

Examining the Relationship Between Resilience and Facets of Friendship in Australian High School

Students



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Table of Contents

<i>Table of Contents</i>	2
<i>List of Tables</i>	3
<i>Contributor Roles Table</i>	4
<i>Abstract</i>	5
<i>Declaration</i>	6
<i>Methods</i>	13
<i>Results</i>	18
<i>Discussion</i>	21
<i>References</i>	27
<i>Appendix 1 – Research Plan</i>	32

List of Tables

Table 1: Year level distribution

Table 2: Demographic characteristics of participants

Table 3: Mean scores on wellbeing and friendship measures for students in Years 10, 11, and 12

Table 4: Correlations

Contributor Roles Table

ROLE	ROLE DESCRIPTION	STUDENT	PRIMARY SUPERVISOR
Conceptualization	Ideas; formulation or evolution of overarching research goals and aims.	X	X
Methodology	Development or design of methodology; creation of models.	X	X
Project administration	Management and coordination responsibility for the research activity planning and execution.	X	
Supervision	Oversight and leadership responsibility for the research activity planning and execution, including mentorship external to the core team.		X
Software	Programming, software development; designing computer programs; implementation of the computer code and supporting algorithms; testing of existing code.	NA	
Investigation	Conducting research - specifically performing experiments, or data/evidence collection.	NA	
Data curation	Management activities to annotate (produce metadata), scrub data and maintain research data (including software code, where it is necessary for interpreting the data itself) for initial use and later re-use.	X	
Formal analysis	Application of statistical, mathematical, computational, or other formal techniques to analyze or synthesize study data.	X	
Visualization	Visualization/data presentation of the results.	X	
Writing – original draft	Specifically writing the initial draft.	X	
Writing – review & editing	Critical review, commentary or revision of original draft	X	X

Abstract

Resilience is the ability to maintain or regain mental wellbeing in the face of adversity and stressors, and is a key component in the mental wellbeing of adolescents. As adolescence is a time of rapid brain development, and most mental illnesses have their onset in this period, understanding the protective factors that build resilience is important for promoting mental wellbeing in the younger population. While previous research has highlighted the importance of establishing resilience in adolescence, there remains a lack of research examining the underlying processes of peer support which can influence resilience and how this interaction is experienced in an Australian context. Two of these processes, peer belonging and friendship intimacy, have not yet been considered within an Australian cohort and form the focus of the current project. This study uses the Wellbeing and Engagement Collection, a South Australian Department for Education survey of youth wellbeing, and specifically considers students in years 10, 11, and 12 (ages 10-19 years). In total, 15,704 participants' data were analysed. This study uses quantitative methods, employing multiple linear regression models to understand the relationship between both peer belonging and friendship intimacy, and resilience. This study finds peer belonging to moderately and positively predict resilience, while friendship intimacy predicts resilience with a very small and negative effect. These findings highlight the difference between one's belonging to a group, and one's trust in a single friend, and indicate that the development of positive friend groups may be an important factor in the development of resilience in older adolescents.

Declaration

This thesis contains no material which has been accepted for the award of any other degree of diploma in any University, and, to the best of my knowledge, this thesis contains no material previously published except where due reference is made. I give permission for the digital version of this thesis to be made available on the web, via the University of Adelaide's digital thesis repository, the Library Search and through web search engines, unless permission has been granted by the School to restrict access for a period of time.

Examining the Relationship Between Resilience and Facets of Friendship in Australian High School Students

Resilience is the ability to maintain or regain mental wellbeing in the face of adversity and stressors (Herrman et al., 2011). It is a process by which skills are developed through “feedback, learning and change”, and involve both inherent and adaptive resilience (Cutter, 2016, p. 111). Inherent resilience refers to the ability to ‘bounce back’ from adverse events, where adaptive resilience involves social learning conducted after such events (Cutter, 2016, p. 111). This type of adaptation and learning has been proven to be relevant across the lifespan. Young people often build resilience during their early development through the maintenance of healthy relationships, while resilience has predicted subjective wellbeing in retirees (Masten & Gewirtz, 2006; Nalin & França, 2015). To best understand and promote lifelong wellbeing, it is important to consider the construct of resilience in early life.

Mental Health and Resilience in Adolescence

In accordance with the World Health Organisation (WHO), adolescence is the period of development between the ages of 10 and 19 (WHO, 2023). While there is no definitive line for when adolescence starts and ends, it is often considered to begin around the age of 10, with middle adolescence including those who are 14-17 years old, and 17-19 years capturing late adolescence (Hashmi, 2013). Adolescence is a period of increased adversity without adequate resources (Malhi et al., 2019), which may explain why most mental illnesses have their onset during this time (Jones, 2013). As adolescence is a period of development, risk, and mental illness onset, it is critical to understand the protective and risk factors of mental health throughout this period. Such factors must be investigated to further understand how they impact adolescent mental health, and how they may be promoted or circumvented to facilitate the development of mental wellbeing.

