12 noon and 6pm, for a period of 3 weeks. In each case the researcher introduced himself and briefed the potential participant on the aims of the study, and assured confidentiality and anonymity of responses. If the request to complete the

questionnaire was accepted, an introductory letter was provided, explaining the study in detail. Participants were given a questionnaire along with an envelope in which to seal the completed questionnaire to either place outside their residence for collection at a prearranged date, or to mail back to the researcher using a reply paid option. Participation was not remunerated.

Statistical Approach

Prior to data analysis the accuracy of data entry was verified by both the researcher and an independent party. Data were also screened for univariate outliers through examination of histograms, skewness and kurtosis for each variable. Multivariate outliers were also screened using Mahalanobis Analysis but did not require normalisation.

To test hypothesis 1 we first assessed the ratio of effort to reward, as a score greater than one indicates risk of psychological strain (Siegrist, 1996). Then we compared the percentage of samples with high vs low risk using the chi square difference test.

To test hypothesis 2a, comparing possible cultural differences in driving anger, descriptive statistics for each subscale of the DAS and the total driving anger score were generated and compared with existing mean scores for Australian, American and British motorists via independent-sample t-tests. To test hypothesis 2b, we compared trait anger measures using comparable items employed in both the Australian and Japanese sample with an independent-sample t-test.

To establish mediation as specified in hypothesis 3, we followed the steps proposed by Baron and Kenny (1986): (1) show that the initial variable, ERI is correlated with the outcome, driving anger, to establish that there is an effect that may be mediated; (2) show that the initial variable, ERI is correlated with the mediator, trait anger; (3) show that the mediator, trait anger affects the outcome variable, driving anger, controlling for the initial measure ERI; and (4) show that the effect of ERI on driving anger controlling for trait anger is zero to establish that the ERI-driving anger is completely mediated by trait anger.

To rule out effects due to extraneous variables we ran the regression models controlling for variables which showed a significant bivariate correlation with ERI, trait anger and/or driving anger.

8.1.3 Publication 4: Results

Levels of Effort-Reward Imbalance

We found an average ERI of 1.12 with 70% of the Japanese sample recording an ERI exceeding one, and thus considered at risk of strain. Against the expected percentage of 40% noted in the Australian sample, this result was statistically significant, χ^2 (1) = 37.50, $p < .001$. This provides support for the first hypothesis, that Japanese participants will score significantly higher on ERI when compared with the Australian sample.

The Experience of Driving Anger

The Driving Anger Scale in a Japanese Sample. All but two items on the DAS evoked at least a mean of 1.5 points on the 5-point anger scale, which Lajunen and colleagues (1998) suggest represents a considerable degree of anger. The two items that failed to meet the cut off score of an appreciable amount of anger were; 'you pass a speed camera' (police presence subscale), and 'a pedestrian walks slowly across the middle of the street, slowing you' (slow driving subscale). The items that were reported to elicit the most anger were 'Someone cuts in and takes the parking spot you have been waiting for' (discourtesy subscale), 'someone yells at you about your driving' (hostile gestures subscale), and 'someone backs right out in front of you without looking' (discourtesy subscale).

Cultural Comparisons in the Experience of Driving Anger. Previous research has seen data collected for the DAS in a variety of western samples; the United States (Deffenbacher et al., 1994), the United Kingdom (Lajunen et al., 1998), and Australia (Hoggan & Dollard, 2007). Table 2 lists the means for each subscale found in the aforementioned research, along with those from the present study of Japanese drivers. Unrelated samples t-tests were employed to test the difference between subscale and total DAS scores in each sample.

Table 2

Means for Subscales and Total DAS Score for American, Australian, British, and Japanese Drivers, and Comparison of Samples

	American Sample (N=1526)	Australian Sample (N=130)	British Sample (N=270)	Japanese Sample (N=215)	*t*-test (Jp-US)	*t*-test (Jp-Aust)	*t*-test (Jp-UK)
Discourtesy	3.9	3.4	2.7	2.5	19.8***	9.3***	2.6**
Traffic Obstructions	3.3	2.5	2.0	2.1	16.9***	3.9***	1.2
Hostile Gestures	3.2	3.0	2.3	2.6	8.3***	3.6***	3.7***
Slow Driving	3.2	2.7	2.0	1.7	20.9***	9.9***	3.5***
Police Presence	3.0	1.9	1.4	1.7	17.7***	1.7*	3.4***
Illegal Driving	2.7	2.9	2.3	2.2	6.9***	5.9***	1.1*
Total DAS Score	109.0	92.2	71.3	69.2	26.2***	10.2***	1.2

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

Both the British and Australian studies were based on community samples and were therefore more generalisable to the population in comparison to for example, a sample obtained within an organisation. The Australian study gathered participants using the same procedure as our Japanese study specifically to produce a random stratified community sample. A chi-square test was used to compare the gender distribution in the two samples (Japan; Female 64%, Male 36%, Australia; Female 57%, Male 43%) and no significant difference was found, χ^2 (1) = 1.99, n.s. The results of an unrelated samples t-test indicate that the difference in age between the two samples (Japan M = 37, SD = 12, Australia M = 35, SD = 11) was also not significant, t = 1.55, n.s. Cross cultural comparison in this study is predominantly made between Japan and Australia as both stratified community samples were obtained in the same manner, and they share similar base demographic features in age and gender. The American sample on the other hand was collected from a student population and as such any comparison with the Japanese stratified community sample must be interpreted with caution. The results of the Japanese and American t-tests, presented above, were conducted on an exploratory basis.

We found interesting differences between Japanese drivers and those previously surveyed in western countries. Contrary to expectations, Japanese drivers reported significantly lower on all DAS subscales and the total DAS score, when compared with drivers from both the US and Australian samples. When compared with British drivers the difference in the total DAS score was found to be non-significant, however Japanese drivers scored significantly lower on the discourtesy, illegal and slow driving subscales, but significantly higher on the hostile gestures and police presence subscales. There was no significant difference in scores on the traffic obstructions subscale. Overall, these findings do not support hypothesis 2a, that Japanese drivers will show significantly higher levels of driving anger compared to western samples.

Hypothesis 2b that Japanese drivers would show significantly higher levels of trait anger compared to an Australian sample was not supported. Both samples displayed very similar trait anger item mean scores (Japan M = 2.38, SD = .50, Australia M = 2.32, SD = .45), and an unrelated samples t-test showed no significant difference between the trait anger of the Japanese and Australian samples, t = 1.12, n.s.

Pearson intercorrelations of variables. Table 3 (below) shows the correlation coefficients calibrated by Cohen (1992) as small $r = .20$, moderate $r = .30$, and strong $r = .50$.

Table 3

Pearson Intercorrelations of Variables

	1	2	3	4	5	6
1. Age						
2. Gender	-.02					
3. Length of Service	.73**	-.14*				
4. Life Satisfaction	.01	.12	.01			
5. ERI	.13	-.01	.06	-.26**		
6. Trait Anger	.01	.06	-.08	-.27**	.26**	
7. Driving Anger	.08	-.02	.03	-.18**	.21**	.33**

Note: * $p < .05$, ** $p < .01$. Gender: 1 = male, 2 = female.

In relation to ERI there were no correlations with demographic variables. Life satisfaction displayed a small to moderate negative correlation with ERI, $r(214) = -.26$, $p < .01$, indicating that participants with high ERI were less satisfied with life in general. ERI was found to be significantly positively correlated at a small to moderate level with trait anger, $r\ (214) = .26$, $p < .01$, and a small correlation with driving anger, $r\ (214) = .21$, $p < .01$. These correlations suggest that individuals with high levels of ERI induced stress were not only more likely to experience anger but also to experience a more profound feeling of anger both on the road and in everyday life.

Trait anger showed a moderate negative correlation with life satisfaction, $r\ (214) = -.27$, $p < .01$. These results suggest that participants who scored high on trait anger were also less satisfied with both their job and the overall state of their lives. As expected, a positive moderate correlation was observed between driving anger and trait anger, $r\ (214) = .33$, $p < .01$, indicating that participants reporting high trait anger have a tendency to experience elevated levels of driving anger.

Life satisfaction displayed a weak negative correlation with driving anger, r (214) = -.18, $p < .01$, indicating that those with higher levels of driving anger are also more likely to be less satisfied with life in general. Profession categories are not presented in the table as only two showed a very marginal correlation with a variable of interest (trait anger) and three had a low N. For these reasons job category was not included in the regression analyses either.

Hierarchical Multiple Regression Analyses

We followed Baron and Kenny's (1986) four steps to test for mediation. In Model 1, as shown in Table 4 we see a significant positive relationship between ERI and driving anger even after controlling for life satisfaction, satisfying step 1. Next we regressed the same measures on trait anger, and as shown in Model 2, ERI remains a significant predictor in the presence of the controls, satisfying step 2. Next we regressed driving anger onto trait anger with life satisfaction and ERI in the model (Model 3). The relationship between trait anger and driving anger was significant and positive β = .30, $p < .001$, satisfying step 3. We note that in this final model ERI was no longer significant thus supporting step 4. Additionally the Sobel test was significant z = 2.94, $p < .01$, indicating that trait anger significantly carried the effect of ERI on to driving anger. In sum support for each step and the significant Sobel test confirms the requirements for mediation. Trait anger fully mediated the relationship between ERI and road anger. The final mediation model is displayed in Figure 1.



Figure 1. Standardised regression coefficients in the proposed mediation of ERI by general anger in the prediction of driving anger. (Note: ** $p < .01$, *** $p < .001$)

Table 4.

Hierarchical Multiple Regression Models Standardised Regression Coefficients (ß)

	Model 1 Driving Anger	Model 2 Trait Anger	Model 3 Driving Anger
Life Satisfaction	-.14	-.22**	-.07
#ERI	.18**	.20**	.12
#Trait Anger			.28***
ΔR^2	.030**	.039**	.070***
Model Adj. R^2	.054	.104	.119
	F (2, 212) = 7.06***	F (2, 212) = 13.47***	F (3, 211) = 10.66***

Note: ** $p < .01$, *** $p < .001$. #, indicates a final step in the equation, to which the ΔR^2 value relates.

8.1.4 Publication 4: Discussion

Work stress and road anger are increasing in many countries, yet the link between them has been largely ignored. The deleterious effects of work stress are wide ranging and spillover to other domains like the family environment (Bakker, Demerouti, & Dollard, 2007). One aim of the present study was to draw attention to the detrimental effects of stress at work due to ERI by demonstrating its spillover into another societal domain, that of anger on the road. Another aim was to investigate the occurrence of driving anger in Japan and to make comparisons with the existing array of information on western countries. We chose Japan as the sample to investigate ERI and driving anger, as high levels of work stress have been reported in the literature, as well as high levels of road casualties.

Consistent with our hypothesis the process by which ERI translates to driving anger was through a fully mediated pathway, the positive effect of ERI on driving anger carried by the intervening variable trait anger. In other words, the stress experienced in the workplace is related to a change in general proclivity to anger, which can spill over into general daily life such as anger behind the wheel. The result is consistent with Australian research (Hoggan & Dollard, 2007). Therefore the translation of anger related to stress at work into another

domain, angry ruminations whilst driving, appears to be a generalisable phenomenon by culture.

