Do Individual Differences Predict Attitudes Towards Recreational Cannabis Legalisation and are these Relationships Mediated by Political Ideology?

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Table of Contents

List of Tables

List of Figures

Abstract

We investigate the psychological predictors of support or opposition to recreational cannabis legalisation (RCL), of which little is known. However, support for RCL co-varies with liberalism while opposition co-varies with conservatism. Furthermore, Openness of the Five Factor Model (FFM) of personality and cognitive ability are known to predict liberalism, while Conscientiousness predicts conservatism. We hypothesise that cognitive ability and personality will predict attitudes towards RCL and this relationship will be mediated by Political Ideology. Using an online survey, we measured personality, cognitive ability, Political Ideology, and presented participants with social and economic consequences of prohibition and legalisation models before asking them to endorse their preference. Undertaking mediation analysis, we find that Political Ideology mediates the relationship between Openness, cognitive ability, Agreeableness, and endorsement of RCL. Although Conscientiousness was associated with a lower probability of endorsing RCL, this relationship was not mediated by Political Ideology. Nearly three quarters of participants endorsed RCL, while Past Use of cannabis was the second strongest predictor of endorsement of RCL after liberal Political Ideology. Political Ideology partially accounts for the relationship between individual differences and endorsement of RCL. We speculate that widespread use of cannabis, the further normalisation of use through RCL in other countries, and the wider recognition of the social and economic benefits could lead to RCL becoming a bigger issue in Australia.

Declaration

This thesis contains no material which has been accepted for the award of any other degree or 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.

Signed

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Introduction

1.1 Preamble

Cannabis is generally treated as a prohibited substance worldwide but since 2013 recreational cannabis legalisation (RCL) has been approved in Uruguay, eight US states, and Canada with more places likely to follow (Allen et al., 2018; Caulkins, Kilmer, & Kleiman, 2016; British Broadcasting Corporation, 2018). Opponents of RCL voice concern about potential consequences, such as increases in dependence, psychosis, and access by minors. Proponents, on the other hand, argue that RCL will decrease harm from criminal sanctions, reduce enforcement costs, and create considerable economic benefits. In the US, support has been growing for many years with RCL advancing in individual states through ballot initiatives (Caulkins et al., 2015). Despite this, little is known about whether individual differences variables predict people's position on the issue of RCL. However, support for RCL is known to correlate with Political Ideology (liberalism correlates positively with support and conservatism negatively) and with a personal history of Past Use of cannabis (Caulkins et al., 2016; Palali & van Ours, 2017). The traits Openness and Conscientiousness, of the Five Factor Model (FFM) of personality, capture some differences between liberals and conservatives **(**Furnham & Fenton-O'Creevy, 2018) but whether they explain variance in support for prohibition or RCL is unknown. Motivated social cognition (Jost, Glaser, Kruglanski, & Sulloway, 2003) is used as a theoretical basis to understand the relationship between Political Ideology and Openness and Conscientiousness. In addition to personality traits, cognitive ability also has a relationship with Political Ideology, correlating negatively with conservatism (Stankov, 2009). The current study investigates the possibility that individual differences predict attitudes towards RCL, and if so, whether any relationship is mediated by Political Ideology, history of Past Use, or both of them. In the following we consider why people use cannabis recreationally, harms associated with use,

differing approaches to cannabis policy and the social and economic implications these have. We then review the evidence linking individual differences to Political Ideology and consider why motivated social cognition could explain support or opposition to RCL. The scarcity of previous research in this area and the importance that continued prohibition or potential legalisation could have for society is sufficient motivation to investigate this topic.

1.2 Cannabis Prevalence and Associated Harms

Cannabis is the term used for products of the Cannabis sativa plant (e.g., flowers, leaves, and the resin that can be made from these), which contain mind-altering chemicals called cannabinoids (Caulkins et al., 2016). Cannabis is the most widely used illicit drug in the world with approximately 183 million (95% confidence interval [CI]: 128-238 million) users worldwide annually or roughly 3.8% (95% CI: 2.7-4.9%) of the global population (United Nations Office of Drugs and Crimes [UNODC], 2017). It is estimated that 35% of Australians have used cannabis in their lifetime (Australian Institute of Health and Welfare [AIHW], 2017).

Cannabis can have a stimulant, depressant, or hallucinogenic effect (Gossop, 2000) depending on the dose, administration method, the psychological state of the user, and the setting in which it is consumed (Hall & Pacula, 2003). Despite the varying effects, a review by Green, Kavanagh, and Young (2003) identified some common experiences as reasons why people use cannabis recreationally. These included: enhanced relaxation, mild euphoria, laughter, heightened sense perception leading to greater appreciation of music and food, increased social closeness, improved sleep, insight/personal growth, and enhanced sexual pleasure.

Cannabis is associated with numerous harms. Using data from a nationally representative multi-wave survey, Lopez-Quintero et al. (2011) estimated that cannabis has a lifetime probability for dependence of 8.9%. For comparison, in the same study, the estimated probability for alcohol dependence was 22.7%, and nicotine dependence was 67.5%. Early onset

of use is associated with adverse effects on brain development (Volkow, Baler, Compton, & Weiss, 2014) and increases the probability of subsequent mental health problems (Fischer et al., 2017). The relationship between cannabis use and psychosis is well established (Degenhardt et al., 2009) with cannabis use being associated with a doubling in relative risk for subsequent development of schizophrenia (Arsenault, Cannon, Witton, & Murray, 2004). Typically, however, researchers who have reviewed the area have concluded that cannabis probably does not independently cause psychosis (e.g., Ksir & Hart, 2016) and that stronger evidence is required before making claims of causation (Gage, Zammit, & Hickman, 2013). Hall and Degenhardt (2009) reported that there is conflicting evidence of cannabis smoking being associated with impaired respiratory function and cancer, and that these findings are made more uncertain because of concurrent tobacco smoking by cannabis users. Van Ours and Williams (2015) reviewed cannabis related effects and concluded that moderate cannabis use is not associated with any serious health problems and that adverse effects of cannabis use are generally confined to a small number of heavy users who are predisposed to mental health problems.

1.3 Approaches to Cannabis Policy

Broadly speaking, there are three main legislative approaches to the status of recreational cannabis: prohibition, decriminalisation, and legalisation (see Table 1 for details).

Table 1

Descriptions of Legislative Approaches to Recreational Cannabis

Cannabis Policy	Description of Legislative Approach
Prohibition	Cannabis was internationally prohibited under the 1961 Single Convention on Narcotic Drugs and aims to promote health and wellbeing by eliminating illicit drug markets and deterring recreational use of controlled drugs by threatening and applying criminal sanctions (Room & Reuter, 2012). Prohibition led to 79 643 cannabis related arrests in Australia in 2015-2016 (Australian Criminal Intelligence Commission, 2017).
Decriminalisation	Although models vary, essentially cannabis remains illegal but possession of small amounts are considered a civil rather than criminal offence, usually resulting in fines (Room, Fischer, Hall, Lenton, & Reuter, 2010). Possession of large amounts of cannabis, cultivation, and distribution remain criminal offences. In this sense, prohibition can be conceptualised as a continuum with total prohibition at one end and decriminalisation at the other (Levine, 2003).
Legalisation	Legalisation is the antithesis of prohibition, in which cultivation, distribution, and use by adults are completely legal and regulated (Caulkins et al., 2016). In this model, cannabis is subject to quality control (potency is known and cannabis is tested for contaminants) and age restrictions apply (Canadian Centre for Addiction and Mental Health, 2014).

Room and Reuter (2012) argue prohibition has not achieved its goals and through unintended consequences increases harm. A criminal record for a cannabis offence can adversely affect an individual's subsequent employment and travel (Erickson & Fischer, 1995), while the market is unregulated meaning potency is unknown, there are no age restrictions, and dealer transactions can expose users to more harmful substances (Crepault, Rehm, & Fischer, 2016). There is also the twofold economic setback of ceding sales tax revenue compounding with the high cost of enforcing prohibition (Jacobi & Sovinsky, 2016).