The development of resilience in adolescence is a crucial part of healthy growth (Malhi et al., 2019), and is defined as “how [adolescents] avoid longer-term mental distress and maintain normal development, and how they create meaning from their situation and identity” (Anderson & Priebe,

2021, p. 690). Adolescent resilience specifically relates to the healthy development and sense of self through such a formative period. The development of resilience in adolescence proves valuable for the transition to well-adjusted adulthood, and involves developing and maintaining a range of resources and abilities (Luecken & Gress, 2010). Of these skills, the authors note the shift of support from parents to peers, individual differences such as coping skills, and societal factors as some of the many aspects that define an adolescence resilience framework (Luecken & Gress, 2010). Adolescent protective factors that facilitate the development of resilience occur at the individual level, such as a sense of hope, at the family level, regarding familial support resources, and at the social level, such as social integration (Ahern, 2006). Of these protective factors, aspects of self-esteem and the presence of an adult mentor are assets used by young people to develop resilience, even when faced with the negative life experiences of poverty (Fergus & Zimmerman, 2005). Risk factors for adolescents are likewise very prevalent. Poor academic achievement, teenage pregnancy, substance use, and participation in crime are all related to poorer outcomes in adolescence (Zolkoski & Bullock, 2012). Such risk factors necessitate the development of resilience, as resilience has been proven to lead to lower rates of mental health problems in youth (Cavioni et al., 2020). Here, it is critical to promote the development of resilience in order to provide adolescents with the skills and wellbeing to manage these risk factors.

Friendships, Belonging and Mental Wellbeing

Relationships with one's peers can take multiple forms; the strength of individual friendships and relationships, and a sense of belonging within friend groups. Regarding individual friendships, a single strong friendship has been found to support the facilitation of resilience through the promotion of support-seeking behaviours (Graber et al., 2016). These close friendships allow adolescents to build their individual abilities, interact with their social environment, and receive support, which builds on their resiliency (Graber et al., 2016). In a study of individuals with facial differences and their development of resilience, friendships were also found to build resilience (Feragen et al., 2010). Here, the strength of friendships as a protective factor was additionally

supported by families, targeting the positive aspects of relationships to further the notion that social experiences can develop resilience. The development of resilience, and therefore the facilitation of mental wellbeing, can be achieved through strong, single friendships. These relationships allow adolescents to engage with a friend in a supportive manner that builds upon their social abilities to develop resilience.

Regarding belonging to a peer group, there are many aspects that contribute to the development of mental wellbeing and resilience. Peer relationships contribute to adolescent's needs to belong by fulfilling their needs to connect (Uslu & Gizir, 2016). Belonging to a group can have many beneficial effects, such as providing a sense of acceptance from peers and security within a group (Newman et al., 2007). This can support adolescents by reducing the development of internalising problems such as depression and anxiety (Newman et al., 2007). Belonging to a group of peers can assist in developing healthy bonds and positive mental wellbeing. Satisfaction in peer groups also shows relation to an increase in resilience (Haddow et al., 2021). Evidence was found of social skills influencing the relationship between resilience and peer relationships, indicating the importance of healthy, well established peer groups.

Resilience and Peer Relationships in Adolescence

Friendships and peer relationships are an important part of adolescent development and positive mental health, and the nature of these relationships can impact the development of resilience. Stronger relationships with peers, teachers and family in children has been found to relate to stronger resilience and a lower prevalence of depressive symptoms (Mesman et al., 2021). Inversely, poorer relationships were found to be related to more mental health issues (Mesman et al., 2021), highlighting not only the protective factor of peer relationships, but also the risk factor if they are to not be present. These relationships are critical, as social support offers young people access to supportive resources (Höltge et al., 2021). The role of country of origin is also important, as youth in China, Jordan, and New Zealand were found to have a strong relationship between sense of belonging and valuing education (Höltge et al., 2021). In this, it is important to recognise that these

peer relationships often occur at school, and there may be additional factors regarding the school environment and other social relationships that effect how adolescents develop resilience. In schools, peer groups offer young people the development of positive pro-social behaviours, and can alleviate some of the risks of early adverse experiences (Pinheiro et al., 2022). Peer relationships in schools are critical in developing mental wellbeing, and it is beneficial for the school environment to be built to foster group activities and social supports (Pinheiro et al., 2022).

Different social groups within school offer differing types of social supports. For example, sports, scouts, and art groups have been found to promote significantly higher resilience in adolescents (Ruvalcaba et al., 2017). Specifically, sports groups have been found to promote self-improvement and coping skills in young people, aspects that relate to the development of resilience. Scout clubs were found to promote healthy relationships, and art groups to offer emotion expression, both within the context of building positive relationships and community (Ruvalcaba et al., 2017). These findings highlight the strength of peer group belonging in adolescence and their role in fostering resilience at a young age. Regarding participation in sports, involvement in team sports rather than individual sports was associated with better mental health outcomes (Oberle et al., 2019). In this, a sense of peer belonging mediated this relationship. That is to say, the sense of belonging that is offered by team sport groups is the key component of developing youth resilience. Extracurricular activities offer adolescents opportunities to connect with peers, and therefore develop resiliency skills, and as such, access to group based activities for young people should be offered by schools (Oberle et al., 2019).