In terms of the occurrence of driving anger, overall, Japanese motorists reported that being the target of hostile gestures was the most anger evoking event, closely followed by discourtesy on the road. Previous studies have all found the discourteous actions of other drivers to be the most anger eliciting situations in western samples with the overt hostility of other motorists falling in the middle of the range (Deffenbacher et al., 1994; Hoggan & Dollard, 2007; Lajunen et al., 1998). The indirect nature of Japanese communication could mean that the culture is less conditioned to overt hostility and thus is more sensitive to hostile motorists (Masataka, 2002; Miyazaki, Komaki, Tsuboi, Kobayashi, Shimizu, Fujita et al., 2003). Interestingly, the Japanese sample reported the least anger in the presence of slow drivers, perhaps an acceptance of Japan's well known traffic congestion problem.

The situation that generated the most anger was another driver parking in the space that the participant was waiting for. Incidentally, Hoggan and Dollard (2007) and Lajunen and colleagues (1998) also found this to be the issue that elicited the greatest amount of anger in Australian and British drivers.

Compared with Americans and Australians (Deffenbacher et al., 1994; Hoggan & Dollard, 2007), Japanese reported less anger across all subscales and in the total driving anger score. However, the average score for each subscale exceeded 1.5 points, which Lajunen and colleagues (1998) state is still an appreciable amount of anger. This indicates that although Japanese people may report lower levels of driving anger it remains a problem that could cloud judgement and encourage risk-taking behaviour on the road.

In our representative community sample of Japanese workers, we found a very high risk of psychological strain (70%) as evident from Effort-Reward Imbalance, compared with western community samples, and significantly higher than in a representative Australian community sample. Furthermore, both Australian and Japanese samples exhibited a significant relationship between work stress from ERI and trait anger. This finding accords with the notion that prolonged exposure to factors at work can shape an individual's long term stable personality traits. For example Dollard and Winefield (1998) found that high strain jobs were associated with increased levels of trait anxiety over time.

The relationship between trait anger and driving anger also supports the intuitive notion that stable characteristics play a role in how individuals deal with daily life. In our study it suggests that individuals with a high proclivity to be angered and who experience more intense anger are also likely to experience elevated levels of anger behind the wheel. This is corroborated by a number of existing studies that have found a relationship between trait and driving anger (Deffenbacher et al., 2003a; Deffenbacher et al., 2003b; Deffenbacher et al., 2002; Deffenbacher, Huff, Lynch, Oetting & Salvatore, 2000; Deffenbacher, White & Lynch, 2004; Hoggan & Dollard, 2007).

There are a number of strengths of the present study that are worth reporting. A major limitation of past studies of driving anger is the use of homogenous samples of convenience like university students. We acquired a representative heterogeneous sample through random selection of a stratified community sample to overcome limitations in generalisability. Additionally our high response rate, 71% of those initially approached actually participated, suggests that the sample is representative of the target population. Nevertheless it could be argued that the results are generalisable only to mid-range Japanese cities like Nagoya and may not apply to rural areas or cities with much higher population density.

The present study also makes a new contribution to knowledge, as this is the first time the DAS instrument has been employed in a non-western sample and in a language other than English. Furthermore its pioneering administration in Japan demonstrated that the instrument is valid, holds a factor structure similar to other cultures, and was reliable ($\alpha = .90$).

Limitations and Future Research

A possible shortcoming of this study is that although the selection criteria entailed possession of a full licence, the actual length of driving experience may have varied by participant. Some participants therefore may have been unfamiliar with a number of the driving situations. Although not measured in previous DAS studies, future research should gauge length of driving experience. Another limitation is the reliance on self-report measures. This method was selected over others due to ease of administration, and the less intrusive nature. However, as with other Asian countries, in Japan ‘face’ or reputation is an important concept along with the desire to appear polite and humble. Thus participants may have had a tendency toward social desirability bias. In order to counteract the effect, the participants’ anonymity was reassured by the researcher, and surveys could be completed in private.

Nevertheless one must keep this cultural tendency in mind whilst interpreting cross-cultural comparisons.

As for the ERI scale, it is worthwhile noting that the omission of Item 14 ('My current occupational position adequately reflects my education and training') from the scale increased the reliability. This may be linked to the structure of Japan's workforce 'seniority system', wherein regardless of education a new employee is always given the lowest position in the company and is expected to earn more prestigious positions and management roles according to age and duration of service (Tokyo Declaration, 1999; Tsutsumi, Ishitake, Peter, Siegrist, & Matoba, 2001). Thus in Japanese culture, it is unlikely that the concept of 'reward' would be linked to education history, and perhaps the structure of the subscale should be reconsidered for a Japanese sample.

Another limitation is the reliance on external data for comparison. Future studies employing cross-cultural analysis may be more reliable if they were all conducted by the same researchers, using the same sampling method. The study was also cross-sectional in design, and without a longitudinal design, causation cannot be implied and there may be other explanations for the significant direct effects that were found. Nevertheless, the existence of a relationship linking these highly important issues was supported, replicating findings in another cultural context and opening the avenue for further study.

The present study is the first investigation of the DAS in a non-western country. Further research is warranted to test the psychometrics of the DAS the instrument in other Asian countries, and to test the key mediation hypothesis proposed here. A longitudinal design would also enable a better investigation of the causal links in the relationship between ERI, trait and driving anger. Additional research is also required to investigate whether the elevated levels of trait anger that are related to ERI stress from work may spill over into other domains (e.g. domestic violence).

Implications of the Present Study

Work stress effects spill over to other life domains, including anger on the road, and the relationship has been demonstrated in both western and eastern cultures. Tackling driving anger could begin by addressing work stress and its associated anger as stress itself was a substantive problem, afflicting 70% of the Japanese workers.

It has been widely accepted that work stress poses detrimental effects on the individual, organisation and the economy. Our study has identified ERI to be a major problem in a Japanese sample. If this stress is seen to originate from a disparity in efforts and rewards, then either of these may be targeted to bring relief in the workplace. Since Japanese culture promotes hard work to avoid losing 'face', its workplaces are characterised by high productivity, job loyalty and low absenteeism. In the presence of problems like poor salary or lack of support, the Japanese mindset is to simply 'endure', which may explain why workplaces in Japan possess many characteristics conducive of a satisfied and productive workforce in spite of its problems. Whilst they appear to be intrinsically motivated to perform well, the critical issue may be the lack of extrinsic rewards.

Previous studies have made Japanese workplaces well aware of the pervasive work stress problem and its costly outcomes, and the present study provides an avenue through which to actively reduce work stress. The perceived effort-reward imbalance may be mitigated by reducing demands and promoting a more supportive work environment and providing greater opportunities for career advancement based on the individual's contribution to the workplace, rather than seniority.

The findings of the present study suggest more serious attention be invested in reducing the influences behind the sensationalised overt aggression and instead address their covert origins - the feeling of anger and aggressive ruminations. By targeting the less observable but more prevalent and equally dangerous problem of driving anger, there is good potential to reduce casualties on the road and to save lives.

Conclusions

The Japanese sample reported a surprisingly large disparity in their perceived efforts and rewards at work, showing over 70% of individuals to be at risk of strain. Despite reporting similar levels of trait anger as Australians, Japanese motorists appeared to harbour less anger on the road, suggesting the existence of cultural differences in attitudes toward anger in other domains. The present study has supported the existence of a link between the stress resulting from an imbalance in perceived efforts and rewards at work, and the development anger in other areas of life. In essence, the mediator model highlights the spill over of stress in the workplace into other apparently unrelated domains like demeanour on the

road. What was once thought to be a problem of the workplace has been shown to have a more pervasive influence in everyday life, underlining the importance of reducing work stress.

8.1.5 Publication 4: References

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8.2 Final 12-item MIDAI Scales

8.2.1 English Version

The following scales contain statements detailing the behaviour of other people that may have the potential to make you angry. Each section is preceded with an opening phrase to which a list of items proposes different situations.

For example: "*How much anger would I feel if a family member or my partner…*
1. Makes a nasty joke about me."

Imagine that each situation described below is *actually happening* to you, and rate the amount of anger that you believe you would feel by circling the appropriate number in the right hand column. You are not likely to have personally experienced all of the listed situations. *When you come across a situation you have not experienced before, imagine that the situation is actually occurring and respond with the degree of anger you believe you would feel.*

MIDAI Family Scale

The following situations concern behaviour that you may experience within the family.

How much anger would I feel if a family member or my partner…	*None at all*	*A little*	*Some*	*Much*	*Very Much*
1. Makes a nasty joke about me	0	1	2	3	4
2. Makes unreasonable demands without considering my other commitments	0	1	2	3	4
3. Reprimands me without knowing the 'whole story'	0	1	2	3	4
4. Doesn't follow through on a promise they made to me	0	1	2	3	4
5. Emphasises my failures during a conversation	0	1	2	3	4
6. Doesn't fulfil their obligations, affecting my plans	0	1	2	3	4
7. Behaves in an unnecessarily aggressive manner toward me	0	1	2	3	4
8. Causes significant delays when I have a schedule to keep	0	1	2	3	4
9. Insults me on purpose	0	1	2	3	4
10. Refuses to acknowledge my point of view	0	1	2	3	4
11. Yells at me	0	1	2	3	4
12. Doesn't give me the respect I deserve	0	1	2	3	4

MIDAI Superiors Scale

The following situations concern behaviour that you may experience in your workplace when interacting with superiors. The term 'superior' is used to refer to anyone in an organisational role higher than yours, including your employer, a senior employee, coordinator, team leader, or project manager. If you do not currently have anyone superior to you in your workplace, consider a time when you did, or imagine how you would feel in your present workplace if you had a superior who behaves in the stated manner.

How much anger would I feel if a superior…	*None at all*	*A little*	*Some*	*Much*	*Very Much*
1. Criticises me in front of others	0	1	2	3	4
2. Makes unreasonable demands without considering my other commitments	0	1	2	3	4
3. Harasses me	0	1	2	3	4
4. Makes me do a task that is far below my qualifications or experience	0	1	2	3	4
5. Reprimands me for no good reason	0	1	2	3	4
6. Doesn't appreciate my work	0	1	2	3	4
7. Behaves in an unnecessarily aggressive manner toward me	0	1	2	3	4
8. Causes significant delays when I have a schedule to keep	0	1	2	3	4
9. Insults me on purpose	0	1	2	3	4
10. Refuses to acknowledge my point of view	0	1	2	3	4
11. Yells at me	0	1	2	3	4
12. Doesn't give me the respect I deserve	0	1	2	3	4

MIDAI Co-workers Scale

The term 'co-worker' is used to refer to other employees and colleagues who have a similar status to you. Although they may not be employed in the same area or may have different roles and titles, neither of you are considered to be in a superior or subordinate position in relation to each other. If you do not currently have anyone in a relatively equal position at your workplace, consider a time when you did, or *imagine* how you would feel in your present workplace if you had a co-worker who behaves in the stated manner.

How much anger would I feel if a co-worker…	*None at all*	*A little*	*Some*	*Much*	*Very Much*
1. Puts me down in order to get ahead	0	1	2	3	4
2. Talks to me as if they were my superior	0	1	2	3	4
3. Makes a nasty joke about me	0	1	2	3	4
4. Betrays information that was held in confidence	0	1	2	3	4
5. Criticises me in front of others	0	1	2	3	4
6. Tries to prevent me from achieving my goals	0	1	2	3	4
7. Behaves in an unnecessarily aggressive manner toward me	0	1	2	3	4
8. Causes significant delays when I have a schedule to keep	0	1	2	3	4
9. Insults me on purpose	0	1	2	3	4
10. Refuses to acknowledge my point of view	0	1	2	3	4
11. Yells at me	0	1	2	3	4
12. Doesn't give me the respect I deserve	0	1	2	3	4

MIDAI Subordinates Scale

The term 'subordinate' is used to refer to anyone in an inferior position to you, including your employees, general staff, or new group members. If you do not currently have anyone in a subordinate position to you, consider a time when you did, or *imagine* how you would feel in your present workplace if you had a subordinate who behaves in the stated manner.