Decriminalisation reduces the harm of criminal sanctions caused by prohibition, but it does nothing to mitigate the other harms identified. RCL potentially diminishes the harms decriminalisation fails to through regulation (Crepault et al., 2016). In US states that have legalised cannabis, arrests for possession have reduced by 88% in Colorado and 98.6% in Washington, resulting in substantial decreases in criminal justice costs (Drug Policy Alliance [DPA], 2018). Youth rates of cannabis use have remained stable in legalised states in which data exists (DPA, 2018).

Legal cannabis sales revenues in US states are estimated to reach $11.8 billion in 2018 and if cannabis was federally legalised (i.e., in all 50 states) this could generate $409 billion in sales revenue, create up to a million jobs, and provide $105.6 billion in tax revenue between 2017 and 2025 (New Frontier Data, 2018).

Jacobi and Sovinsky (2016) investigated the effect of taxation on rates of use if cannabis was legalised in Australia. They suggested that RCL would increase the number of total users but, if cannabis were taxed at 25%, the increase would only be from 13 in 100 people to 18 in 100. They also estimated that an Australian state equivalent to the size of Colorado would generate over $68 million in tax revenue. Shanahan and Ritter (2014) conducted a cost-benefit analysis in Australia comparing prohibition to potential RCL in net social benefit terms (NSB;

i.e., total sum of benefits minus total sum of costs). They found that once government revenue was factored in, the RCL model had superior NSB.

Between 1987 and 2004, four Australian states/territories decriminalised cannabis (Williams & Bretteville-Jenson, 2014). However, Australia has been scaling back decriminalisation for many years (Room et al., 2010) and in WA decriminalisation was repealed altogether in 2011 (Williams & Bretteville-Jenson, 2014). This study will, therefore, exclude the option of decriminalisation and will give participants the binary choice of prohibition or RCL.

Research in cannabis legalisation has often used single outcome measures such as health concerns and are sometimes unclear as to whether the study is referring to personal use, supply, decriminalisation or legalisation (Shanahan, Gerard, & Ritter, 2014). The economic issues presented, in addition to benefits of reduced criminality, are important considerations when deciding whether to support RCL. This study will explicitly outline the characteristics of prohibition and RCL as an industry to enable the participants to make informed decisions on the topic.

1.4 Individual Differences and Political Ideology

No previous research could be found that explicitly investigated the role of personality traits and cognitive ability in attitudes towards RCL. However, two characteristics that have been found to correlate with support are Political Ideology (Caulkins et al., 2016), which is predicted by personality and cognitive ability, and a history of Past Use of cannabis (Palali & van Ours, 2017), which is predicted by personality.

It is commonly understood that conservative ideology represents tradition and maintaining the status quo, whereas liberal ideology tends to promote progressive social policies and egalitarianism (Jost, Nosek, & Gosling, 2008). Research in Political Ideology commonly uses a

continuum with conservative (right-wing) at one pole and liberal (left-wing) at the other (e.g., Carney, Jost, Gosling, & Potter, 2008).

According to a poll by the Pew Research Centre (PRC; 2013, as cited in Galston & Dionne, 2013) 73% of self-identified liberals endorsed RCL compared to 37% of conservatives. A more recent poll found that 61% of Americans support RCL, which when broken down by partisanship equated to 69% of Democrats and 40% of Republicans (PRC, 2018). Although liberal and conservative are technically not the same as Democrat and Republican, Political Ideology has considerably predictive utility on voting behaviours (Jost, 2006).

The application of personality traits in research to understand the differences between liberals and conservatives has proven insightful (Gerber, Huber, Doherty, Dowling, & Ha, 2010). The FFM model has become the dominant framework in the field of personality (Schulze & Roberts, 2006). See Table 2 for an overview of the five traits.

Table 2

Description of the Big Five Traits

Trait	Description
Openness	The breadth, depth, originality, and complexity of an individual's mental and experiential life. Seeks stimulating activities.
Conscientiousness	Socially prescribed impulse control that facilitates goal directed behaviour such as thinking before acting, following norms and rules, organising, and prioritising.
Extraversion	Energetic approach toward the social and material world, and includes traits such as sociability, activity, and positive emotionality.
Agreeableness	Contrasts a prosocial and communal orientation towards others with antagonism and includes traits such as altruism, tender-mindedness, and trust.
Neuroticism	Contrasts emotional stability with negative emotionality, such as feeling anxious, nervous, sad, and tense.

Note. Adapted from John, Naumann, and Soto (2008).

The most prominent relationships between traits and Political Ideology are that liberals score higher in Openness and conservatives score higher in Conscientiousness (Carney et al., 2008). Sibley, Osborne, and Duckitt (2012) conducted a meta-analysis using 73 studies (N = 71, 895) and found that Openness correlated negatively with conservatism (r = -.18) and Conscientiousness correlated positively with conservatism (r = .10). The correlation between personality and ideology applies to both social and economic dimensions of Political Ideology (Gerber et al., 2010) although Carney et al. (2008) found the effect was stronger for social policies.

There is evidence that personality traits are partly heritable (Bratko, Butkovic, Vukasovic, Chamorro-Premuzic, & von Stumm, 2012) in addition to longitudinal evidence supporting the aforementioned relationships between Openness and liberalism, and Conscientiousness and conservatism (Block & Block, 2006), suggesting that personality traits influence ideological proclivities. Associations between Political Ideology and Extroversion, Neuroticism, and Agreeableness have been generally weak and inconsistent (Carney et al., 2008).

Jost et al. (2003) conducted a meta-analysis using 88 samples to uncover the characteristics of conservatism. They report that conservatives (vs. liberals and moderates) tended to score higher on measures of psychological variables including dogmatism, intolerance of ambiguity, needs for order, structure, and closure, and perceived threat to system stability. They also found that conservatives (vs. liberals and moderates) tended to score lower on measures of uncertainty tolerance, integrative complexity, and openness to experience.

This led Jost et al. (2003) to propose that political conservatism is conceived as motivated social cognition insofar as conservatives adopt certain ideological positions to reduce feelings of threat and uncertainty. Two core principles undergird the difference between liberal and conservative beliefs: (1) promoting versus resisting change and (2) rejection versus justification of inequality (Jost et al., 2008). Theoretically, to ensure that uncertainty and threat are minimised motivates conservatives to oppose change, as change by definition brings a degree of unpredictability, and support the status quo to maintain structure, order, and familiarity.

Although the majority of ideological-individual difference research has focused on the relationship with cognitive styles (e.g., Jost et al., 2003), some research has also investigated the relationship with cognitive ability. Cognitive ability refers to the proficiency to perform cognitive tasks that require problem solving, reasoning, memory, and comprehension, and has been found to co-vary with ideology (Onraet et al., 2015).

A correlational study by Stankov (2009) used two samples to analyse the relationship between cognitive ability and conservatism. The first sample used data from community college students and measured cognitive ability using SAT, Vocabulary, and Analogy tests. The second sample used international students and measured their cognitive ability using education levels, and mathematics and reading assessments. The results revealed that in both samples cognitive ability negatively correlated with conservatism. This finding has support from a longitudinal study by Deary, Batty, and Gale (2008), who employed structural equation modelling and found a direct path coefficient of .46 between general intelligence aged 10 and liberal non-traditional social attitudes aged 30. Schoon, Cheng, Gale, Batty, and Deary (2010) subsequently replicated this study using a different sample.

Contrastingly, Carl (2014a; 2014b) found that self-identified Republicans had a 1 to 5 IQ point advantage over self-identified Democrats. However, Ganzach (2016) disputed these findings claiming that once race and socio-economic status are properly controlled, there was no significant difference between the two groups.