Close friendships in adolescence have been found to be a strong protective factor against negative outcomes such as social problems, depression, and anxiety (Moses & Villodas, 2017). These close friendships can mitigate the impact of early adverse experiences, and assist in building supportive and secure relationships (Moses & Villodas, 2017). This trust in peers is the critical component, as close relationships provide the resources to develop self-worth, empowerment, and the ability to deal with school-based stressors (Moses & Villodas, 2017). Lan and Wang (2019) found

that the relationship between peer support and self-esteem could be moderated by resilience. They note that, in individuals with strong peer support, high scores of resilience are related to higher levels of self-esteem. Here, peer relationships and resilience have additional adaptive benefits to the development of young people's wellbeing and sense of self.

Resilience in adolescence is both a critical component of development and influenced by a range of protective and risk factors. In building this resilience, peer relationships have been found to be instrumental in the formulation of strong, trusting bonds, as well as personal skills such as pro-social behaviour and emotion expression. These relationships can take the form of a sense of belonging to a group, and structured groups such as sports and scout clubs. As peer relationships are such an important aspect of healthy development in adolescence, it is critical to understand by what mechanisms they predict resilience, and how they may be promoted to encourage healthy, positive growth.

The Present Study

Previous research has highlighted the importance of establishing resilience in adolescence, and its role in fostering lifelong skills of adaptation and development in the face of adversity (Hamill, 2003). While much of the research in this space has centred on individual and environmental protective factors within at-risk populations (Ahern, 2006), there has been little work exploring the specific relationship between peer belonging and friendship intimacy and resilience in an Australian adolescent population. Studies in Mexico, China and Canada find that engagement in social groups such as sports, arts and religious groups can build resilience, and, in turn, resilience may enhance peer support (Ruvalcaba et al., 2017; Lan & Wang, 2019; Oberle et al., 2019). However, facets of friendship and their relationship to resilience have been under researched within Australian schools. Two of these facets, peer belonging and friendship intimacy, form the focus of this current project within an Australian adolescent population. By understanding the relationship between facets of friendship and resilience in Australian adolescents, this research aims to fill this literature gap and can have implications on the development of educational policies and practices aimed at supporting

adolescent development. Findings from this study may provide insight into how peer belonging and friendship intimacy impact the resilience of high school adolescents. Given the importance of mental health promotion in adolescence, and the positive effects of resilience in preventing mental ill health (Cavioni et al., 2020), it is important to understand what factors are associated with resilience. Should peer belonging or friendship intimacy be found to positively predict resilience in Australian high-school students, this research could inform practice regarding what interventions would best serve adolescents in their development of healthy resilience.

The present study investigates resilience as a factor of emotional wellbeing and both peer belonging and friendship intimacy as factors of engagement with school. The aim of this study is to investigate the relationship between resilience, and peer belonging and friendship intimacy in Australian high school students (grades 10-12, aged 13-19 years). The research questions are as follows: (1) Does peer belonging and friendship intimacy predict resilience in older adolescent students?, and (2) Does the relationship between peer belonging, friendship intimacy and resilience change as students enter later high school years?

Methods

Data Source

The Wellbeing and Engagement Collection

The Wellbeing and Engagement Collection (WEC) is an annual survey of student wellbeing administered by the South Australian Department of Education (Gregory & Brinkman, 2020). It was introduced in 2012 with the intention of filling the gap in local population level data and has grown to represent 526 schools and over 95,000 students in 2019. The WEC collects data across the domains of emotional wellbeing, engagement with school, learning readiness, and health and wellbeing out of school (Gregory et al., 2021).

Ethics Approvals

Ethics approval was granted through the University of Adelaide Human Research Ethics Committee (23/45). The South Australian Department for Education also approved use of the WEC dataset (#2020-0007).

Measures

Resilience

The WEC operationalises resilience as “young people’s beliefs about their capacity to recover from difficulties and challenges,” and is a facet of emotional wellbeing (South Australian Department for Education, 2019). Resilience questions were measured on a Likert scale ranging from 1 = *strongly disagree* to 5 = *strongly agree*. These questions include “I have a hard time making it through stressful events,” “I tend to bounce back quickly after hard times,” “I tend to take a long time to get over set-backs in my life,” “I usually come through difficult times with little trouble,” and “it does not take me long to recover from a stressful event” (Gregory & Brinkman, 2020).