How much anger would I feel if a subordinate…	*None at all*	*A little*	*Some*	*Much*	*Very Much*
1. Lies to me on purpose	0	1	2	3	4
2. Doesn't respect my authority	0	1	2	3	4
3. Makes a nasty joke about me	0	1	2	3	4
4. Arrives very late for work or an appointment without a reasonable excuse	0	1	2	3	4
5. Undermines my authority in front of others	0	1	2	3	4
6. Neglects an important task that I needed them to do	0	1	2	3	4
7. Behaves in an unnecessarily aggressive manner toward me	0	1	2	3	4
8. Causes significant delays when I have a schedule to keep	0	1	2	3	4
9. Insults me on purpose	0	1	2	3	4
10. Refuses to acknowledge my point of view	0	1	2	3	4
11. Yells at me	0	1	2	3	4
12. Doesn't give me the respect I deserve	0	1	2	3	4

MIDAI Stranger Scale

The following situations concern behaviour that you may experience from people you have just met. The term 'stranger' is used to refer to someone with whom you are not acquainted. The listed behaviours are assumed to take place sometime within the first day of meeting the person in question and in a context where neither of you is in a superior nor subordinate social or organisational position.

How much anger would I feel if a stranger…	*None at all*	*A little*	*Some*	*Much*	*Very Much*
1. Makes a nasty joke about me	0	1	2	3	4
2. Doesn't show me common courtesy	0	1	2	3	4
3. Harasses me	0	1	2	3	4
4. Lies to me on purpose	0	1	2	3	4
5. Criticises me without justification	0	1	2	3	4
6. Harasses another stranger whilst I am present	0	1	2	3	4
7. Behaves in an unnecessarily aggressive manner toward me	0	1	2	3	4
8. Causes significant delays when I have a schedule to keep	0	1	2	3	4
9. Insults me on purpose	0	1	2	3	4
10. Refuses to acknowledge my point of view	0	1	2	3	4
11. Yells at me	0	1	2	3	4
12. Doesn't give me the respect I deserve	0	1	2	3	4

8.2.2 Japanese Version

下記に描かれている状況が、実際にあなたに起きていると想像して下さい。右側の欄にあなたが感じるであろうイライラ度の程度に〇を付けて下さい。もしあなたが以下の状況を経験した事がなければ、実際に起きていると想像し、あなたが感じるであろうイライラ度を答えて下さい。

家族に対するイライラ度

自分の家族が下記のような言動をあなたに対してとったらイライラを感じる可能性があります。ここで言う「家族」とはあなたの家族、例えば自分の両親、兄弟、子供、配偶者、一緒に住んでいる交際相手を指します。

もし自分の家族が下記のような言動を自分に対してとったらどの程度のイライラを感じるか。		全く感じない	少し感じる	感じる	強く感じる	かなり強く感じる
1.	自分についての不快な冗談を言う	0	1	2	3	4
2.	自分の他のするべき事を考慮せず不合理な要求を押付ける	0	1	2	3	4
3.	話の全部の内容を知らずに自分を叱責する	0	1	2	3	4
4.	自分にした約束を遂行しない	0	1	2	3	4
5.	会話の中で自分の失敗を強調する	0	1	2	3	4
6.	自分の計画に影響する義務を果たさない	0	1	2	3	4
7.	自分に対し不必要に攻撃的な態度を振舞う	0	1	2	3	4
8.	自分の決められた予定に重大な遅れを持たらす	0	1	2	3	4
9.	故意に自分を侮辱する	0	1	2	3	4
10.	自分の視点を認める事を拒否する	0	1	2	3	4
11.	自分に怒鳴る	0	1	2	3	4
12.	自分に値する尊敬の念を示さない	0	1	2	3	4

上司との関わり合い

下記の状況は職場であなたが受けうる言動についてです。ここで言う「上司」とは組織の中であなたよりも高い地位にいる人です。例えば、あなたの雇主、先輩、責任者、コーディネーター、チームの指導者、企画部長、あなたよりも長い期間雇われている人を指します。もし職場にあなたよりも上位にいる人がいなければ、過去にいた時の経験を思い浮かべるか、もしくは以下に述べられているように振舞う上司が職場にいると想像し答えて下さい。

もし自分の上司が下記のような言動を自分に対してとったら、どの程度のイライラを感じるか。	全く感じない	少し感じる	感じる	強く感じる	かなり強く感じる
1. 他の人の前で自分を批評する	0	1	2	3	4
2. 自分の他のするべき事を考慮せず不合理な要求を押付ける	0	1	2	3	4
3. 自分を馬鹿にする	0	1	2	3	4
4. 自分の持っている経験や資格よりも遥かに低い仕事を与える	0	1	2	3	4
5. 不当な理由で自分を叱責する	0	1	2	3	4
6. 自分のする仕事に感謝しない	0	1	2	3	4
7. 自分に対し不必要に攻撃的な態度を振舞う	0	1	2	3	4
8. 自分の決められた予定に重大な遅れを持たらす	0	1	2	3	4
9. 故意に自分を侮辱する	0	1	2	3	4
10. 自分の視点を認める事を拒否する	0	1	2	3	4
11. 自分に怒鳴る	0	1	2	3	4
12. 自分に値する尊敬の念を示さない	0	1	2	3	4

同僚との関わり合い

ここで言う「同僚」とは、他の従業員やあなたと同じような地位にいる人を指します。彼等はあなたと同じ場所で雇われてはいなかったり、違った役割を持っているかもしれませんが、あなた達の関係に、どちらが上位でどちらが下位であるという関係は存在しません。もし職場にあなたと同じ地位にいる人がいなければ、過去にいた時の経験を思い浮かべるか、もしくは以下に述べられているように振舞う同僚が職場にいると想像し答えて下さい。

もし自分の同僚が下記のような言動を自分に対してとったら、どの程度のイライラを感じるか。	全く感じない	少し感じる	感じる	強く感じる	かなり強く感じる
1. 成功する手段として自分の地位を下げる	0	1	2	3	4
2. まるで上司のように自分に話しかける	0	1	2	3	4
3. 自分についての不快な冗談を言う	0	1	2	3	4
4. 内密にしておいた情報を漏らす	0	1	2	3	4
5. 他の人の前で自分を批評する	0	1	2	3	4
6. 自分が目標に達成するのを防げようとする	0	1	2	3	4
7. 自分に対し不必要に攻撃的な態度を振舞う	0	1	2	3	4
8. 自分の決められた予定に重大な遅れを持たらす	0	1	2	3	4
9. 故意に自分を侮辱する	0	1	2	3	4
10. 自分の視点を認める事を拒否する	0	1	2	3	4
11. 自分に怒鳴る	0	1	2	3	4
12. 自分に値する尊敬の念を示さない	0	1	2	3	4

部下との関わり合い

ここで言う「部下」とはあなたよりも下の地位にいる人、例えばあなたの雇っている従業員、後輩やあなたよりも短い期間雇われている人を指します。もし職場にあなたよりも下位にいる人がいなければ、過去にいた時の経験を思い浮かべるか、もしくは以下に述べられているように振舞う部下が職場にいると想像し答えて下さい。

もし自分の部下が下記のような言動を自分に対してとったら、どの程度のイライラを感じるか。	全く感じない	少し感じる	感じる	強く感じる	かなり強く感じる
1. 故意に自分に嘘をつく	0	1	2	3	4
2. 自分の権限を尊重しない	0	1	2	3	4
3. 自分についての不快な冗談を言う	0	1	2	3	4
4. 職場や会合にかなり遅れてやって来た理由が不当である	0	1	2	3	4
5. 他の人の前で自分の権威を傷付ける	0	1	2	3	4
6. 自分が彼等にして欲しい重要な仕事を軽視する	0	1	2	3	4
7. 自分に対し不必要に攻撃的な態度を振舞う	0	1	2	3	4
8. 自分の決められた予定に重大な遅れを持たらす	0	1	2	3	4
9. 故意に自分を侮辱する	0	1	2	3	4
10. 自分の視点を認める事を拒否する	0	1	2	3	4
11. 自分に怒鳴る	0	1	2	3	4
12. 自分に値する尊敬の念を示さない	0	1	2	3	4

他人に対するイライラ度

下記の状況はあなたが出会ったばかりの人から受けうる言動についてです。ここで言う「他人」とはあなたの良く知らない人を指します。下記に述べられている言動はその人に始めて会った日に起きると考えて下さい。ここで状況は社会的、又は組織的にあなた達の間にどちらが上位でどちらが下位であるという関係は存在しません。

もし他人が下記のような言動を自分に対してとったらどの程度のイライラを感じるか。	全く感じない	少し感じる	感じる	強く感じる	かなり強く感じる
1. 自分についての不快な冗談を言う	0	1	2	3	4
2. 自分に一般的な礼儀を示さない	0	1	2	3	4
3. 自分を馬鹿にする	0	1	2	3	4
4. 故意に自分に嘘をつく	0	1	2	3	4
5. 正当とする証拠なしに自分を批評する	0	1	2	3	4
6. 自分の目の前で他の知らない人を馬鹿にする	0	1	2	3	4
7. 自分に対し不必要に攻撃的な態度を振舞う	0	1	2	3	4
8. 自分の決められた予定に重大な遅れを持たらす	0	1	2	3	4
9. 故意に自分を侮辱する	0	1	2	3	4
10. 自分の視点を認める事を拒否する	0	1	2	3	4
11. 自分に怒鳴る	0	1	2	3	4
12. 自分に値する尊敬の念を示さない	0	1	2	3	4

8.3 Individual item means and standard deviation tables

8.3.1 MIDAI Family Scale

Table 1. *Interpersonal anger toward family members*

	Australia		Japan	
Overt Hostility	***M***	***SD***	***M***	***SD***
Item 1: Makes a nasty joke about me	1.99	1.08	2.20	1.07
Item 3: Reprimands me without knowing the 'whole story'	2.43	1.13	2.54	1.02
Item 5: Emphasises my failures during conversation	2.43	1.23	2.59	1.15
Item 7: Behaves in an unnecessarily aggressive manner toward me	2.45	1.21	2.59	1.11
Item 9: Insults me on purpose	2.42	1.34	2.59	1.21
Item 11: Yells at me	2.32	1.19	2.54	1.14
Covert Provocation	***M***	***SD***	***M***	***SD***
Item 2: Makes unreasonable demands without considering my other commitments	2.15	1.13	2.27	1.02
Item 4: Doesn't follow through on a promise they made to me	2.06	1.03	2.14	1.01
Item 6: Doesn't fulfil their obligations, affecting my plans	2.05	1.08	2.23	1.01
Item 8: Causes significant delays when I have a schedule to keep	2.07	1.13	2.26	1.04
Item 10: Refuses to acknowledge my point of view	2.39	1.06	2.39	0.98
Item 12: Doesn't give me the respect I deserve	2.20	1.08	2.40	0.93