Meta-analytic results suggest the balance of evidence supports the notion that cognitive ability correlates negatively with right-wing attitudes (Onraet et al., 2015; Van Hiel, Onraet, & De Pauw, 2010). Van Hiel et al. (2010) found a small correlation (r = -.26), while Onraet et al. (2015) found a similar correlation (r = -.20). Onraet et al. identified that the type of right-wing attitude and the way cognitive ability is measured moderated the effect size of the relationship, however.

Stankov (2009) built on the theory of motivated social cognition (Jost et al., 2003) by suggesting that low cognitive ability may be another predictor of conservatism, alongside others identified by Jost et al. (2003; e.g., dogmatism), and argued this comports with the idea of perceived threat and uncertainty. Stankov proposed that people with low cognitive ability might

perceive threat from sources such as complexity or novelty and to manage their psychological needs may gravitate towards conservative thinking.

Political Ideology is significant because it is associated with beliefs that people have about the world. Common perspectives held by conservatives include the perception that the world is dangerous, holding prejudicial views of people belonging to stigmatized groups (Duckitt, 2001), importance of achievement, conformity, harshness towards outsiders (Stankov, 2007), holding favourable attitudes toward pre-existing social norms, authority (Jost et al., 2003), and morality (Jost, 2006).

In contrast, liberals tend to be more open-minded, tolerant, seek novelty and stimulating activities (Jost et al., 2008), more egalitarian, and seek to change the status quo (Jost, 2006). Liberals have also been found to support Government action that furthers equality and personal freedom (Swedlow, 2008).

The differences between liberals and conservatives are behaviourally significant. Carney et al. (2008) found that liberals exhibited more non-verbal characteristics associated with Openness such as smiling, expressiveness, and greater engagement during interactions, while conservatives tended to be less responsive and more distracted. These behavioural differences also extended to personal and working spaces (Carney et al., 2008). Bedrooms and offices of conservatives were found to be more conventional, tidy, and organised while those of liberals tended to have more travel related items and contained greater diversity of books and music.

Regarding attitudes towards cannabis specifically, there are notable differences between liberals and conservatives: support for RCL is higher among liberals than conservatives. When comparing the perceived relative harmfulness of alcohol and cannabis, the majority of Republicans, 53.2%, considered them to be equally harmful and 16.1% reported cannabis to be more harmful (Allen et al., 2018). In comparison, 38.5% of Democrats considered them equally

harmful, and only 3.6% reported cannabis as more harmful than alcohol (Allen et al., 2018). However, the health risks associated with cannabis are considerably lower than those of alcohol (Lachenmeier & Rehm, 2015).

Although both liberals and conservatives overall reported that government efforts to enforce cannabis laws cost more than they are worth (79% and 65%, respectively), considerably more conservatives than liberals believe that cannabis use is morally wrong (Galston & Dionne, 2013). Palamar (2014) investigated opinions towards cannabis policies and found that conservatives were less likely to support RCL and cannabis being sold to adults only or anyone (i.e., including minors), while liberals were more likely to support RCL and support cannabis being sold to adults only and not to anyone (i.e., they favoured regulated RCL). Plausibly, these results represent the manifestation of more dogmatic, conformist, and moral attitudes associated with conservatism versus the more open-minded, novelty-seeking characteristics of liberalism.

Based on this evidence, it is conceivable that individual differences motivate Political Ideology, which through the process of motivated social cognition, shapes attitudes to RCL. In other words, conservatives may perceive a greater threat than liberals from cannabis use and the novelty of RCL, and will, therefore resist the change of RCL and instead support the status quo of prohibition. Liberals may be more inclined to support change and reduce inequality in how cannabis users are treated in comparison to other recreational drug users (e.g., alcohol users).

1.5 Effect of Past Use of Cannabis on Attitudes Towards Legalisation

Cannabis users have been found to be higher in Openness and lower in Conscientiousness, which is theoretically consistent with these traits insofar as people high in Openness like seeking out new experiences while being low in Conscientiousness relates to non-conforming and impulsivity (Fridberg, Vollmer, O'Donnell, & Skosnik, 2011). This is relevant to the current study. Using an Australian sample, Shanahan et al. (2014) found evidence of a preference for

RCL being positively correlated with cannabis use. A more recent study that also used Australian data found positive correlations between the support of current and past users for RCL when compared to never-users, although the relationship was stronger for current users (Williams, van Ours, & Grossman, 2016). Palali and van Ours (2017) investigated the relationship between current and Past Use and the support for RCL and concluded that the effect is likely causal. It was posited that the support of current users for RCL might be partly driven by self-interest (i.e., RCL could lower prices). However, the support of both current and past users could be due to finding out experientially that cannabis has net benefits and is not as harmful as they may have initially thought (Palali & van Ours, 2017). Abstainers, on the other hand, would not have this experiential information and are consequently less likely to support RCL (Palali & van Ours, 2017). This suggests that people high in Openness are more likely to try cannabis and, because on balance these experiences are positive, this could shape their attitude favourably towards RCL.

1.6 The Current Study

The overarching aim of this study is to investigate how individual differences correlate with attitudes towards RCL, and whether this relationship is mediated by Political Ideology and/or moderated by Past Use of cannabis. This study will give participants an overview of the consequences of models of prohibition and RCL, including health and enforcement costs as well as the potential benefits of tax revenue, to investigate how these specific features correlate with individual differences.

Table 3

Aims and Hypotheses for the Current Study

Aim 1	To investigate whether personality traits and cognitive ability predict attitudes towards

	RCL and, if so, whether these relationships are mediated by Political Ideology. Furthermore, if mediation is present, whether this is moderated by Past Use of cannabis. Hypothesis 1: Higher Openness and cognitive ability will both correlate positively with liberalism, while higher Conscientiousness will correlate negatively with liberalism. Hypothesis 2: People higher in Openness and cognitive ability, being politically liberal, and with a history of Past Use will be more likely to endorse RCL, while people higher in Conscientiousness will be less likely to endorse RCL. Hypothesis 3: It is hypothesised that Political Ideology will mediate the relationship between individual differences and attitudes towards RCL. It is further hypothesised that such mediation may be moderated by Past Use of cannabis.
Aim 2	To explore how individual differences correlate with specific aspects of prohibition/legalisation. Since it is conceivable that individual differences might correlate with specific aspects of prohibition or RCL regardless of what policy is endorsed overall, questions pertaining to individual aspects of prohibition/RCL (e.g., "How important to you is it that taxpayer money is spent on attempting to prohibit cannabis use?") were developed to facilitate measurement of how individual differences correlate with them (see Method for further details). Because previous research has found inconsistent or generally weak correlations between Extroversion, Neuroticism, and Agreeableness and Political Ideology we remain agnostic as to how these will correlate to both RCL overall and on the specifics of each approach. They are included in the analysis for exploratory purposes.

Method

2.1 Participants

The sample used for this study comprised sub-samples of psychology students and the general public. Level 1 Psychology students at the University of Adelaide (UoA) were invited to participate in exchange for course credit; and social media and posters were used to recruit members of the community. Participants were required to be proficient in English and 18 years or older.

2.2 Materials

Two online questionnaires were used to collect data from the student sample. For the community sample, the two questionnaires were combined into one. These are described in further detail below.

2.2.1 Demographic Data

Demographic questions included participant age (in groups of 10 years except the first group which was 18-to-29 and the final group being 70 or older), gender, parent/primary caregiver status, marital status, and highest level of obtained education (from did not finish school to graduated from university with a PhD).