Peer Belonging and Friendship Intimacy

The predictor variables capture the strength of one’s relationships with their peers and friends. Peer belonging is operationalised as students “feeling that they belong to a social group,” and friendship intimacy as “quality of social support from peers” (South Australian Department for

Education, 2019). Questions for both variables were measured on Likert scales ranging from 1 = *strongly disagree* to 5 = *strongly agree*. Peer belonging measures included the questions “I feel part of a group of friends that do things together,” “I feel that I usually fit in with other kids around me,” and “when I am with other kids my age, I feel I belong.” Friendship intimacy similarly asked three questions; “I have a friend I can tell everything to,” “I have at least one really good friend I can talk to when something is bothering me,” and “there is somebody my age who really understands me” (Gregory & Brinkman, 2020).

Psychometric Properties

All measures in the WEC report good internal reliability, as well as convergent and divergent validity (Gregory & Brinkman, 2020). This applies to both the scales and the individual questions. Resilience showed good internal reliability ($\alpha = .76$), noting the measures reliability across years (Gregory & Brinkman, 2020). Resilience also showed good convergent validity, with high scores associated with lower scores on scales of sadness, worry and psychological distress ($r = -.54, -.50,$ and $-.52$ respectively). Resilience also showed low correlation with unrelated scales, such as academic self-concept ($r = -.31$), perseverance ($r = -.27$) and engagement (flow) ($r = -.23$) (Gregory & Brinkman, 2020).

Peer belonging showed high internal reliability across grades ($\alpha = 0.82$ to 0.87), and had high correlations friendship intimacy and other similar scales ($r = 0.52$ to 0.54). Peer belonging also had low correlations with theoretically distinct scales such as perseverance ($r = .30$ to $.36$) and engagement scales ($r = .34$ to $.41$).

Friendship intimacy scored highly on internal reliability across year levels ($\alpha = 0.82$ to 0.90). It showed high correlations with peer belonging and other similar scales ($r = 0.52$ to 0.54), and low correlations with the distinct measures of perseverance ($r = .21$ to $.26$) and engagement ($r = .25$ to $.32$). Friendship intimacy was found to skew highly towards higher year levels, particularly for girls. The authors note that this may make it difficult to detect changes over time (Gregory & Brinkman, 2020).

Covariates

Demographic information of participants was collected during the WEC and utilised as covariates within this study. Gender, age, Aboriginal and/or Torres Strait Islander status, Non-English Speaking Background status (NESB), and Socio-Economic Status (SES) were included, SES measured using the 2016 Socio-Economic Indexes for Areas (SEIFA). The SEIFA is an Australian Bureau of Statistics index of socio-economic advantage and disadvantage based on the postcode of the adolescent (ABS, 2018).

To better understand the relationship between resilience and facets of friendship, a variety of covariates were considered in the following study. Age has been found to change the way resilience predicts youth emotional wellbeing outcomes, with the relationship becoming stronger as adolescents age into later school years (Lenz, 2021). Women have reported lower scores on resilience than men (Hirani et al., 2016), and Aboriginal and Torres Strait Islander adolescents have been found to show great resilience in the face of adversities (Young et al., 2019). Lower SES has also been shown to improve one's resilience in the way of the 'everydayness' of routines (Vyas & Dillahun, 2017), while people of Non-English Speaking Backgrounds show stronger resilience when community is formed around speaking one's native tongue (Gartland et al., 2021).

Participants

The participants in this study included South Australian Government school students in years 10, 11 and 12 in 2019 who completed the Wellbeing and Engagement Collection ($n = 17,549$). From this, a total of 15,704 participants had complete data (89.5%). Of this sample, 40.7% were in year 10 (Table 1), with 50.1% identifying themselves as female, 67.9% aged 16-17 years old, 24.8% lived in the most socioeconomically disadvantaged communities, 4.6% were from non-English speaking backgrounds, and 3.7% identified as Aboriginal and/or Torres Strait Islander (Table 2).

Missing Data

Of the 17,549 students in the analysis sample, 15,704 students had complete data on all variables (89.5%). A Little's Missing Completely at Random (MCAR) Test (Little, 1988) indicated that

the data was not missing completely at random. The highest non-responses were for the friendship and peer belonging scales with 5.8% missing for each, followed by 3.6% missing for the resilience scale and 3.3% for gender. A potential explanation for the greater non-response of the predictor variables is the self-presentation of the respondents. Young people may avoid responding to questions about the strength of friendships if they themselves score low, in a way potentially associated with shame or embarrassment (Van Goor & Verhage, 1999). This sample bias may lead to an underestimation on the relationship between both predictors and resilience.

Table 1

Year level distribution

Year Level	<i>n</i>	%
10	6399	40.7
11	5228	33.3
12	4077	26.7
Total	15,704	100

Statistical Analyses

Data analysis was conducted using IBM SPSS Statistics version 27 (IBM Corp., 2020). Firstly, the data set was cleaned. This included removing all cases that were not in years 10, 11, and 12. All WEC measures not of interest were also removed, meaning the remaining data included only variables and scales of interest. The analysis sample was then created by filtering out all cases that had missing data for any of the variables or covariates. Mean and standard deviation differences between resilience, peer belonging, and friendship intimacy were determined for each year level and whole cohort (Table 3). Then, all data were checked for independent observations, normality, homoscedasticity, and linearity prior to running multiple regression analyses. No regression assumptions were violated, and multiple linear regression models were conducted. To address the first research question, two models were conducted including all year levels as a whole cohort, one unadjusted model of peer belonging and friendship intimacy predicting the outcome of resilience,

and an adjusted model including the covariates. To address the second research question, the same process was conducted with the sample of each year level individually, both unadjusted and adjusted for covariates.