Table 2. *Interpersonal anger toward superiors at work*

	Australia		Japan	
Overt Hostility	***M***	***SD***	***M***	***SD***
Item 1: Criticises me in front of others	2.64	1.01	2.40	0.96
Item 3: Harasses me	2.77	1.22	2.46	1.00
Item 5: Reprimands me for no good reason	2.79	1.16	2.39	1.04
Item 7: Behaves in an unnecessarily aggressive manner toward me	2.78	1.21	2.44	0.97
Item 9: Insults me on purpose	2.76	1.23	2.41	1.07
Item 11: Yells at me	2.84	1.26	2.60	1.06
Covert Provocation	***M***	***SD***	***M***	***SD***
Item 2: Makes unreasonable demands without considering my other commitments	2.31	1.06	1.84	0.97
Item 4: Makes me do a task that is far below my qualifications or experience	1.49	1.21	1.52	1.17
Item 6: Doesn't appreciate my work	2.15	1.11	2.05	1.09
Item 8: Causes significant delays when I have a schedule to keep	2.07	1.12	1.80	1.03
Item 10: Refuses to acknowledge my point of view	2.33	1.10	1.78	0.93
Item 12: Doesn't give me the respect I deserve	2.41	1.14	1.89	1.04

Table 3. *Interpersonal anger toward co-workers*

	Australia		Japan	
Overt Hostility	***M***	***SD***	***M***	***SD***
Item 1: Puts me down in order to get ahead	2.88	1.11	2.97	1.00
Item 3: Makes a nasty joke about me	2.42	1.20	2.42	1.07
Item 5: Criticises me in front of others	2.69	1.16	2.78	1.03
Item 7: Behaves in an unnecessarily aggressive manner toward me	2.72	1.13	2.88	0.97
Item 9: Insults me on purpose	2.65	1.21	2.82	1.06
Item 11: Yells at me	2.62	1.23	2.84	1.13
Covert Provocation	***M***	***SD***	***M***	***SD***
Item 2: Talks to me as if they were my superior	2.37	1.19	2.36	1.11
Item 4: Betrays information that was held in confidence	2.94	1.04	2.67	0.84
Item 6: Tries to prevent me from achieving my goals	2.59	1.12	2.69	1.00
Item 8: Causes significant delays when I have a schedule to keep	2.29	1.07	2.23	0.88
Item 10: Refuses to acknowledge my point of view	2.29	1.06	2.20	0.90
Item 12: Doesn't give me the respect I deserve	2.41	1.11	2.50	0.93

Table 4. *Interpersonal anger toward subordinates at work*

	Australia		Japan	
Overt Hostility	***M***	***SD***	***M***	***SD***
Item 1: Lies to me on purpose	2.77	1.10	2.78	1.10
Item 3: Makes a nasty joke about me	2.37	1.24	2.51	1.08
Item 5: Undermines my authority in front of others	2.83	1.06	2.93	0.96
Item 7: Behaves in an unnecessarily aggressive manner toward me	2.75	1.12	2.80	1.06
Item 9: Insults me on purpose	2.75	1.13	2.82	1.02
Item 11: Yells at me	2.74	1.23	2.84	1.07
Covert Provocation	***M***	***SD***	***M***	***SD***
Item 2: Doesn't respect my authority	2.29	.96	2.31	0.94
Item 4: Arrives very late for work or an appointment without a reasonable excuse	2.03	1.00	2.07	1.00
Item 6: Neglects an important task that I needed them to do	2.64	1.00	2.46	0.89
Item 8: Causes significant delays when I have a schedule to keep	2.35	1.08	2.22	0.86
Item 10: Refuses to acknowledge my point of view	2.28	1.04	2.18	0.82
Item 12: Doesn't give me the respect I deserve	2.37	1.13	2.30	0.97

8.3.5 MIDAI Stranger Scale

Table 5. *Interpersonal anger toward strangers*

	Australia		Japan	
Overt Hostility	***M***	***SD***	***M***	***SD***
Item 1: Makes a nasty joke about me	2.29	1.25	2.98	1.01
Item 3: Harasses me	2.59	1.15	2.93	1.06
Item 5: Criticises me without justification	2.21	1.20	2.68	1.18
Item 7: Behaves in an unnecessarily aggressive manner toward me	2.36	1.15	3.10	1.10
Item 9: Insults me on purpose	2.49	1.18	3.13	1.11
Item 11: Yells at me	2.44	1.23	3.14	1.15
Covert Provocation	***M***	***SD***	***M***	***SD***
Item 2: Doesn't show me common courtesy	2.21	1.16	2.72	0.98
Item 4: Lies to me on purpose	1.99	1.18	2.12	1.07
Item 6: Harasses another stranger whilst I am present	2.10	.99	2.17	1.03
Item 8: Causes significant delays when I have a schedule to keep	2.10	1.01	2.65	0.87
Item 10: Refuses to acknowledge my point of view	1.70	1.12	2.23	1.21
Item 12: Doesn't give me the respect I deserve	1.75	1.09	2.46	1.01

8.4 Original Community Sample Pilot Study Questionnaire

8.4.1 English Version

University of South Australia

INTERPERSONAL ANGER:
Developing a domain-specific anger instrument.

My name is Sarven McLinton, and I am currently conducting research for my PhD in Psychology at the University of South Australia. I am inviting you to participate in a study for my PhD, the purpose of which is to test a recently developed scale for measuring *Interpersonal Anger* – the feelings of anger that may be experienced in social situations.

If you decide to participate in this study your responses will greatly assist in generating a robust measure of Interpersonal Anger and will also provide insight into the nature of anger in social situations in Australia. I would greatly appreciate it if you could take 25 minutes of your time to complete this questionnaire and return it in the reply-paid envelope over the coming weeks. The questionnaire consists of a series of items concerning your work environment, temperament, your reactions to certain social situations, as well as some broad demographic information.

While I would appreciate it if you could be involved in this project, participation is entirely voluntary and you are free to withdraw at any time. The questionnaire is anonymous, and any identifying information that you may provide will be separated from your responses. Your responses will be kept confidential by the researcher and you will not be identified in the reporting of the research. Information you provide will contribute to all stages of this project, and by adding to the body of knowledge it will help us to better understand anger in social situations. All information collected will be locked in a secure room in the School of Psychology for a period of seven years, after which it will be destroyed.

This study has the approval of the Human Research Ethics Committee of the University of South Australia. Participation in this study may cause distress in some individuals, and if you feel distressed about any of the issues contained in this questionnaire please do not attempt to complete it. In this case you are advised to contact the UniSA Psychology Clinic where you may access counselling services at a nominal rate (PsychologyClinic@unisa.edu.au), or Lifeline (13 11 14) a free counselling service available over the phone. If you wish to communicate with someone independent of this study, particularly regarding any ethical aspects of the project, you may contact Vicki Allen the Executive Officer of the ethics committee at Vicki.Allen@unisa.edu.au . For more information on the study itself, please contact my supervisor Professor Maureen Dollard at Maureen.Dollard@unisa.edu.au . Also, feel free to contact myself, Sarven McLinton (Sarven.Mclinton@unisa.edu.au) if you would like to receive a summary of the results at the conclusion of the study in December, 2009.

Thank you for your time and assistance.
Kind Regards,

Sarven S. McLinton, B.Psych(Hons)

Centre for Applied Psychological Research, School of Psychology
Playford Building
City East Campus
Frome Road
Adelaide
South Australia 5000

GPO Box 2471
Adelaide
South Australia 5001
Australia

t: +61 8 8302 1077
f: +61 8 8302 2956

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1. Interpersonal Anger

The following situations concern behaviour that you may experience within the family.

The following scales contain statements detailing the behaviour of other people that may have the potential to make you angry. Each section is preceded with an opening phrase to which a list of items proposes different situations.

For example: "*How much anger would I feel if a family member or my partner…*
1. Makes a nasty joke about me."

Right-hand Column: Imagine that each situation described below is *actually happening* to you, and rate the amount of anger that you believe you would feel by circling the appropriate number in the right hand column. You are not likely to have personally experienced all of the listed situations. *When you come across a situation you have not experienced before, imagine that the situation is actually occurring and respond with the degree of anger you believe you would feel.*

Left-hand Column: Please indicate how frequently you actually experience this situation.

How often does this happen to you?								**How much anger would you feel?**				
Less than once a year	*A few times a year or less*	*Once a month or less*	*A few times a month*	*Once a week*	*A few times a week*	*Every day*	***How much anger would I feel if a family member or my partner…***	*None at all*	*A little*	*Some*	*Much*	*Very Much*
0	1	2	3	4	5	6	**1.** Makes a nasty joke about me	0	1	2	3	4
0	1	2	3	4	5	6	**2.** Criticises me without justification	0	1	2	3	4
0	1	2	3	4	5	6	**3.** Doesn't give me the respect I deserve	0	1	2	3	4
0	1	2	3	4	5	6	**4.** Causes significant delays when I have a schedule to keep	0	1	2	3	4
0	1	2	3	4	5	6	**5.** Yells at me	0	1	2	3	4
0	1	2	3	4	5	6	**6.** Reprimands me without knowing the 'whole story'	0	1	2	3	4
0	1	2	3	4	5	6	**7.** Refuses to acknowledge my point of view	0	1	2	3	4
0	1	2	3	4	5	6	**8.** Criticises me in front of others	0	1	2	3	4
0	1	2	3	4	5	6	**9.** Doesn't fulfil their obligations, affecting my plans	0	1	2	3	4
0	1	2	3	4	5	6	**10.** Behaves in an unnecessarily aggressive manner toward me	0	1	2	3	4
0	1	2	3	4	5	6	**11.** Doesn't follow through on a promise they made to me	0	1	2	3	4
0	1	2	3	4	5	6	**12.** Talks ill of me behind my back	0	1	2	3	4
0	1	2	3	4	5	6	**13.** Tries to prevent me from achieving my goals	0	1	2	3	4
0	1	2	3	4	5	6	**14.** Doesn't provide support when I really need it	0	1	2	3	4
0	1	2	3	4	5	6	**15.** Lies to me on purpose	0	1	2	3	4
0	1	2	3	4	5	6	**16.** Neglects an important task that I needed them to do	0	1	2	3	4
0	1	2	3	4	5	6	**17.** Emphasises my failures during a conversation	0	1	2	3	4
0	1	2	3	4	5	6	**18.** Makes unreasonable demands without considering my other commitments	0	1	2	3	4
0	1	2	3	4	5	6	**19.** Insults me on purpose	0	1	2	3	4
0	1	2	3	4	5	6	**20.** Betrays a secret that I confided in them	0	1	2	3	4

2. Anger in the Workplace

The following situations concern behaviour that you may experience in your workplace.

2.1 Interacting with Superiors

The term 'superior' is used to refer to anyone in an organisational role higher than yours, including your employer, a senior employee, coordinator, team leader, project manager, or anyone who has been employed there for a much longer period of time. If you do not currently have anyone superior to you in your workplace, consider a time when you did, or *imagine* how you would feel in your present workplace if you had a superior who behaves in the stated manner.