2.2.2 Personality Traits

Personality was measured using the Openness Conscientiousness Extraversion Agreeableness Neuroticism Index Condensed (OCEANIC; Schulze & Roberts, 2006). The OCEANIC is composed of 45 items and requires the participant to rate how characteristic of them a given behaviour is using a 6-point Likert-type scale (never, rarely, sometimes, often, usually, always). Examples of items used in the OCEANIC include “I am organised” and “I am philosophical”. The scores across the 45 items give an overview of the participant’s personality according to the FFM framework. The OCEANIC has high internal consistency reliability with

Cronbach's α for the measure ranging from .77 for Openness to .91 for Conscientiousness and Neuroticism (Schulze & Roberts, 2006).

2.2.3 Cognitive Ability

Cognitive ability was measured using the Ravens Advanced Progressive Matrices Short-Form (APM; Bors & Stokes, 1998). The APM is comprised of 12 progressively more difficult abstract analytic reasoning problems. Each problem is presented as a 3x3 matrix in which images transform vertically and horizontally. In each problem, the lower right-hand corner of the matrix is blank, and it is the participant's task to pick which one of eight possible solutions is correct according to the rules of the problem, which are determined by the horizontal and vertical transformations. Participants attempt two practice problems before undertaking the 12 test problems. Participants are scored out of 12, with higher scores indicating higher cognitive ability. Bors and Stokes (1998) report that the APM short-form is less time consuming than the full-length version but correlates highly ($r = .92$, $p < .001$) and has high internal consistency with Cronbach's α of .73. The advantage of using analytic reasoning tasks is that they measure problem-solving ability independent of previous knowledge or experience (Carpenter, Just, & Shell, 1990).

2.2.4 Attitudes to Cannabis Legalisation

Participants were first asked "Where would you place yourself on a continuum of Political Ideology?" where Right-wing = 1 and Left-wing = 9. Political continuums such as these have been found to be a reliable indicator of Political Ideology (Jost, 2006). Because the Australian Liberal Party are centre right, the terms Left-wing and Right-wing were used instead of liberal and conservative to avoid confusion.

Next, a single item "Have you ever tried cannabis?" (Yes/No) was presented. Following this question, the defining characteristics of cannabis prohibition and legalisation were presented

in a table (See Table 4). The table had two options for the participants to choose from Policy A (representing prohibition) and Policy B (representing RCL). The choices were labelled Policy A and Policy B, rather than "Prohibition" or "Legalisation", to encourage the participants to make their choice based on the actual characteristics of each policy rather than the labels themselves, which are potentially loaded (Shanahan et al., 2014).

Table 4

Description of the Attributes and how they Differ Under Policy A (Prohibition) and Policy B (RCL)

Attributes	Policy A	Policy B
If adult found with cannabis	Arrested and go to court	No offence, legally traded good. Offence to supply to under 18 year olds
Cost to enforce cannabis laws	$60 million	$ 40 million
Estimated rate of use	13 in 100	18 in 100
Cost to treat associated health problems (e.g., addiction, psychosis)	$20 million	$40 million
Tax revenue	Zero as cannabis is not a legally sold product	$85 million
Location of purchase	Illicit drug dealer, sells to anyone	Cannabis shop, sells to people 18 years and older only

The attributes in Table 4 were adapted from Shanahan et al.'s (2014) study except for the tax revenue figures. Shanahan et al. conducted a discrete choice experiment in which they used current estimates of each attribute and generated other estimates of these based on certain experimental conditions (e.g., decriminalisation, legalisation; see Shanahan et al., 2014). Because of the impracticality of including all health harms associated with cannabis (e.g.,

dependence, psychosis etc.) and all enforcement interventions (e.g., policing, courts, etc.) an economic proxy of the overall costs for these issues in NSW were used instead. Policy A used Shanahan et al.'s estimates for the current status quo (i.e., prohibition). Policy B used the highest estimates that Shanahan et al. approximated for *estimated rates of use* and *cost to treat cannabis related health problems*, as these would be expected to rise under RCL. The figures for the estimated rate of use were identical to a study by Jacobi and Sovinsky (2016) who were investigating the effect of RCL on cannabis use prevalence.

It is anticipated that enforcement costs would be lower under a legalisation model (Jacobi & Sovinsky, 2016). For the *cost to enforce cannabis laws*, Shanahan et al. (2014) provided a range of estimates, of which $40 million was chosen for this study. The lowest figure Shanahan et al. estimated was $20 million, but it was decided this was too low for the current study, as it may have made Policy B too attractive from an economic perspective. The tax revenue figure was derived from a study by Jacobi and Sovinsky (2016) in which they estimated that an Australian state the size of Colorado would collect approximately $68 million. This financial figure was extrapolated to a population the size of NSW, increasing it to $85 million. Tax revenue was included in this study because it has the potential to benefit society and is thus deserving of consideration in the RCL choice.

Because it is possible that individual differences might correlate with specific aspects of Policy A or Policy B regardless of which policy was endorsed overall, questions were also devised around each attribute (see Appendix A). Thus, seven questions related to the attributes in the table were generated (e.g., How important to you is it that taxpayer money is spent on attempting to prohibit cannabis use?) and participants answered on a 7-point Likert-type scale with "Not at all important" at one end and "Extremely important" at the other. The two final questions used a 7-point Likert-type scale in which "Very negative" was used at one end and

"Very positive" at the other (e.g., "If cannabis were legalised what is your attitude to it being sold in shops to people 18 years and older compared to the current situation of drug dealers selling to anyone?"). Henceforth, the attributes in Table 4 and the questions relating to them are referred to as the consequences of each legislative approach. Table 4 was going to include a question about job creation related to the cannabis industry but was excluded when no estimates could be found for Australia, but in an oversight, a question relating to attitudes towards job creation was included in these questions.

2.3 Procedure

Participants read an information sheet and indicated informed consent prior to undertaking the study. For students, there were two questionnaires (Part 1 and Part 2), which were accessible via the School of Psychology Research Participation System. Part 1 was comprised of the individual differences aspect of the study (i.e., personality traits and cognitive ability). Part 2 pertained to demographic data, Political Ideology, Past Use, attitudes towards RCL, and finally a choice to endorse Policy A or Policy B. To ensure anonymity, students used an identification code for each part of the study. This code was then used to match their Part 1and Part 2 responses, and to grant course credit course credit in exchange for their participation.

The community sample was recruited via social media and advertising posters (see Appendix B). The two questionnaires used in the student sample were combined into one for the community sample. The study was completely anonymous for both the student and community samples to encourage honest responses to the questions. There were no time constraints for either sample. The data for the study was collected using online software *SurveyMonkey* and was open to both samples from 10/04/2018 to 19/08/2018. The study received approval from the School of Psychology: Human Research Ethics Subcommittee, Code Number 18/26.

2.4 Data Analysis

Statistical analyses were conducted using the statistical packages MPlus v7.3 (Muthén & Muthén, 2014) and R v3.3.1 (R Core Team, 2016).

Results

3.1 Power Analysis

A priori power analysis was conducted using G*Power 3.1 (Faul, Erdfelder, Lang, & Buchner, 2009). The input parameters for a correlation point biserial model were set to: two tails, alpha level of .05, power of .80, and effect size of .2. The conservative effect size was chosen to be consistent with the correlation found by Onraet et al (2015) between cognitive ability and right-wing attitudes. The results indicated that 190 participants were required, meaning that the current study had sufficient power.

3.2 Descriptive Statistics

Incomplete questionnaires (n = 43) and responses indicating non-consent for data being used in research (n = 4) were excluded from the analysis, leaving N = 191. Of the total sample, n = 117 (61.26%) were from the community. Table 5 displays the descriptive statistics for the participants of the study and policy endorsement according to each demographic group and associated chi-square analyses. Overall, 74% of this sample endorsed RCL, which is considerably higher than the most recent Australian estimate of 35% in 2016 (AIHW, 2017). Significant chi-square findings were that non-primary caregivers were more likely to endorse RCL compared with primary caregivers, while people with a history of Past Use of cannabis were more likely to endorse RCL compared to never-users, consistent with previous research (Palali & van Ours, 2017). Of the people with a history of Past Use of cannabis, (n = 125) 86.4% endorsed RCL.