Table 2

Demographic characteristics of participants (n = 15,704)

Variable	Year 10		Year 11		Year 12		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Gender								
Male	3340	52.2	2639	50.5	1853	45.5	7832	49.9
Female	3059	47.8	2589	49.5	2224	54.5	7872	50.1
Age (years)								
13	1	0.0	0	0.0	0	0.0	1	0.0
14	18	0.3	0	0.0	0	0.0	18	0.1
15	1903	29.7	11	0.2	0	0.0	1914	12.2
16	4339	67.8	1496	28.6	15	0.5	5850	37.3
17	133	2.1	3403	65.1	1277	31.3	4813	30.6
18	5	0.1	240	4.6	2576	63.2	2821	18.0
19	0	0.0	78	1.5	209	5.1	287	1.8
Socio-Economic Status (SES)								
Most disadvantaged	1572	24.6	1335	25.5	995	24.4	3902	24.8
2	1109	17.3	1013	19.4	774	19.0	2896	18.4
3	1076	16.8	905	17.3	720	17.7	2701	17.2
4	1218	19.0	959	18.3	799	19.6	2976	19.0
Least disadvantaged	1424	22.3	1016	19.4	789	19.4	3229	20.6
Aboriginal and/or Torres Strait Islander								
Yes	245	3.8	300	3.8	129	3.2	574	3.7
No	6154	96.2	5028	96.2	3948	96.8	15130	96.3
Non-English Speaking Background								
English	6040	94.4	5002	95.7	3942	96.7	14984	95.4
Non-English	359	5.6	226	4.3	135	3.3	720	4.6

Note. SES measured using SEIFA.

Results

First, analysis of the mean differences for students across Years 10, 11, and 12 indicated that students scored similar on measures of peer belonging, friendship intimacy, and resilience, regardless of the year level (Table 3).

Table 3

Mean scores on wellbeing and friendship measures for students in Years 10, 11, and 12

	M	SD
All Year Levels		
Peer Belonging	3.56	0.92
Friendship Intimacy	3.95	0.99
Resilience	3.07	0.68
Year 10		
Peer Belonging	3.59	0.91
Friendship Intimacy	3.94	0.99
Resilience	3.08	0.66
Year 11		
Peer Belonging	3.54	0.93
Friendship Intimacy	3.93	1.00
Resilience	3.06	0.70
Year 12		
Peer Belonging	3.52	0.93
Friendship Intimacy	3.99	0.99
Resilience	3.06	0.69

Note. 15,704 total participants, 6399 year 10 participants, 5228 year 11 participants, 4077 year 12 participants. Likert scales for all measures ranged from 1 = *strongly disagree* to 5 = *strongly agree*.

Research Question One – Does peer belonging and friendship intimacy predict resilience in older adolescent students?

Table 4 displays the results of multiple linear regression analyses assessing the relationship between both peer belonging and friendship intimacy, and resilience for older adolescents (all years) and for individual year levels. The models include results before and after accounting for a range of covariates (gender, age, Aboriginal and/or Torres Strait Islander status, non-English speaking background, and socio-economic status).

Standardised beta coefficients indicate the degree to which friendship intimacy and peer belonging predicted variance in resilience. Positive standardised coefficients (< 0) indicate that students who reported higher in measures of peer belonging or friendship intimacy also reported higher in measures of resilience. Negative standardised coefficients (> 0) indicate that students who reported higher measures of peer belonging or friendship intimacy reported lower measures of resilience.

Peer belonging was significantly associated with higher levels of resilience in older adolescents across all year levels, before and after accounting for a range of covariates. The unadjusted result (0.38) suggests a medium effect, with this maintained in the adjusted model (0.34). Inversely, the level of friendship intimacy was negatively associated with resilience for all older adolescents, with very weak effects, -.08 and -.04 in the unadjusted and adjusted models respectively. Overall, the change in beta coefficient results between the unadjusted model and the adjusted model accounting for the range of covariates was small; .05 for peer belonging and .04 for friendship intimacy.

Research Question Two – Does the relationship between peer belonging, friendship intimacy and resilience change as students enter later high school years?

The relationship between peer belonging, friendship intimacy, and resilience was examined for years 10, 11, and 12 (Table 4). Peer belonging was moderately associated with resilience in year 10 students (Table 4). The unadjusted model reports a beta coefficient of .39, while the adjusted model report .35. Friendship intimacy in year 10 reported very weak, negative effects, with standardised beta coefficients of -.1 and -.06 in the unadjusted and adjusted models respectively. In year 11 students, peer belonging predicted resilience to a similar degree, with moderate positive effects of .4 and .36 in the unadjusted and adjusted models. Friendship intimacy reports a relationship of -0.09 in the unadjusted model and -0.05 in the adjusted model. Year 12 results report peer belonging relationships to be .35 and .31 in the unadjusted and adjusted models respectively.