Right-hand Column: Imagine that each situation described below is *actually happening* to you, and rate the amount of anger that you believe you would feel by circling the appropriate number in the right hand column. You are not likely to have personally experienced all of the listed situations. *When you come across a situation you have not experienced before, imagine that the situation is actually occurring and respond with the degree of anger you believe you would feel.*

Left-hand Column: Please indicate how frequently you actually experience this situation in your present workplace. *If you do not have subordinates you may leave this column blank.*

How often does this happen to you?								**How much anger would you feel?**				
Less than once a year	*A few times a year or less*	*Once a month or less*	*A few times a month*	*Once a week*	*A few times a week*	*Every day*	***How much anger would I feel if a superior…***	*None at all*	*A little*	*Some*	*Much*	*Very Much*
0	1	2	3	4	5	6	**1.** Criticises me in front of others	0	1	2	3	4
0	1	2	3	4	5	6	**2.** Gives another employee special treatment without justification	0	1	2	3	4
0	1	2	3	4	5	6	**3.** Makes me stay at work much later than I had planned	0	1	2	3	4
0	1	2	3	4	5	6	**4.** Doesn't provide support when I really need it	0	1	2	3	4
0	1	2	3	4	5	6	**5.** Gives me a demeaning task to do	0	1	2	3	4
0	1	2	3	4	5	6	**6.** Makes me work harder than other employees with no additional reward	0	1	2	3	4
0	1	2	3	4	5	6	**7.** Gives me work at the very last minute that will slow down my progress	0	1	2	3	4
0	1	2	3	4	5	6	**8.** Doesn't give me the respect I deserve	0	1	2	3	4
0	1	2	3	4	5	6	**9.** Makes me do a task that is far below my qualifications or experience	0	1	2	3	4
0	1	2	3	4	5	6	**10.** Doesn't appreciate my work	0	1	2	3	4
0	1	2	3	4	5	6	**11.** Harasses me	0	1	2	3	4
0	1	2	3	4	5	6	**12.** Promotes an employee who is less experienced or qualified than me	0	1	2	3	4
0	1	2	3	4	5	6	**13.** Makes unreasonable demands without considering my other commitments	0	1	2	3	4
0	1	2	3	4	5	6	**14.** Causes significant delays that slow down my progress	0	1	2	3	4
0	1	2	3	4	5	6	**15.** Harasses another employee whilst I am present	0	1	2	3	4
0	1	2	3	4	5	6	**16.** Insults me on purpose	0	1	2	3	4
0	1	2	3	4	5	6	**17.** Rejects my idea without giving it due consideration	0	1	2	3	4
0	1	2	3	4	5	6	**18.** Behaves in an unnecessarily aggressive manner toward me	0	1	2	3	4
0	1	2	3	4	5	6	**19.** Refuses to acknowledge my point of view	0	1	2	3	4
0	1	2	3	4	5	6	**20.** Discriminates against me	0	1	2	3	4
0	1	2	3	4	5	6	**21.** Reprimands me for no good reason	0	1	2	3	4
0	1	2	3	4	5	6	**22.** Changes my work conditions without considering the impact those changes will have on me	0	1	2	3	4
0	1	2	3	4	5	6	**23.** Yells at me	0	1	2	3	4
0	1	2	3	4	5	6	**24.** Betrays information that was held in confidence	0	1	2	3	4

2.2 Interacting with Co-workers

The term 'co-worker' is used to refer to other employees and colleagues who have a similar status to you. Although they may not be employed in the same area or may have different roles and titles, neither of you are considered to be in a superior or subordinate position in relation to each other. If you do not currently have anyone in a relatively equal position at your workplace, consider a time when you did, or *imagine* how you would feel in your present workplace if you had a co-worker who behaves in the stated manner.

Right-hand Column: Imagine that each situation described below is *actually happening* to you, and rate the amount of anger that you believe you would feel by circling the appropriate number in the right hand column. You are not likely to have personally experienced all of the listed situations. *When you come across a situation you have not experienced before, imagine that the situation is actually occurring and respond with the degree of anger you believe you would feel.*

Left-hand Column: Please indicate how frequently you actually experience this situation at your present workplace. *If you do not have co-workers you may leave this column blank.*

How often does this happen to you?								**How much anger would you feel?**				
Less than once a year	*A few times a year or less*	*Once a month or less*	*A few times a month*	*Once a week*	*A few times a week*	*Every day*	***How much anger would I feel if a co-worker…***	*None at all*	*A little*	*Some*	*Much*	*Very Much*
0	1	2	3	4	5	6	**1.** Spreads nasty rumours about me	0	1	2	3	4
0	1	2	3	4	5	6	**2.** Behaves in an unnecessarily aggressive manner toward me	0	1	2	3	4
0	1	2	3	4	5	6	**3.** Puts me down in order to get ahead	0	1	2	3	4
0	1	2	3	4	5	6	**4.** Harasses another employee whilst I am present	0	1	2	3	4
0	1	2	3	4	5	6	**5.** Insults me on purpose	0	1	2	3	4
0	1	2	3	4	5	6	**6.** Intentionally sabotages my work	0	1	2	3	4
0	1	2	3	4	5	6	**7.** Doesn't give me the respect I deserve	0	1	2	3	4
0	1	2	3	4	5	6	**8.** Betrays information that was held in confidence	0	1	2	3	4
0	1	2	3	4	5	6	**9.** Yells at me	0	1	2	3	4
0	1	2	3	4	5	6	**10.** Causes significant delays that slow down my progress	0	1	2	3	4
0	1	2	3	4	5	6	**11.** Makes a nasty joke about me	0	1	2	3	4
0	1	2	3	4	5	6	**12.** Lies to me on purpose	0	1	2	3	4
0	1	2	3	4	5	6	**13.** Criticises me in front of others	0	1	2	3	4
0	1	2	3	4	5	6	**14.** Refuses to acknowledge my point of view	0	1	2	3	4
0	1	2	3	4	5	6	**15.** Talks to me as if they were my superior	0	1	2	3	4
0	1	2	3	4	5	6	**16.** Harasses me	0	1	2	3	4
0	1	2	3	4	5	6	**17.** Tries to prevent me from achieving my goals	0	1	2	3	4

2.3 Interacting with Subordinates

The term 'subordinate' is used to refer to anyone in an inferior position to you, including your employees, general staff, group members, or anyone who has been employed in your workplace for a much shorter period of time. If you do not currently have anyone in a subordinate position to you, consider a time when you did, or *imagine* how you would feel in your present workplace if you had a subordinate who behaves in the stated manner.

Right-hand Column: Imagine that each situation described below is *actually happening* to you, and rate the amount of anger that you believe you would feel by circling the appropriate number in the right hand column. You are not likely to have personally experienced all of the listed situations. *When you come across a situation you have not experienced before, imagine that the situation is actually occurring and respond with the degree of anger you believe you would feel.*

Left-hand Column: Please indicate how frequently you actually experience this situation at your present workplace. *If you do not have subordinates you may leave this column blank.*

How often does this happen to you?								**How much anger would you feel?**				
Less than once a year	*A few times a year or less*	*Once a month or less*	*A few times a month*	*Once a week*	*A few times a week*	*Every day*	***How much anger would I feel if a subordinate…***	*None at all*	*A little*	*Some*	*Much*	*Very Much*
0	1	2	3	4	5	6	**1.** Arrives very late for work or an appointment without a reasonable excuse	0	1	2	3	4
0	1	2	3	4	5	6	**2.** Doesn't respect my authority	0	1	2	3	4
0	1	2	3	4	5	6	**3.** Spreads nasty rumours about me	0	1	2	3	4
0	1	2	3	4	5	6	**4.** Yells at me	0	1	2	3	4
0	1	2	3	4	5	6	**5.** Talks to me as if they were my superior	0	1	2	3	4
0	1	2	3	4	5	6	**6.** Intentionally sabotages my work	0	1	2	3	4
0	1	2	3	4	5	6	**7.** Insults me on purpose	0	1	2	3	4
0	1	2	3	4	5	6	**8.** Undermines my authority in front of others	0	1	2	3	4
0	1	2	3	4	5	6	**9.** Refuses to acknowledge my point of view	0	1	2	3	4
0	1	2	3	4	5	6	**10.** Offers advice in front of others to make me appear incompetent	0	1	2	3	4
0	1	2	3	4	5	6	**11.** Causes significant delays that slow down my progress	0	1	2	3	4
0	1	2	3	4	5	6	**12.** Lies to me on purpose	0	1	2	3	4
0	1	2	3	4	5	6	**13.** Belittles my role as a superior	0	1	2	3	4
0	1	2	3	4	5	6	**14.** Neglects an important task that I needed them to do	0	1	2	3	4
0	1	2	3	4	5	6	**15.** Behaves in an unnecessarily aggressive manner toward me	0	1	2	3	4
0	1	2	3	4	5	6	**16.** Harasses another employee whilst I am present	0	1	2	3	4
0	1	2	3	4	5	6	**17.** Doesn't give me the respect I deserve	0	1	2	3	4
0	1	2	3	4	5	6	**18.** Makes a nasty joke about me	0	1	2	3	4

3. Anger toward Strangers

The following situations concern behaviour that you may experience from people you have just met.

The term 'stranger' is used to refer to someone with whom you are not acquainted. The listed behaviours are assumed to take place sometime within the first day of meeting the person in question and in a context where neither of you is in a superior nor subordinate social or organisational position.

Right-hand Column: Imagine that each situation described below is *actually happening* to you, and rate the amount of anger that you believe you would feel by circling the appropriate number in the right hand column. You are not likely to have personally experienced all of the listed situations. *When you come across a situation you have not experienced before, imagine that the situation is actually occurring and respond with the degree of anger you believe you would feel.*

Left-hand Column: Please indicate how frequently you actually experience this situation.

How often does this happen to you?								**How much anger would you feel?**				
Less than once a year	*A few times a year or less*	*Once a month or less*	*A few times a month*	*Once a week*	*A few times a week*	*Every day*	***How much anger would I feel if a stranger…***	*None at all*	*A little*	*Some*	*Much*	*Very Much*
0	1	2	3	4	5	6	**1.** Behaves in an unnecessarily aggressive manner toward me	0	1	2	3	4
0	1	2	3	4	5	6	**2.** Doesn't give me the respect I deserve	0	1	2	3	4
0	1	2	3	4	5	6	**3.** Harasses another stranger whilst I am present	0	1	2	3	4
0	1	2	3	4	5	6	**4.** Causes significant delays when I have a schedule to keep	0	1	2	3	4
0	1	2	3	4	5	6	**5.** Yells at me	0	1	2	3	4
0	1	2	3	4	5	6	**6.** Refuses to acknowledge my point of view	0	1	2	3	4
0	1	2	3	4	5	6	**7.** Lies to me on purpose	0	1	2	3	4
0	1	2	3	4	5	6	**8.** Criticises me in front of others	0	1	2	3	4
0	1	2	3	4	5	6	**9.** Harasses me	0	1	2	3	4
0	1	2	3	4	5	6	**10.** Reprimands me for no good reason	0	1	2	3	4
0	1	2	3	4	5	6	**11.** Insults me on purpose	0	1	2	3	4
0	1	2	3	4	5	6	**12.** Doesn't show me common courtesy	0	1	2	3	4
0	1	2	3	4	5	6	**13.** Criticises me without justification	0	1	2	3	4
0	1	2	3	4	5	6	**14.** Makes a nasty joke about me	0	1	2	3	4

4. State-Trait Anger Expression Inventory

4.1 How I feel right now

A number of statements that people use to describe themselves are given below. Read each statement and circle the appropriate number in the right hand column to indicate how you feel *right now*. There are no right or wrong answers. Do not spend too much time on any one statement. Mark the answer that *best* describes your *present feelings*.

How I feel right now		*Not at all*	*Somewhat*	*Moderately so*	*Very much so*
1.	I am furious	1	2	3	4
2.	I feel irritated	1	2	3	4
3.	I feel angry	1	2	3	4
4.	I feel like yelling at somebody	1	2	3	4
5.	I feel like breaking things	1	2	3	4
6.	I am mad	1	2	3	4
7.	I feel like banging on the table	1	2	3	4
8.	I feel like hitting someone	1	2	3	4
9.	I feel like swearing	1	2	3	4
10.	I feel annoyed	1	2	3	4
11.	I feel like kicking somebody	1	2	3	4
12.	I feel like cursing out loud	1	2	3	4
13.	I feel like screaming	1	2	3	4
14.	I feel like pounding somebody	1	2	3	4
15.	I feel like shouting out loud	1	2	3	4

4.2 How I generally feel

Read each of the following statements that people have used to describe themselves, and then circle the appropriate number in the right hand column to indicate how you *generally* feel or react. There are no right or wrong answers. Do not spend too much time on any one statement. Mark the answer that *best* describes how you *generally* feel or react.