Table 5

*Descriptive Statistics for Participants (*N = 191*) Including: Age Group, Gender, Primary Care-Giver Status, Relationship Status, Highest Level of Education, and History of Cannabis Use, and Associated Chi-Square Analyses of Policy Endorsement*

Variable and Subcategory	*n*	%	Policy A *n* (%)	Policy B *n* (%)	Chi Square
Age Group					
18-29	121	63.4	28 (14.7)	93 (48.7)	χ^2 (3) = 2.94,
30-39	32	16.8	9 (4.71)	23 (12.0)	p = .40
40-49	15	7.85	3 (1.57)	12 (6.28)	
50-59	13	6.81	7 (3.66)	6 (3.14)	
60-69	6	3.14	1 (0.52)	5 (2.62)	
70+	4	2.10	1 (0.52)	3 (1.57)	
Gender					
Male	90	47.1	23 (12.0)	67 (35.1)	χ^2 (1) = 0,
Female	98	51.3	26 (13.6)	72 (37.7)	p = 1
Other	3	1.57	0 (0.00)	3 (1.57)	
Primary Care Giver					
Yes	40	20.9	16 (8.38)	24 (12.6)	χ^2 (1) = 4.55,
No	151	79.1	33 (17.3)	118 (61.8)	p = .03
Relationship Status					
Single	106	55.5	22 (11.52)	84 (44.0)	χ^2 (2) = 3.02,
Married/de-facto	70	36.7	22 (11.52)	48 (25.1)	p = .22
Separated	2	1.04	1 (0.52)	1 (0.52)	
Divorced	6	3.14	2 (1.05)	4 (2.09)	
Other	7	3.67	2 (1.05)	5 (2.62)	
Highest Education Level					
Did not Finish School	6	3.14	0 (0.00)	6 (3.14)	χ^2 (3) = 7.03, p = .07
High School	92	48.2	18 (9.42)	74 (38.7)	
College	24	12.6	9 (4.71)	15 (7.85)	
Undergraduate Degree	62	32.5	20 (10.5)	42 (22.0)	
Masters Degree	5	2.62	1 (0.52)	4 (2.09)	
PhD	2	1.05	1 (0.52)	1 (0.52)	
History of Cannabis Use					
No	66	34.6	32 (16.8)	34 (17.8)	χ^2 (1) = 25.76,
Yes	125	65.4	17 (8.90)	108 (56.5)	p <.001

Note. For the chi-square analysis, some categories were collapsed due to insufficient expected cell counts (Navarro, 2015). The age groups 50-59, 60-69, and 70+ were collapsed into one category; Separated, Divorced, and Other were collapsed into one group in the Relationship Status category; Undergraduate Degree, Masters Degree, and PhD were collapsed into one group in the Education category. The Other category (n = 3) in the Gender demographic was excluded for chi-square analysis since it did not fit into either male of female category.

Table 6 shows the means and standard deviations for the OCEANIC, APM, and Political Ideology for the sample. The psychometrics had good internal consistency reliability. The Political Ideology mean score indicates that the sample was liberal leaning.

Table 6

*Descriptive Statistics for Political Ideology, OCEANIC, and Advanced Progressive Matrices (*N *= 191)*

Variable	Mean	*SD*	Min	Max	*alpha*
Political Ideology	5.74	1.97	1	9	-
Openness	32.69	7.40	17	51	.82
Conscientiousness	37.95	7.04	21	53	.87
Extraversion	31.87	7.24	14	53	.86
Agreeableness	41.40	7.37	26	54	.91
Neuroticism	28.42	7.51	13	48	.87
APM	7.07	2.97	0	12	.80

Note. APM is Advanced Progressive Matrices.

3.3 Aim 1

To investigate whether personality traits and cognitive ability predict attitudes towards RCL and, if so, whether this relationship is mediated by Political Ideology. Furthermore, if mediation is present, whether this mediation is moderated by Past Use of cannabis.

3.3.1 Hypothesis 1

Hypothesis 1 is that higher Openness and cognitive ability will correlate positively with liberalism and higher Conscientiousness will correlate negatively with liberalism (see Table 7 for the correlational matrix). These correlations were observed; however, only the correlations between Openness-liberalism and cognitive ability-liberalism were statistically significant.

These findings are consistent with previous research (e.g., Furnham & Fenton-O'Creevy, 2018; Schoon et al., 2010) but the medium correlation of $r = .47$ between Openness-liberalism is higher than is generally reported in the literature (e.g., Sibley et al., 2012). The small correlation between Conscientiousness-liberalism ($r = -.13$, $p = .07$), although not statistically significant, is nonetheless consistent with the effect sizes reported in the literature (e.g., Sibley et al., 2012). Therefore, Hypothesis 1 was partially supported.

3.3.2 Hypothesis 2

Hypothesis 2 is that people higher in Openness and cognitive ability, being politically liberal, and with a Past Use of cannabis will be more likely to endorse RCL, while people higher in Conscientiousness will be less likely to endorse RCL. As Table 7 shows, there were significant medium positive correlations between Openness, liberalism, and Past Use, and support for RCL, while cognitive ability had a small positive correlation. There was a significant small negative correlation between Conscientiousness and endorsement of RCL. These results indicate that Hypothesis 2 was supported.

Table 7

Correlation Matrix of Political Ideology, OCEANIC Dimensions, Advanced Progressive Matrices (APM), and Questions Pertaining to Consequences of Prohibition/RCL

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 Political Ideology	-														
2 Openness	.47	-													
3 Conscientiousness	-.13	.07	-												
4 Extraversion	-.04	.09	.18	-											
5 Agreeableness	.21	.33	.22	.35	-										
6 Neuroticism	.13	.04	-.18	-.21	-.01	-									
7 APM	.24	.32	-.17	-.05	.03	.11	-								
8 Prohibition	-.25	-.40	.07	-.01	-.26	-.07	-.24	-							
9 Treatment	.36	.38	-.11	.03	.33	.15	.18	-.29	-						
10 Criminal P	-.46	-.51	.10	.02	-.27	-.13	-.23	.68	-.48	-					
11 Tax Revenue	.25	.28	-.19	.03	.18	.00	.13	-.36	.36	-.41	-				
12 Increased Use	-.41	-.34	.21	.01	-.26	-.11	-.28	.52	-.30	.50	-.31	-			
13 Job Creation	.32	.28	-.12	.11	.19	.01	-.01	-.49	.41	-.57	.50	-.36	-		
14 Buy in Shops	.38	.42	-.12	.08	.37	.06	.20	-.63	.41	-.70	.50	-.52	.69	-	
15 Past Use	.32	.45	-.12	.14	.20	.06	.17	-.43	.27	-.55	.34	-.35	.41	.42	-
16 Policy Endorsed	.41	.31	-.15	-.03	.29	.10	.19	-.52	.36	-.69	.35	-.53	.53	.71	.38

Note. Correlations with an absolute value of .14 have $p < .05$. Prohibition is "How important to you is it that taxpayer money is spent on attempting to prohibit cannabis use?", Treatment is "How important to you is it that people can receive taxpayer-funded treatment for cannabis-related health problems?" Criminal P is "If someone is found with cannabis how important to you is it that criminal proceedings commence?", Tax revenue is "If cannabis were legalised how important to you is the potential tax revenue it would generate?", Increased Use is "It is currently estimated that 13 out of 100 people currently use cannabis and it is estimated this could increase to 18 in 100 people if it were legalised. How important is this increase to you?", Job creation is "If cannabis were legalised how do you feel about the jobs this industry would potentially create?", Buy in Shops is "If cannabis were legalised what is your attitude about it being sold in shops to people 18 years and older compared to the current situation of drug dealers selling to anyone?", Past Use is "Have you ever tried cannabis?", Policy Endorsed refers to endorsing prohibition or RCL.