Friendship intimacy predicted resilience weakly and negatively, with a beta coefficient of $-.05$ in the unadjusted model, and the adjusted result of $-.01$ is the only non-significant result.

Table 4

Correlations

	Unadjusted β	Adjusted β
All Year Levels		
Peer Belonging	.38***	.34***
Friendship Intimacy	-.08***	-.04***
Year 10		
Peer Belonging	.39***	.35***
Friendship Intimacy	-.10***	-.06***
Year 11		
Peer Belonging	.40***	.36***
Friendship Intimacy	-.09***	-.05**
Year 12		
Peer Belonging	.35***	.31***
Friendship Intimacy	-.05**	-.01

Note. 15,704 total participants, 6399 Year 10 participants, 5228 Year 11 participants, 4077 Year 12 participants. *** $p < .001$, ** $p < .01$. β = standardised beta coefficients. Adjusted models account for the following covariates; gender, age, Aboriginal and/or Torres Strait Islander status, non-English speaking background, and socio-economic status.

Discussion

The primary goal of this study is to examine the relationship between peer belonging, friendship intimacy, and resilience in older adolescent Australian students. Using a large population-based dataset, the current research provides a comprehensive understanding of how facets of friendships are associated with resilience as one progresses through formal schooling.

The present study finds peer belonging to be moderately and positively associated with resilience for this sample of older adolescent students. This means that students with higher scores of peer belonging also showed higher scores of resilience. These findings are supported by the greater literature, which states that peer belonging assists in the development of coping skills, and is critical in adolescent development (Oliver et al., 2006). Fulfilling a need to belong and feeling an acceptance from peers allows adolescents the space to build healthy coping mechanisms (Uslu & Gizir, 2016; Newman et al., 2007). The relationship between peer intimacy and resilience highlights the importance of fostering healthy friend groups in adolescence for the sake of greater mental wellbeing. Friend groups have been found to build these supports in sports and art communities, and indicate the benefits of extracurricular activities during adolescence (Ruvalcaba et al., 2017; Oberle et al., 2019). These findings support the notion that building mental wellbeing and resilience in adolescence can be achieved through strong peer groups, and that extracurricular activities offer a space for these relationships to develop.

Regarding the whole cohort, friendship intimacy is shown to be negatively associated with resilience, indicating that stronger relationships with a single friend could be associated with lower scores of resilience. These findings are surprising and seem to contradict past work. Previously, research has found that strong friendships can help build resilience in the form of supportive resources (Mesman et al., 2021; Höltge et al., 2021). Friendship intimacy has been found to positively build mental wellbeing and resilience (Feragen et al., 2010; Graber et al., 2016), yet the findings of this study indicate the opposite. There is little research to suggest that stronger friendship intimacy negatively predicts resilience, even to the slight degree found within this study; however,

there are some potential explanations. Individuals with stronger family support do not necessarily translate those social skills into a peer-based setting (Graber et al., 2016). Here, strong family connections do not make it easier for adolescents to build supportive friendships, which may indicate family relationships to be a third variable relevant to the friendship intimacy and resilience relationship. Within this study, participants may be supported by family in a way that inhibits their development of resilience through strong friendships.

As peer belonging shows a moderate, positive relationship to resilience, and friendship intimacy shows a weak, negative relationship, it is important to investigate why such conceptually similar measures are relating differently to resilience, even to a small degree. There does not yet exist any empirical studies that investigate the difference between peer belonging and friendship intimacy to directly explain this difference. However, one potential explanation of this difference is that belonging to a group may build intimacy, where having a single strong friend may not. Where peer belonging measures a sense of belonging to a social group, and friendship intimacy measures the quality of social support, the difference lies within a group or individual friendship dynamic. Similar to the findings of family connections not translating to friendships (Graber et al., 2016), it may be the case that while the development of positive friend groups facilitates healthy development (Newman et al., 2007; Uslu & Gizir, 2016), this may not translate to individual friends. While the measures of peer belonging and friendship intimacy are highly correlated with each other (Gregory & Brinkman, 2020), there is a slight difference in their relationships with resilience. To further understanding how resilience is associated with peer relationships, future work may benefit from determining the differences between group friendships and single friendships for developing and maintaining resilience in adolescence.

Across individual year levels, the relationship between peer belonging and resilience remained positive and moderate throughout the years, rising slightly from year 10 to 11, and then falling to below that of year 10 in year 12. This result remained positive and moderate throughout the years. Regarding friendship intimacy, the negative relationship with resilience became weaker

over the years, remaining negative. The relationship between resilience and both peer belonging and friendship intimacy approached zero when comparing years 10 to 12. Across both models, the overall change in beta scores between years 10 and 12 is small, indicating that as students age, the strength of their relationships does little to predict resilience. There exists little research that explain such changes across the later high school years, and may be an area for further research.