How I generally feel		*Almost never*	*Sometimes*	*Often*	*Almost always*
16.	I am quick tempered	1	2	3	4
17.	I have a fiery temper	1	2	3	4
18.	I am a hot-headed person	1	2	3	4
19.	I get angry when I'm slowed down by others' mistakes	1	2	3	4
20.	I feel annoyed when I am not given recognition for doing good work	1	2	3	4
21.	I fly off the handle	1	2	3	4
22.	When I get mad, I say nasty things	1	2	3	4
23.	It makes me furious when I am criticised in front of others	1	2	3	4
24.	When I get frustrated, I feel like hitting someone	1	2	3	4
25.	I feel infuriated when I do a good job and get a poor evaluation	1	2	3	4

4.3 How I generally react to anger

Everyone feels angry or furious from time to time, but people differ in the ways they react when they are angry. A number of statements are listed below which people use to describe their reactions when they feel *angry* or *furious*. Read each statement and circle the appropriate number in the right hand column to indicate how *often* you *generally* react or behave in the manner described when you are feeling angry or furious. There are no right or wrong answers. Do not spend too much time on any one statement.

How I generally react to anger	*Almost never*	*Sometimes*	*Often*	*Almost always*
26. I control my temper	1	2	3	4
27. I express my anger	1	2	3	4
28. I take a deep breath and relax	1	2	3	4
29. I keep things in	1	2	3	4
30. I am patient with others	1	2	3	4
31. If someone annoys me, I'm apt to tell him or her how I feel	1	2	3	4
32. I try to calm myself as soon as possible	1	2	3	4
33. I pout or sulk	1	2	3	4
34. I control my urge to express my angry feelings	1	2	3	4
35. I lose my temper	1	2	3	4
36. I try to simmer down	1	2	3	4
37. I withdraw from people	1	2	3	4
38. I keep my cool	1	2	3	4
39. I make sarcastic remarks to others	1	2	3	4
40. I try to soothe my angry feelings	1	2	3	4
41. I boil inside, but I don't show it	1	2	3	4
42. I control my behaviour	1	2	3	4
43. I do things like slam doors	1	2	3	4
44. I endeavour to become calm again	1	2	3	4
45. I tend to harbour grudges that I don't tell anyone about	1	2	3	4
46. I can stop myself from losing my temper	1	2	3	4
47. I argue with others	1	2	3	4
48. I reduce my anger as soon as possible	1	2	3	4
49. I am secretly quite critical of others	1	2	3	4
50. I try to be tolerant and understanding	1	2	3	4
51. I strike out at whatever infuriates me	1	2	3	4
52. I do something relaxing to calm down	1	2	3	4
53. I am angrier than I am willing to admit	1	2	3	4
54. I control my angry feelings	1	2	3	4
55. I say nasty things	1	2	3	4
56. I try to relax	1	2	3	4
57. I'm irritated a great deal more than people are aware of	1	2	3	4

5. About myself

5.1 How I would describe myself

Please indicate the extent to which you personally agree or disagree with the following statements about yourself by circling the corresponding number to the right of the statement.

	Strongly Disagree	*Disagree*	*Neither Agree or Disagree*	*Agree*	*Strongly Agree*
1. I am a talkative person	1	2	3	4	5
2. I am a lively person	1	2	3	4	5
3. I enjoy meeting new people	1	2	3	4	5
4. I can usually let myself go and enjoy myself at a lively party	1	2	3	4	5
5. I usually take the initiative in making new friends	1	2	3	4	5
6. I can easily put some life into a rather dull party	1	2	3	4	5
7. I tend to keep in the background on social occasions	1	2	3	4	5
8. I like mixing with people	1	2	3	4	5
9. I like to be around plenty of action and excitement	1	2	3	4	5
10. I am mostly quiet when I am around others	1	2	3	4	5
11. Other people think of me as very lively	1	2	3	4	5
12. I can get a party going	1	2	3	4	5

5.2 About my behaviour in social situations

Please indicate the extent to which you personally agree or disagree with the following statements concerning a variety of social situations by circling the corresponding number to the right of the statement.

	Strongly Disagree	*Disagree*	*Neither Agree or Disagree*	*Agree*	*Strongly Agree*
1. It is sometimes hard for me to go on with work if I am not encouraged.	1	2	3	4	5
2. I sometimes feel resentful when I don't get my way.	1	2	3	4	5
3. On a few occasions, I have given up doing something because I thought too little of my ability.	1	2	3	4	5
4. There have been times when I felt like rebelling against people in authority even though I knew they were right.	1	2	3	4	5
5. No matter who I'm talking to, I'm always a good listener.	1	2	3	4	5
6. There have been occasions when I took advantage of someone.	1	2	3	4	5
7. I'm always willing to admit it when I make a mistake.	1	2	3	4	5
8. I sometimes try to get even rather than forgive and forget.	1	2	3	4	5
9. I am always courteous, even to people who are disagreeable.	1	2	3	4	5
10. I have never been annoyed when people expressed ideas very different from my own.	1	2	3	4	5
11. There have been times when I was quite jealous of the good fortune of others.	1	2	3	4	5
12. I am sometimes irritated by people who ask favours of me.	1	2	3	4	5
13. I have never deliberately said something that hurt someone's feelings.	1	2	3	4	5

6. About my Job

The following questions relate to your experiences at work. Please complete this section if you are currently engaged in paid employment. *Otherwise leave this section blank.*

About my Job Please indicate the extent to which you personally agree or disagree with the following statements by circling the corresponding number to the right of the statement.	*Strongly Disagree*	*Disagree*	*Agree*	*Strongly Agree*
1. I have constant time pressure due to a heavy workload.	1	2	3	4
2. I have many interruptions and disturbances in my job.	1	2	3	4
3. I have a lot of responsibility in my job.	1	2	3	4
4. I am often pressured to work overtime.	1	2	3	4
5. My job is physically demanding.	1	2	3	4
6. Over the past few years, my job has become more and more demanding.	1	2	3	4
7. I receive respect I deserve from my superiors.	1	2	3	4
8. I receive respect I deserve from my colleagues.	1	2	3	4
9. I receive adequate support in difficult situations.	1	2	3	4
10. I am treated unfairly at work.	1	2	3	4
11. My job promotion prospects are poor.	1	2	3	4
12. I have experienced or I expect to experience an undesirable change in my work situation.	1	2	3	4
13. My job security is poor.	1	2	3	4
14. My current occupational position adequately reflects my education and training.	1	2	3	4
15. Considering all my efforts and achievements, I receive the respect and prestige I deserve at work.	1	2	3	4
16. Considering all my efforts and achievements, my work prospects are adequate.	1	2	3	4
17. Considering all my efforts and achievements, my salary/income is adequate.	1	2	3	4

7. Demographics

Age: _____ Sex: M / F

Finally, this study may be followed up in the future in order to investigate how these variables may change over time. This would involve completing the same questionnaire again. In order to pair up this information with data that may be collected from you in the future, you will need to provide a unique code that you can remember easily. This will maintain your anonymity throughout data collection.

First 3 letters of mother's first name			***First 3 letters of father's first name***		

This section will be detached immediately upon receipt of your questionnaire. Separation of your contact details and your completed questionnaire will preserve your anonymity. If you wish to be included in the second phase of this study, please write your details below and a questionnaire will be posted to you in 4-6 months time. Thank you for your participation!

Name: _____

Postal Address: _____

_____

8.4.2 Japanese Version

University of South Australia

南オーストラリア大学
社会学部　心理学科
人に対するイライラ度

私は南オーストラリア大学の博士号の大学院生で、名前はサーベン・マクリントンと言います。私の論文のテーマである、様々な社会的場面での人に対するイライラ度についての研究に参加して下さい。

参加は自由で、途中で止める事もできます。参加したければ、次のページからの調査票に答えて下さい。約２０分程掛かります。質問はあなたの性格、職場、人の行動に対する反応についてです。参加は匿名で、あなたの答えが第三者に知れ渡る事はありません。

この研究は南オーストラリア大学の倫理委員会から許可を貰っています。この調査票に答える上で万が一、疲労を感じる事があれば答えるのを止めて下さい。この論文についてもっと知りたければ、私や私の監督や倫理委員会の役員にＥメールを送って下さい。もし２００９年１２月にあなたが研究の結果の要約を読みたければ、私にＥメールを送って下さい。

サーベン・マクリントン
sarven.mclinton@unisa.edu.au

監督：モリーン・ドラード
maureen.dollard@unisa.edu.au

倫理委員会の役員：ヴィキー・アレン
vicki.allen@unisa.edu.au

助けて頂いて、どうもありがとうございました。

サーベン・マクリントン
心理学研究センター
博士号大学院生

Educating Professionals
Creating and Applying Knowledge
Engaging our Communities

Centre for Applied Psychological Research, School of Psychology
Playford Building
City East Campus
Frome Road
Adelaide
South Australia 5000

GPO Box 2471
Adelaide
South Australia 5001
Australia

t: +61 8 8302 1077
f: +61 8 8302 2956

www.unisa.edu.au

CRICOS Provider Number 00121B

１．家族に対するイライラ度

下記の状況は家庭であなたが受けうる言動についてです。

自分の家族が下記のような言動をあなたに対してとったらイライラを感じる可能性があります。ここで言う「家族」とはあなたの家族、例えば自分の両親、兄弟、子供、配偶者、一緒に住んでいる交際相手を指します。

右側の欄：下記に描かれている状況が、実際にあなたに起きていると想像して下さい。右側の欄にあなたが感じるであろうイライラ度の程度に〇を付けて下さい。もしあなたが以下の状況を経験した事がなければ、実際に起きていると想像し、あなたが感じるであろうイライラ度を答えて下さい。
左側の欄：あなたが実際にどれくらいの頻度でこれらの状況を経験するか答えて下さい。