3.3.3 Hypothesis 3

Hypothesis 3 proposes that Political Ideology will mediate the relationship between cognitive ability and personality, and Policy Endorsement. It is further proposed that such mediation may be moderated by Past Use of cannabis status. Hayes (2015) describes a method for indexing the moderation of mediated relationships and this will be followed here. Figure 1 (adapted from Hayes) shows the relevant conceptual and statistical models.

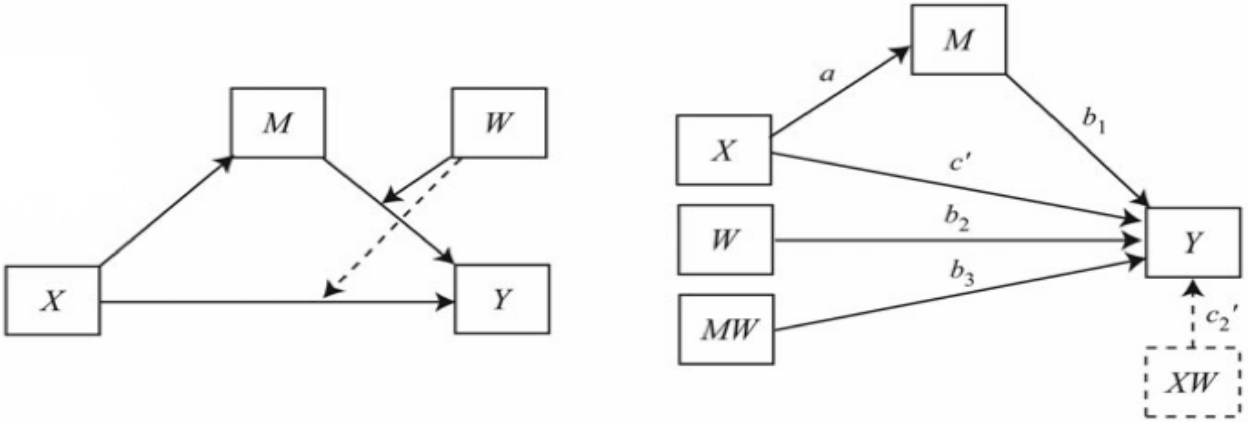

Figure 1. Model of second stage moderation. *X* represents the independent variable (e.g., APM), *M* is the mediating variable (Political Ideology), *W* is the moderating variable (Past Use status), and *Y* is the dependent variable (Policy Endorsement), *MW* is the product of mediator and moderator, and *XW* is the product of independent variable and moderator, *a*, b_1, b_2, b_3, *c'*, and *c2'* are the estimated regression coefficients between the relevant variables. The dotted lines are optional moderator effects.

For the variables that are significantly related to Policy Endorsement (APM, Openness, Conscientiousness, and Agreeableness), first a mediation model will be examined to establish whether the relationship is mediated by Political Ideology; if it is, a model as depicted on the right of Figure 1 will assess moderation both of the mediated effect and of the direct effect, otherwise only moderation of the direct effect will be tested. Inference on the indirect paths and on paths representing moderation is via 95% bias-corrected bootstrap confidence intervals (based on 10,000 bootstrap samples; see Hayes & Preacher, 2014).

For APM, mediation of the relationship with Policy Endorsement by Political Ideology was

tested using a simple mediation model (see Figure 2, upper panel). The unstandardised indirect effect of APM via Political Ideology was 0.083, with bias-corrected bootstrap CI_{95} [0.032, 0.153] indicating that Political Ideology mediates the effect of APM on Policy Endorsement. The index of the moderation of the mediation (ab_3 in Figure 1) was .018 with CI_{95} [-0.077, 0.114]; the unstandardised path representing the moderation of the direct effect (c_2' in Figure 1) was -0.132 (see Figure 2, lower panel) with CI_{95} [− 0.427, 0.175]. Thus, there is no evidence of moderation by Past Use of either the direct effect of APM on Policy Endorsement or the effect of APM mediated by Political Ideology.

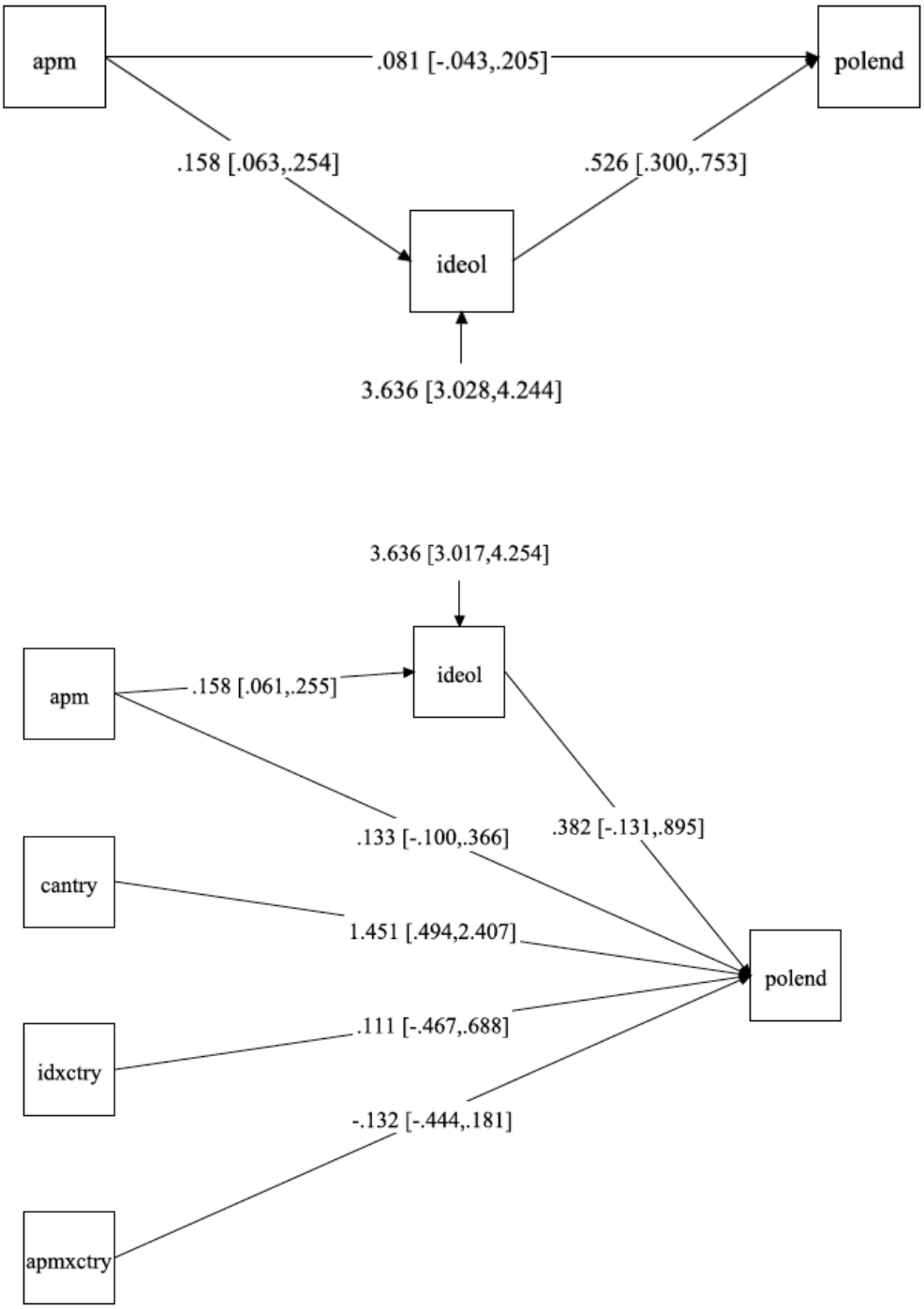

Figure 2. Mediation (upper) and moderated mediation (lower) models for APM as predictor for Policy Endorsement. apm is Advanced Progressive Matrices, ideol is Political Ideology, polend is Policy Endorsement, cantry is Past Use status, idxctry is the product of Political Ideology and Past Use, apmxctry is the product of Advanced Progressive Matrices and Past Use. Unstandardised path coefficients are shown, 95% CIs in brackets.