When considering the difference in models before and after controlling for a range of covariates, the adjusted model shows a slightly smaller relationship between both peer belonging and friendship intimacy and resilience. This suggests demographic factors such as gender, age, Aboriginal and/or Torres Strait Islander status, NESB, and SES do not have a strong impact on the relationship between facets of friendship and resilience for older adolescents. This is a novel finding, as previous studies have found SES, gender, and age to affect the relationship between facets of friendship and resilience (Davenish et al., 2017; Graber et al., 2016; Lenz, 2021). This indicates that Australian adolescents consistently show similar relationships between peer belonging, friendship intimacy, and resilience, regardless of their inclusion within specific demographic groups. The lack of variance in results when considering the covariates is reassuring, in the way that these findings apply broadly to the cohort regardless of demographic group, and these results offer novel findings to contribute to the literature.

Strengths and Limitations

This study has its strengths in the use of the WEC. As a large dataset, the sample size for this study included many participants. Given such a large analysis sample, the findings will be consistently significant. This means that the findings are an accurate representation of the relationship between both predictors and resilience in the population. In the case of friendship intimacy, this means significant and accurate, albeit weak, findings, but the accuracy of the findings regarding peer belonging indicate useful results, such that they could be used to inform future practice. Another strength of this study lies within how the findings may be applied. Given the size of the WEC, the findings are very generalisable. With an analysis sample of over 15,000 participants, this study

captures many students across a range of schools and communities. Additionally, given that the covariates included in this study had little effect on the overall results, these findings can be applied to students across the state within a range of contexts. This generalisability offers these results to be applied within a practical setting in South Australian schools as an accurate representation of the students within them.

The WEC is limited in its sampling bias towards particular groups of adolescents. Firstly, students in the government school sector report lower participation rates in years 10 to 12 (Gregory et al., 2021). Given the age of participants in this study, it is important to recognise that the non-participation of older adolescents may impact data, and that non-participation may occur due to an extraneous factor that was not considered in this study. Secondly, students in Catholic and Independent schools were not included as part of this research (Gregory et al., 2021). Children from socially advantaged families are more likely to attend these schools, and as such, students from high socio-economic areas may be underrepresented (Gregory et al., 2021). While this study did not find SES to considerably impact the results, the lack of data from students in higher socio-economic communities may underrepresent the true effect of SES on peer belonging, friendship intimacy, and resilience. Finally, this study is cross sectional in design, and therefore cannot claim any causal relationship found between the variables of interest. The findings cannot claim that peer belonging causes greater resilience, nor that friendship intimacy causes weaker resilience, only that there are meaningful associations between the factors.

Implications for Future Research and Practice

While this study finds positive results regarding the relationship between peer belonging and resilience, it is important to recognise that these are only correlational findings. To further understand the relationship between peer belonging and resilience, and if this relationship is causal, further research must be conducted. As such, future research should consider employing longitudinal methodologies to investigate the direction of this relationship. Such findings could provide insight into how peer belonging may be promoted in schools.

It would also be pertinent to further investigate the difference between peer belonging and friendship intimacy. The difference between their relationships to resilience is considerable, and as conceptually similar constructs, it is a counterintuitive result to find that they predict resilience in different manners. As little research has been conducted regarding the difference between peer groups and individual friends, it is difficult to explain this difference. Future research should aim to understand the difference in peer belonging and friendship intimacy, and how their differences may explain the findings of this study.

While a minor finding in this study, it must be noted that the weakening of the relationship between both predictors and resilience over time is an under researched aspect of high school relationships. There exists little justification for why this may be the case, and further research may attempt to fill this gap.

In identifying peer belonging as a predictor of resilience, there is a relevant need to promote such belonging within schools. There have been several interventions conducted to promote peer belonging in schools, and such interventions have been found to reduce aspects of mental health issues (Dray et al., 2017). Of these findings, the interventions were effective in reducing depressive symptoms, general psychological distress, internalising problems, and externalising problems (Dray et al., 2017). Interventions for developing belonging targeting behavioural domains have been found to not only effectively build belonging among peers, but also reduce adolescent psychological distress (Allen et al., 2022). These behavioural interventions take the form of developing social skills, and improve students' relationships with their peers by promoting pro-social behaviour or reducing bullying behaviours to build resilience (Allen et al., 2022). With peer belonging interventions succeeding in building resilience, the findings of this study encourage the use of such interventions in South Australian high schools.

Conclusions

This study investigates the relationship between facets of friendship – peer belonging and friendship intimacy – and resilience. It finds peer belonging to be a moderate predictor of resilience

in older adolescent school students, and finds friendship intimacy to negatively predict resilience with a weak effect. These relationships change minimally between years 10 and 12, as they both get slightly weaker. Covariates were not found to meaningfully change these relationships, indicating that these results seem consistent across a range of diverse adolescents. This study contributes to the literature by offering insight into the importance of peer groups and belonging in high school students, and the importance of interventions that promote healthy friend groups. Future research should attempt to further understand the direction of this relationship, as well as investigate the difference between peer groups and individual friends and how they might differ in the facilitation of resilience.