どれくらいの頻度で経験するか							もし自分の家族が下記のような言動を自分に対してとったらどの程度のイライラを感じるか。	どの程度のイライラを感じるか				
一年に一回以下	一年に数回	一ヶ月に一回	一ヶ月に数回	一週間に一回	一週間に数回	ほぼ毎日		全く感じない	少し感じる	感じる	強く感じる	かなり強く感じる
0	1	2	3	4	5	6	**1.** 自分についての不快な冗談を言う	0	1	2	3	4
0	1	2	3	4	5	6	**2.** 正当とする証拠なしに自分を批評する	0	1	2	3	4
0	1	2	3	4	5	6	**3.** 自分に値する尊敬の念を示さない	0	1	2	3	4
0	1	2	3	4	5	6	**4.** 自分の決められた予定に重大な遅れを持たらす	0	1	2	3	4
0	1	2	3	4	5	6	**5.** 自分に怒鳴る	0	1	2	3	4
0	1	2	3	4	5	6	**6.** 話の全部の内容を知らずに自分を叱責する	0	1	2	3	4
0	1	2	3	4	5	6	**7.** 自分の視点を認める事を拒否する	0	1	2	3	4
0	1	2	3	4	5	6	**8.** 他の人の前で自分を批評する	0	1	2	3	4
0	1	2	3	4	5	6	**9.** 自分の計画に影響する義務を果たさない	0	1	2	3	4
0	1	2	3	4	5	6	**10.** 自分に対し不必要に攻撃的な態度を振舞う	0	1	2	3	4
0	1	2	3	4	5	6	**11.** 自分にした約束を遂行しない	0	1	2	3	4
0	1	2	3	4	5	6	**12.** 陰で自分の悪口を言う	0	1	2	3	4
0	1	2	3	4	5	6	**13.** 自分が目標に達成するのを防げようとする	0	1	2	3	4
0	1	2	3	4	5	6	**14.** 自分が本当に必要な時に援助をしない	0	1	2	3	4
0	1	2	3	4	5	6	**15.** 故意に自分に嘘をつく	0	1	2	3	4
0	1	2	3	4	5	6	**16.** 自分が彼等にして欲しい重要な仕事を軽視する	0	1	2	3	4
0	1	2	3	4	5	6	**17.** 会話の中で自分の失敗を強調する	0	1	2	3	4
0	1	2	3	4	5	6	**18.** 自分の他のするべき事を考慮せず不合理な要求を押付ける	0	1	2	3	4
0	1	2	3	4	5	6	**19.** 故意に自分を侮辱する	0	1	2	3	4
0	1	2	3	4	5	6	**20.** 自分が打ち明けた秘密を漏らす	0	1	2	3	4

２．職場でのイライラ度

下記の状況は職場であなたが受けうる言動についてです。

（パートタイムやアルバイトでも良いです）

2.1 上司との関わり合い

ここで言う「上司」とは組織の中であなたよりも高い地位にいる人です。例えば、あなたの雇主、先輩、責任者、コーディネーター、チームの指導者、企画部長、あなたよりも長い期間雇われている人を指します。もし職場にあなたよりも上位にいる人がいなければ、過去にいた時の経験を思い浮かべるか、もしくは以下に述べられているように振舞う上司が職場にいると想像し答えて下さい。

右側の欄：下記に描かれている状況が、実際にあなたに起きていると想像して下さい。右側の欄にあなたが感じるであろうイライラ度の程度に〇を付けて下さい。もしあなたが以下の状況を経験した事がなければ、実際に起きていると想像し、あなたが感じるであろうイライラ度を答えて下さい。

左側の欄：あなたの現在の職場で実際にどれくらいの頻度でこれらの状況を経験するか答えて下さい。*もしあなたに上司がいなければ、空白のまま残しておいて下さい。*

どれくらいの頻度で経験するか								どの程度のイライラを感じるか				
一年に一回以下	一年に数回	一ヶ月に一回	一ヶ月に数回	一週間に一回	一週間に数回	ほぼ毎日	もし自分の上司が下記のような言動を自分に対してとったら、どの程度のイライラを感じるか。	全く感じない	少し感じる	感じる	強く感じる	かなり強く感じる
0	1	2	3	4	5	6	**1.** 他の人の前で自分を批評する	0	1	2	3	4
0	1	2	3	4	5	6	**2.** 他の従業員に正当とする証拠なしに特別待遇を行う	0	1	2	3	4
0	1	2	3	4	5	6	**3.** 自分が予定していたよりもかなり長く残業させる	0	1	2	3	4
0	1	2	3	4	5	6	**4.** 自分が本当に必要な時に援助をしない	0	1	2	3	4
0	1	2	3	4	5	6	**5.** 自分に大変労力を要求する仕事を与える	0	1	2	3	4
0	1	2	3	4	5	6	**6.** 自分に追加報酬なしに他の従業員よりも重労働をさせる	0	1	2	3	4
0	1	2	3	4	5	6	**7.** 自分の作業の進行を遅らせるような仕事をギリギリになって与える	0	1	2	3	4
0	1	2	3	4	5	6	**8.** 自分に値する尊敬の念を示さない	0	1	2	3	4
0	1	2	3	4	5	6	**9.** 自分の持っている経験や資格よりも遥かに低い仕事を与える	0	1	2	3	4
0	1	2	3	4	5	6	**10.** 自分のする仕事に感謝しない	0	1	2	3	4
0	1	2	3	4	5	6	**11.** 自分を馬鹿にする	0	1	2	3	4
0	1	2	3	4	5	6	**12.** 自分より経験が少ない、又は資格がない従業員を昇格する	0	1	2	3	4
0	1	2	3	4	5	6	**13.** 自分の他のするべき事を考慮せず不合理な要求を押付ける	0	1	2	3	4
0	1	2	3	4	5	6	**14.** 自分の決められた予定に重大な遅れを持たらす	0	1	2	3	4
0	1	2	3	4	5	6	**15.** 自分の目の前で他の従業員を馬鹿にする	0	1	2	3	4
0	1	2	3	4	5	6	**16.** 故意に自分を侮辱する	0	1	2	3	4
0	1	2	3	4	5	6	**17.** 自分の挙げたアイディアをよく考える事すらなく否定する	0	1	2	3	4
0	1	2	3	4	5	6	**18.** 自分に対し不必要に攻撃的な態度を振舞う	0	1	2	3	4
0	1	2	3	4	5	6	**19.** 自分の視点を認める事を拒否する	0	1	2	3	4
0	1	2	3	4	5	6	**20.** 自分を差別する	0	1	2	3	4
0	1	2	3	4	5	6	**21.** 不当な理由で自分を叱責する	0	1	2	3	4
0	1	2	3	4	5	6	**22.** 自分の生活に影響を及ぼす事を考慮せずに労働条件を変える	0	1	2	3	4
0	1	2	3	4	5	6	**23.** 自分に怒鳴る	0	1	2	3	4
0	1	2	3	4	5	6	**24.** 内密にしておいた情報を漏らす	0	1	2	3	4

2.2 同僚との関わり合い

ここで言う「同僚」とは、他の従業員やあなたと同じような地位にいる人を指します。彼等はあなたと同じ場所で雇われてはいなかったり、違った役割を持っているかもしれませんが、あなた達の関係に、どちらが上位でどちらが下位であるという関係は存在しません。もし職場にあなたと同じ地位にいる人がいなければ、過去にいた時の経験を思い浮かべるか、もしくは以下に述べられているように振舞う同僚が職場にいると想像し答えて下さい。

右側の欄：下記に描かれている状況が、実際にあなたに起きていると想像して下さい。右側の欄にあなたが感じるであろうイライラ度の程度に〇を付けて下さい。もしあなたが以下の状況を経験した事がなければ、実際に起きていると想像し、あなたが感じるであろうイライラ度を答えて下さい。
左側の欄：あなたの現在の職場で実際にどれくらいの頻度でこれらの状況を経験するか答えて下さい。*もしあなたに同僚がいなければ、空白のまま残しておいて下さい。*

どれくらいの頻度で経験するか								どの程度のイライラを感じるか				
一年に一回以下	一年に数回	一ヶ月に一回	一ヶ月に数回	一週間に一回	一週間に数回	ほぼ毎日	もし自分の同僚が下記のような言動を自分に対してとったら、どの程度のイライラを感じるか。	全く感じない	少し感じる	感じる	強く感じる	かなり強く感じる
0	1	2	3	4	5	6	**1.** 自分について不快な噂を流す	0	1	2	3	4
0	1	2	3	4	5	6	**2.** 自分に対し不必要に攻撃的な態度を振舞う	0	1	2	3	4
0	1	2	3	4	5	6	**3.** 成功する手段として自分の地位を下げる	0	1	2	3	4
0	1	2	3	4	5	6	**4.** 自分の目の前で他の従業員を馬鹿にする	0	1	2	3	4
0	1	2	3	4	5	6	**5.** 故意に自分を侮辱する	0	1	2	3	4
0	1	2	3	4	5	6	**6.** 意図的に自分の仕事を防害する	0	1	2	3	4
0	1	2	3	4	5	6	**7.** 自分に値する尊敬の念を示さない	0	1	2	3	4
0	1	2	3	4	5	6	**8.** 内密にしておいた情報を漏らす	0	1	2	3	4
0	1	2	3	4	5	6	**9.** 自分に怒鳴る	0	1	2	3	4
0	1	2	3	4	5	6	**10.** 自分の決められた予定に重大な遅れを持たらす	0	1	2	3	4
0	1	2	3	4	5	6	**11.** 自分についての不快な冗談を言う	0	1	2	3	4
0	1	2	3	4	5	6	**12.** 故意に自分に嘘をつく	0	1	2	3	4
0	1	2	3	4	5	6	**13.** 他の人の前で自分を批評する	0	1	2	3	4
0	1	2	3	4	5	6	**14.** 自分の視点を認める事を拒否する	0	1	2	3	4
0	1	2	3	4	5	6	**15.** まるで上司のように自分に話しかける	0	1	2	3	4
0	1	2	3	4	5	6	**16.** 自分を馬鹿にする	0	1	2	3	4
0	1	2	3	4	5	6	**17.** 自分が目標に達成するのを防げようとする	0	1	2	3	4

2.3 部下との関わり合い

ここで言う「部下」とはあなたよりも下の地位にいる人、例えばあなたの雇っている従業員、後輩やあなたよりも短い期間雇われている人を指します。もし職場にあなたよりも下位にいる人がいなければ、過去にいた時の経験を思い浮かべるか、もしくは以下に述べられているように振舞う部下が職場にいると想像し答えて下さい。

右側の欄：下記に描かれている状況が、実際にあなたに起きていると想像して下さい。右側の欄にあなたが感じるであろうイライラ度の程度に〇を付けて下さい。もしあなたが以下の状況を経験した事がなければ、実際に起きていると想像し、あなたが感じるであろうイライラ度を答えて下さい。
左側の欄：あなたの現在の職場で実際にどれくらいの頻度でこれらの状況を経験するか答えて下さい。*もしあなたに部下がいなければ、空白のまま残しておいて下さい。*

どれくらいの頻度で経験するか							もし自分の部下が下記のような言動を自分に対してとったら、どの程度のイライラを感じるか。	どの程度のイライラを感じるか				
一年に一回以下	一年に数回	一ヶ月に一回	一ヶ月に数回	一週間に一回	一週間に数回	ほぼ毎日		全く感じない	少し感じる	感じる	強く感じる	かなり強く感じる
0	1	2	3	4	5	6	**1.** 職場や会合にかなり遅れてやって来た理由が不当である	0	1	2	3	4
0	1	2	3	4	5	6	**2.** 自分の権限を尊重しない	0	1	2	3	4
0	1	2	3	4	5	6	**3.** 自分について不快な噂を流す	0	1	2	3	4
0	1	2	3	4	5	6	**4.** 自分に怒鳴る	0	1	2	3	4
0	1	2	3	4	5	6	**5.** まるで上司のように自分に話しかける	0	1	2	3	4
0	1	2	3	4	5	6	**6.** 意図的に自分の仕事を防害する	0	1	2	3	4
0	1	2	3	4	5	6	**7.** 故意に自分を侮辱する	0	1	2	3	4
0	1	2	3	4	5	6	**8.** 他の人の前で自分の権威を傷付ける	0	1	2	3	4
0	1	2	3	4	5	6	**9.** 自分の視点を認める事を拒否する	0	1	2	3	4
0	1	2	3	4	5	6	**10.** 他の人の前で自分は無能力であると見せようとする	0	1	2	3	4
0	1	2	3	4	5	6	**11.** 自分の決められた予定に重大な遅れを持たらす	0	1	2	3	4
0	1	2	3	4	5	6	**12.** 故意に自分に嘘をつく	0	1	2	3	4
0	1	2	3	4	5	6	**13.** 自分の上司としての役割を軽く見る	0	1	2	3	4
0	1	2	3	4	5	6	**14.** 自分が彼等にして欲しい重要な仕事を軽視する	0	1	2	3	4
0	1	2	3	4	5	6	**15.** 自分に対し不必要に攻撃的な態度を振舞う	0	1	2	3	4
0	1	2	3	4	5	6	**16.** 自分の目の前で他の従業員を馬鹿にする	0	1	2	3	4
0	1	2	3	4	5	6	**17.** 自分に値する尊敬の念を示さない	0	1	2	3	4
0	1	2	3	4	5	6	**18.** 自分についての不快な冗談を言う	0	1	2	3	4