For Openness, the unstandardised indirect effect was 0.059, with bias-corrected bootstrap CI_{95} [0.032, 0.99] indicating that Political Ideology mediates the effect of Openness on Policy Endorsement. The index of the moderation of the mediation was .041 with CI_{95} [-0.042, 0.122]; the unstandardised path representing the moderation of the direct effect was -0.257 (see Figure 3) with CI_{95} [-0.434, -0.095]. This indicates that Past Use did not moderate the relationship between Political Ideology and Policy Endorsement; however, Past Use did moderate the direct effect.

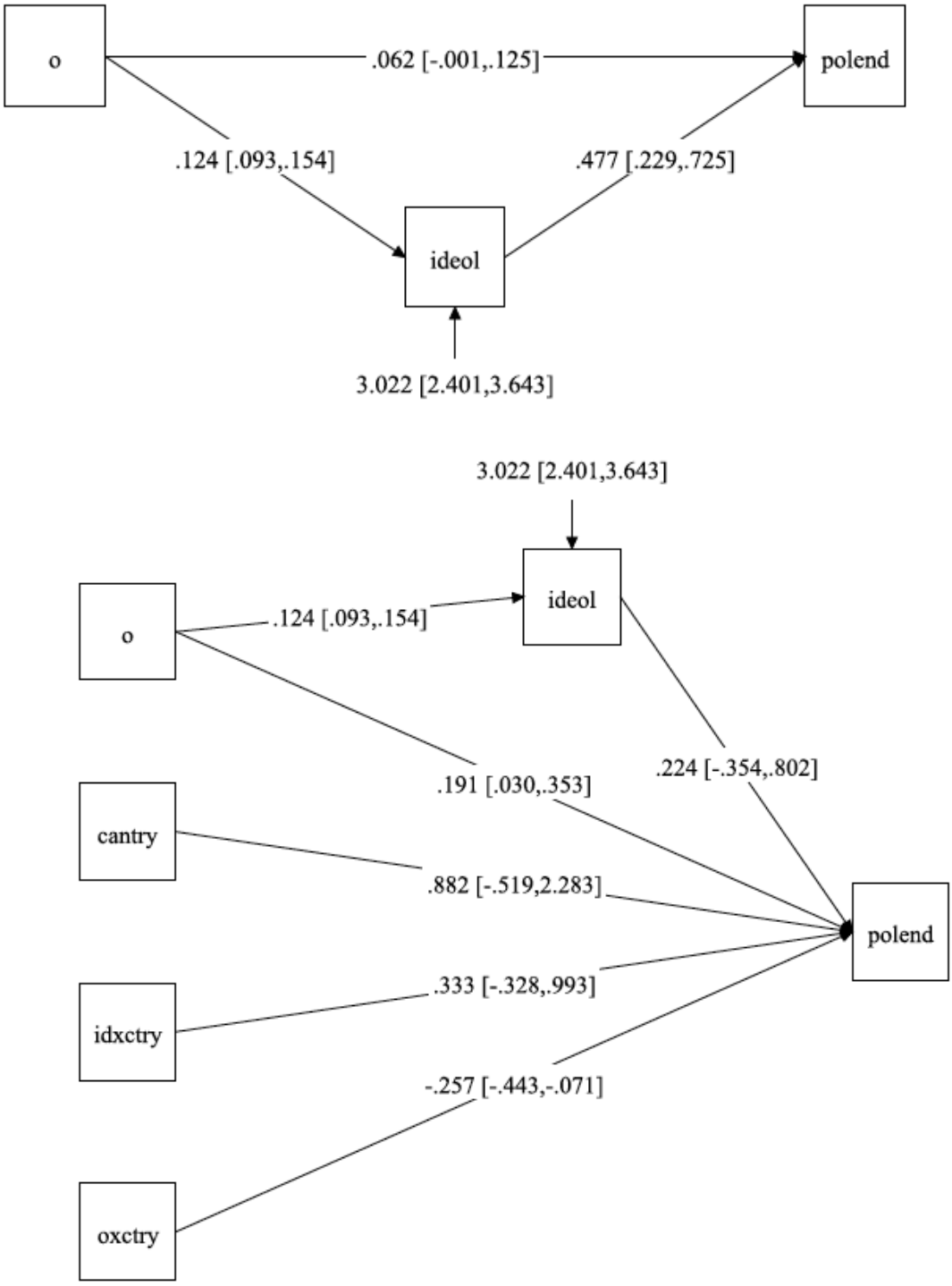

Figure 3. Mediation (upper) and moderated mediation (lower) models for Openness as predictor for Policy Endorsement. O is Openness, ideol is Political Ideology, polend is Policy Endorsement, cantry is Past Use status, idxctry is the product of Political Ideology and Past Use, oxctry is the product of Openness and Past Use. Unstandardised path coefficients are shown, 95% CIs in brackets.

Figure 4 clarifies the moderation by Past Use of the direct effect of Openness on Policy Endorsement by plotting the relationship separately for Past Use of cannabis status. It can be seen that, for those who have never used cannabis, as Openness score increases, the likelihood of endorsing RCL increases whereas the relationship is constant across Openness for those who have used cannabis.

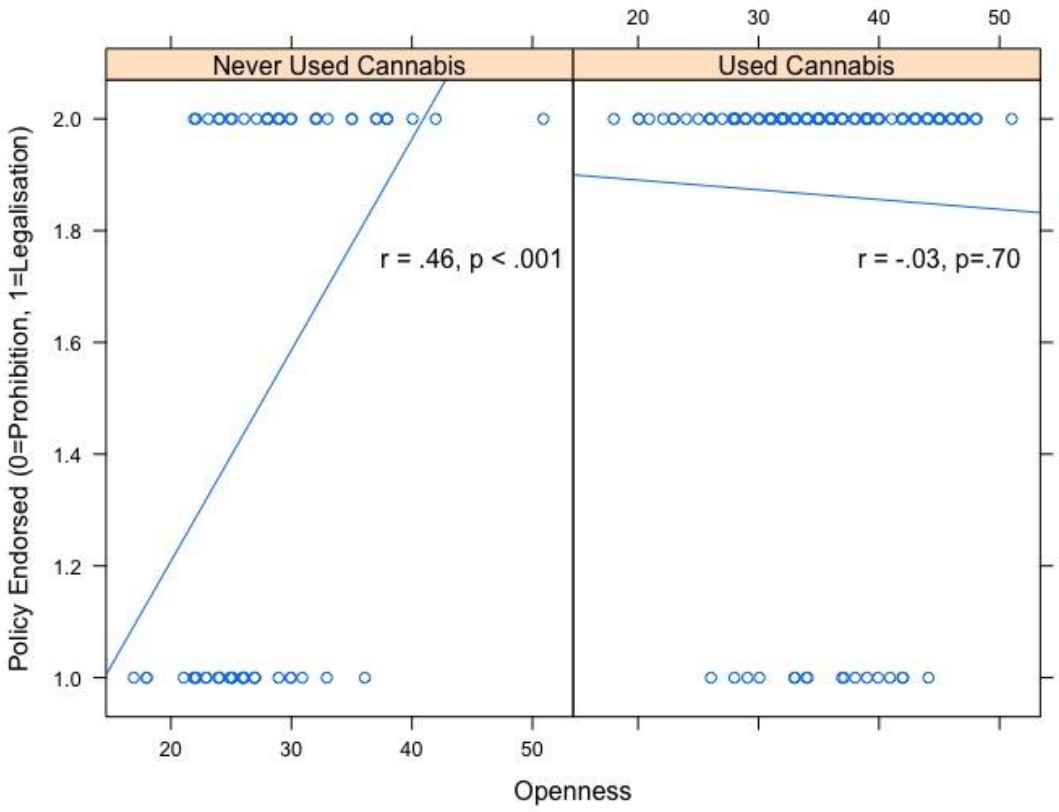

Figure 4. Plot displaying effect of Openness in never-users of cannabis (left panel) and those with past use of cannabis (right panel) on Policy Endorsement.