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Appendix 1 – Research Plan

Psychology Honours Project 2023 – Research Plan

Student Name: /

Student ID: [REDACTED]

Study Information

1. Title:

Examining the relationship between resilience and aspects of friendship in Australian high school students.

2. Target Journal:

The Journal of Youth and Adolescence, Child Indicators Research, and the Journal of Adolescent Research will be the target journals for this research.

3. Research Aim/s:

The primary aim of this project will be to investigate the relationship between resilience, and peer belonging and friendship intimacy in Australian high school students (grades 10-12, aged 15-18 years). The secondary aim will be to determine whether the relationship between resilience, and peer belonging and friendship intimacy differs for students in grades 10, 11, and 12.

4. Research Question/s:

To address the primary aim, this research will be guided by the question; 'Does peer belonging and friendship intimacy predict resilience in older adolescent students?' Regarding the secondary aim, this research will likewise be guided by the question; 'Does the relationship between peer belonging, friendship intimacy and resilience change as students enter later high school years?'

5. Use of Theory:

The proposed project will be inductive in nature. This research study will analyse data from the Wellbeing and Engagement Collection (WEC), form hypotheses based on existing literature and theory, which will be examined using statistical analyses.

Design Plan

6. Tradition (optional):

This research will use the frequentist tradition.

7. Study Design:

This study will use a cross sectional study design to examine the relationship between aspects of friendship (peer belonging and friendship intimacy) and resilience for students in grades 10, 11, and 12. Multiple linear regression models will be used to address the research questions.

8. Study Measures (optional):

The predictor variables in this study will be peer belonging and friendship intimacy. The outcome variable will be resilience. Additionally, covariates will be accounted for in the multiple linear regression models. These covariates will be gender, primary language spoken at home, and socio-economic status, and will be controlled for in additional models.

9. Study Materials (optional):

All data used in this study will be from the Wellbeing and Engagement Collection (WEC) 2019 data set.

10. Study Procedure:

This research will use pre-existing data from the WEC. As this data has been used as part of a previous project, ethics has been approved by the HREC subcommittee in the School of Psychology at the University of Adelaide and the South Australian Department of Education (#20/02 and #2020-0007, respectively). Upon approval for the continued use of this data from the HREC subcommittee in the School of Psychology and South Australian Department for Education, the primary supervisor, Dr *supervisor name*, will share the datasets.

Sampling Plan

11. Existing Data/Partial Existing Data/Original Data (choose one)

This study will rely on existing data – the Wellbeing and Engagement Collection. This data was collected by the South Australian Department for Education, and collects information relating to learning and participation in students in years 4 to 12.

12. Data Collection Procedures

This study will use pre-existing data.

13. Type of Data Collected:

The WEC has collected quantitative, self-report data. Peer belonging collects information regarding students 'feeling that they belong to a social group' and consists of questions such as 'I feel that I usually fit in with other kids around me.' Friendship intimacy is defined as 'quality of social support from peers' and involves questions such as 'I have a friend I can tell everything to'. Resilience is defined as 'young people's beliefs about their capacity to recover from difficulties and challenges' and includes questions such as 'I have a hard time making it through stressful events.'

14. Sample Size:

The sample of students used in this study will be from Grades 10, 11, and 12 in 2019 (n ~ 18,500 total students). Rough estimates – prior to data clean-up – for each grade include: Grade 10 = 7500, Grade 11 = 6200, Grade 12 = 4800. Participants are most likely to be between 15 and 18 years of age.

15. Stopping Rule:

N/A

Analysis Plan

16. Data Analyses:

- Data will be analyzed by [REDACTED], with the supervision of Dr. *supervisor name*.
- IBM SPSS will be used to conduct the data cleaning and analyses.
- Multiple linear regressions will be conducted, both regarding the entire data and controlling for covariates.
- The data will initially be cleaned. Then, multiple regression models will be run to address both research questions. These analyses will be conducted both without and with controlling for covariates.
- Data will be excluded from these analyses in the case of incomplete data. Given the data set is based at a population level, there is little opportunity for there to be meaningful outliers that will skew the analyses.
- Multiple linear regression models assume that there is a linear relationship between the variables. To test for this assumption, the variables will be visualized in a scatter plot. It is also assumed that each observation is independent of each other and will be tested using a Durbin-Watson test. It is assumed that there will be no multicollinearity between predictor variables, and this will be tested using a Variance Inflation Factor. Homoscedasticity is assumed, and the constant variance of residuals will be tested with plotting and comparing standardized residuals versus predicted values. Finally, it is assumed that the residuals will be normally distributed, and this will be tested for with a Q-Q plot.
- Given the large population level data that will be used, there is little chance for the assumptions to be violated in these analyses.

Other

17. Other (Optional):

N/A