３．他人に対するイライラ度

下記の状況はあなたが出会ったばかりの人から受けうる言動についてです。

ここで言う「他人」とはあなたの良く知らない人を指します。下記に述べられている言動はその人に始めて会った日に起きると考えて下さい。ここで状況は社会的、又は組織的にあなた達の間にどちらが上位でどちらが下位であるという関係は存在しません。

右側の欄：下記に描かれている状況が、実際にあなたに起きていると想像して下さい。右側の欄にあなたが感じるであろうイライラ度の程度に〇を付けて下さい。もしあなたが以下の状況を経験した事がなければ、実際に起きていると想像し、あなたが感じるであろうイライラ度を答えて下さい。
左側の欄：あなたが実際にどれくらいの頻度でこれらの状況を経験するか答えて下さい。

どれくらいの頻度で経験するか							もし他人が下記のような言動を自分に対してとったらどの程度のイライラを感じるか。	どの程度のイライラを感じるか				
一年に一回以下	一年に数回	一ヶ月に一回	一ヶ月に数回	一週間に一回	一週間に数回	ほぼ毎日		全く感じない	少し感じる	感じる	強く感じる	かなり強く感じる
0	1	2	3	4	5	6	**1.** 自分に対し不必要に攻撃的な態度を振舞う	0	1	2	3	4
0	1	2	3	4	5	6	**2.** 自分に値する尊敬の念を示さない	0	1	2	3	4
0	1	2	3	4	5	6	**3.** 自分の目の前で他の知らない人を馬鹿にする	0	1	2	3	4
0	1	2	3	4	5	6	**4.** 自分の決められた予定に重大な遅れを持たらす	0	1	2	3	4
0	1	2	3	4	5	6	**5.** 自分に怒鳴る	0	1	2	3	4
0	1	2	3	4	5	6	**6.** 自分の視点を認める事を拒否する	0	1	2	3	4
0	1	2	3	4	5	6	**7.** 故意に自分に嘘をつく	0	1	2	3	4
0	1	2	3	4	5	6	**8.** 他の人の前で自分を批評する	0	1	2	3	4
0	1	2	3	4	5	6	**9.** 自分を馬鹿にする	0	1	2	3	4
0	1	2	3	4	5	6	**10.** 不当な理由で自分を叱責する	0	1	2	3	4
0	1	2	3	4	5	6	**11.** 故意に自分を侮辱する	0	1	2	3	4
0	1	2	3	4	5	6	**12.** 自分に一般的な礼儀を示さない	0	1	2	3	4
0	1	2	3	4	5	6	**13.** 正当とする証拠なしに自分を批評する	0	1	2	3	4
0	1	2	3	4	5	6	**14.** 自分についての不快な冗談を言う	0	1	2	3	4

４．自分の性格について

4.1 今の自分の気持ちについて

下記の文は人の感情を表現するのによく使われます。*あなたが今感じている程度を*右側の欄の一致する数字に〇を付けて下さい。どれが正解でどれが間違いかという答えはありません。一つの質問に答えることに時間を掛けすぎないで下さい。

今の自分の気持ちについて	全く感じない	少し感じる	感じる	強く感じる
1. 怒り狂っている	1	2	3	4
2. イライラしている	1	2	3	4
3. 怒りを感じている	1	2	3	4
4. 誰かを怒鳴りつけたい	1	2	3	4
5. 何かを懐してしまいたい	1	2	3	4
6. 逆上している	1	2	3	4
7. 机をばんばん叩きたい	1	2	3	4
8. 誰かを殴りたい	1	2	3	4
9. 口汚く罵りたい	1	2	3	4
10. 腹が立っている	1	2	3	4
11. 誰かを蹴りたい	1	2	3	4
12. 大きな声で汚い言葉を吐きたい	1	2	3	4
13. 悲鳴を上げたい	1	2	3	4
14. 誰かをぶん殴りたい	1	2	3	4
15. 大声で叫びたい	1	2	3	4

4.2 普段の自分の気持ちについて

あなた自身についての普段の気持ちや行動について、右側の欄の一致する数字に〇を付けて下さい。どれが正解でどれが間違いかという答えはありません。一つの質問に答えることに時間を掛けすぎないで下さい。

普通の自分の気持ちや行動について	全然感じない	時々感じる	よく感じる	ほぼいつも感じる
16. 気が短い	1	2	3	4
17. 怒りっぽい	1	2	3	4
18. せっかちである	1	2	3	4
19. 他人の間違いで自分が遅れたりすると腹を立てる	1	2	3	4
20. 良い事をしたのに認められないとイライラする	1	2	3	4
21. すぐかっとなる	1	2	3	4
22. 怒ると意地悪な事を言う	1	2	3	4
23. 人の前で非難されたりすると怒りを感じる	1	2	3	4
24. 自分のしたい事が出来ないと誰かを叩きたくなる	1	2	3	4
25. 良い仕事をしたのにも関わらず悪い評価をされたら、腹が立つ	1	2	3	4

4. 3 怒っている時の行動について

人は皆、時折イライラしたり、怒ったりします。しかし、人それぞれ怒っている時の行動にはよく違いが見られます。下記の文は人が怒ったり腹を立てたりする時の行動についてです。あなたが怒ったり腹を立てたりする時にどれくらいの頻度で下記のような行動をとるかについて右側の欄の一致する数字に〇を付けて下さい。どれが正解でどれが間違いかという答えはありません。一つの質問に答えることに時間を掛けすぎないで下さい。

自分が怒っている時の行動について	全然感じない	時々感じる	よく感じる	ほぼいつも感じる
26. 怒りを抑える	1	2	3	4
27. 怒りを表す	1	2	3	4
28. 深呼吸をして落ち着かせる	1	2	3	4
29. 怒っていても外に表さない	1	2	3	4
30. 腹を立てたりしないで我慢する	1	2	3	4
31. 誰かにイライラさせられたら、その人に自分の気持ちを伝える	1	2	3	4
32. 出来るだけ早く気を静めようとする	1	2	3	4
33. すねたり、ふくれたりする	1	2	3	4
34. 怒りを表したい気持ちを抑える	1	2	3	4
35. 落ち着きを失って不機嫌になる	1	2	3	4
36. 落ち着こうとする	1	2	3	4
37. 人から離れて一人だけになる	1	2	3	4
38. 冷静さを保つ	1	2	3	4
39. 人に皮肉な事を言う	1	2	3	4
40. 怒りを和らげようとする	1	2	3	4
41. 心の中では怒りが煮えくり返っていても、それを外には表さない	1	2	3	4
42. 自分の行動を抑制する	1	2	3	4
43. ドアをばたんと閉めるような、荒々しいことをする	1	2	3	4
44. もう一度冷静になるようにする	1	2	3	4
45. 誰にも言えないような恨みを抱くようになる	1	2	3	4
46. 気を静めてかんしゃくを起こしたりしないようにする	1	2	3	4
47. 他の人と口論する	1	2	3	4
48. 出来るだけ早く腹立たしい気持ちを失くす	1	2	3	4
49. 誰にも知られないように、自分の胸の中だけで他人を非難する	1	2	3	4
50. 気を静めて相手を理解しようとする	1	2	3	4
51. 自分を怒らせる物は何でもやっつけようとする	1	2	3	4
52. 落ち着くために、くつろぐ	1	2	3	4
53. 外から見るよりも、実は自分はもっと怒っている	1	2	3	4
54. 自分で腹立たしい気持ちを静める	1	2	3	4
55. 口汚い事を言う	1	2	3	4
56. リラックスしようとする	1	2	3	4
57. 他の人が思うよりも、はるかに苛立っている	1	2	3	4

５．社会的場面での行動について

様々な社会的場面で、あなたがどの程度、下記の状況にあてはまっていると思うか右側の欄の一致する数字に〇を付けて下さい。

	強くそう思わない	そう思わない	どちらとも言えない	そう思う	強くそう思う
1. 時々、促されないと仕事を続ける気がしない	1	2	3	4	5
2. 時々、自分の思い通りに物事が進まないと腹が立つ	1	2	3	4	5
3. 何度か、自分には実力がないと思い物事を諦めた事がある	1	2	3	4	5
4. 権威のある人に対し、彼らが正しいと分かっていても反抗したくなる時がある	1	2	3	4	5
5. 話し相手が誰であろうと、いつも自分は良い聞き手である	1	2	3	4	5
6. 何度か他人を利用した事がある	1	2	3	4	5
7. いつでも自分の失敗を認める事ができる	1	2	3	4	5
8. 時々過去の恨みなどをさらりと水に流すより、仕返しをしようとする	1	2	3	4	5
9. 自分はいつも無愛相な人にも礼儀正しい	1	2	3	4	5
10. 自分と全く違った考えを述べる人に対してイラ立った事がない	1	2	3	4	5
11. 他人の成功をとても羨ましいと思った事がある	1	2	3	4	5
12. 時々自分に頼み事をしてくる人にイライラさせられる	1	2	3	4	5
13. 意図的に人の気持ちを傷付ける事を言った事がない	1	2	3	4	5

６．仕事について

以下の質問はあなたの仕事についてです。パートタイムやアルバイトでも良いです。*もしあなたが現在、雇用されていれば、この欄を埋めて下さい。*あなたがどの程度、下記の状況にあてはまっていると思うか右側の欄の一致する数字に〇を付けて下さい。

	強くそう思わない	そう思わない	そう思う	強くそう思う
1. たくさんの仕事量のせいで時間的プレッシャーを感じる	1	2	3	4
2. 仕事をする中で、多くの妨害と不安を感じる	1	2	3	4
3. 仕事に対し多くの責任を持っている	1	2	3	4
4. よく残業をするよう圧力をかけられる	1	2	3	4
5. 仕事が身体的に大変な労力を要する	1	2	3	4
6. 過去何年かの間に、仕事がだんだんきつくなってきた	1	2	3	4
7. 上司から自分に値する敬意を受けている	1	2	3	4
8. 同僚から自分に値する敬意を受けている	1	2	3	4
9. 困難な状況下では適切なサポートを受けている	1	2	3	4
10. 仕事で不公平に扱われている	1	2	3	4
11. 昇格する機会が少ない	1	2	3	4
12. 仕事で望ましくない変動を経験している、又は経験した事がある	1	2	3	4
13. 仕事の安全性が乏しい	1	2	3	4
14. 現在の役職の地位は十分に自分の経験や資格を反映している	1	2	3	4
15. 自分の努力と業績を考慮すると、仕事上自分が値する敬意と名声を受けている	1	2	3	4
16. 自分の努力と業績を考慮すると、自分の仕事の将来性は妥当である	1	2	3	4
17. 自分の努力と業績を考慮すると、自分の収入は妥当である	1	2	3	4

7.　　年齢: _____　　性別:　男　/　女