For Conscientiousness, the unstandardised indirect effect was -0.020, with bias-corrected bootstrap CI_{95} [− 0.046, 0.003]. The unstandardised path representing the moderation of the direct effect was -0.009 with CI_{95} [− 0.138, 0.126]. These results indicate that Political Ideology did not mediate the relationship between Conscientiousness and Policy Endorsement and Past

Use did not moderate the direct effect (see Appendix C for mediation diagrams for Conscientiousness and Agreeableness).

For Agreeableness, the unstandardised indirect effect was 0.030, with bias-corrected bootstrap CI_{95} [0.007, 0.061] indicating that Political Ideology mediated the relationship between Agreeableness and Policy Endorsement. The index of the moderation of the mediation was .011 with CI_{95} [-0.020, 0.056]; the unstandardised path representing the moderation of the direct effect was -0.095 with CI_{95} [- 0.229, 0.053], indicating that Past Use did not moderate either the direct effect between Agreeableness and Policy Endorsement or the effect of Agreeableness mediated by Political Ideology. Thus, the mediation component of Hypothesis 3 was largely supported, while the moderation component was mostly unsupported. Table 8 summarises the results of the mediation and moderation analyses.

Table 8

Summary of Mediation and Moderation Analyses of Relationships Between Cognitive Ability, Personality Variables, and Policy Endorsement

Variable	Mediation	Moderation of Mediation	Moderation of Direct Effect
APM	Yes	No	No
Openness	Yes	No	Yes
Conscientiousness	No	No	No
Agreeableness	Yes	No	No

Note. APM is Advanced Progressive Matrices.

3.4 Aim 2

To explore how personality and cognitive ability correlate with the consequences of prohibition/RCL (see Table 7 for the correlation matrix).

Of the significant correlations involving Conscientiousness, there was a small positive correlation with concern about increased use of cannabis, indicating that as Conscientiousness increases so does concern about increased rates of use, and a small negative correlation with the importance of potential tax revenue, indicating that as Conscientiousness increases tax revenue is viewed as less important. Although Conscientiousness had a significant negative correlation with RCL, neither importance of taxpayer money being spent on cannabis prohibition nor criminal proceedings for possession were significant. The correlations between Openness and consequences of RCL were all significant, ranging from small to large. There were negative correlations between Openness and importance of taxpayer money being spent on cannabis prohibition and criminal proceedings for possession, and with concern about increased use, indicating that as Openness increases the importance of these issues reduces. There were positive correlations with importance of tax revenue, treatment for cannabis related health problems, potential job creation, and cannabis availability for adults in shops, indicating that as Openness increases these issues are viewed more favourably.

The Agreeableness correlations followed the same directions as the Openness correlations and, although weaker, were all significant. The results were coherent for Openness and Agreeableness insofar as they both were associated with higher probability of endorsing RCL and also positively associated with the consequences of RCL (e.g., tax revenue, access by adults only in shops etc.) while being negatively associated with consequences of prohibition (e.g., importance of prohibition and criminal proceedings for possession of cannabis). Neuroticism had a small significant positive correlation with importance for treatment of cannabis related health problems and a small negative correlation with importance of criminal proceedings, while Extraversion had no significant correlations with any aspect of cannabis policy. Of the three

personality traits included for exploratory purposes (Agreeableness, Neuroticism, and Extraversion) only Agreeableness had a significant relationship with endorsement of a cannabis policy, this relationship was medium and positive with support for RCL. The correlations between Cognitive Ability and consequences of cannabis legislation generally followed the same directions as the Openness correlations, but the relationships were weaker and not all correlations were statistically significant.

Discussion

Recreational cannabis legalisation (RCL) is an area of growing interest worldwide (Caulkins et al., 2016) but little was known about the role individual differences played in attitudes towards it. Our results show that higher cognitive ability, Openness and Agreeableness predict a higher probability of endorsing RCL, and these relationships were mediated by Political Ideology, and for Openness moderated by Past Use of cannabis. Conscientiousness and conservatism were associated with a lower probability of endorsement of RCL but the relationship between Conscientiousness and RCL was not mediated by Political Ideology. Neither Extraversion nor Neuroticism was associated with RCL. The correlations between the individual differences and consequences of cannabis legislation were consistent. The one exception was higher Conscientiousness being associated with a lower probability for endorsing RCL but only having negligible correlations with aspects of prohibition such as the importance of criminal prosecution for cannabis possession. Other interesting findings include the high number of participants that endorsed RCL and specifically, the high proportion of individuals with a history of Past Use of cannabis that endorsed RCL. These results and their implications, strengths and limitations will be discussed in more detail below.

4.1 Aims of the Study

The first aim of this study was to investigate whether personality traits and cognitive ability predict attitudes towards RCL and, if so, whether this relationship is mediated by Political Ideology and moderated by Past Use of cannabis. The second aim was to explore the associations between individual differences and the consequences of specific approaches to cannabis legislation. We did this by correlating each individual difference with the questions

relating to the consequences of each legislative approach (see Appendix A). We tested two hypotheses before moving onto the mediation and potential moderation analyses.

4.2 Hypothesis 1

The first hypothesis was that Openness and cognitive ability would correlate positively with liberalism, while Conscientiousness would correlate negatively. These relationships were found, which is consistent with previous work in this area (Carney et al., 2008; Deary et al., 2008; Furnham & Fenton-O'Creevy, 2018). However, it should be noted that the relationship between Conscientiousness and liberalism was not statistically significant, although the effect size (r = -.13) is slightly larger to that reported in the literature (e.g., Sibley et al., 2012). Hence, the non-significant result is due to the small number of participants who considered themselves conservative (n = 48; G Power 3.1 estimated n = 63 to be sufficient for statistical significance for the correlation size we found). Thus, this hypothesis was partially supported.

It appears straightforward as to why Openness is the personality dimension consistently found to be the most strongly correlated with Political Ideology, specifically liberalism. Openness is characterised by the willingness to engage with novel ideas, unconventional values, and positivity towards change (Schulze & Roberts, 2006; Furnham & O'Creevy, 2018) while liberalism represents progressive social policies and egalitarianism (Jost et al., 2008). Similarly, Conscientiousness, which is characterised by discipline and following norms and rules, and conservatism, which represents tradition and maintaining the status quo, also appear to share some likenesses and also consistently co-vary (Sibley et al., 2012).

4.3 Hypothesis 2

The second hypothesis was that people higher in Openness and cognitive ability, being politically liberal, and with a history of Past Use of cannabis will be more likely to endorse RCL,

while people higher in Conscientiousness will be more opposed to RCL. These predictions were confirmed and the relationships between Political Ideology, Past Use of cannabis, and attitudes to RCL were consistent with previous findings (Galston & Dionne, 2013; Palali & van Ours, 2017). Past Use of cannabis was the second strongest predictor of RCL endorsement after Political Ideology. This confirms findings from previous research and accords with the proposal that people who try cannabis generally find it has positive utility, otherwise they would probably not endorse RCL (Palali & van Ours, 2017). Palai and van Ours (2017) speculated that people who have used cannabis discover it is less harmful than they thought it was going to be before trying it. Our finding that Past Use of cannabis is related to less concern about increasing rates of use in conjunction with potential RCL supports this speculation.

4.4 Hypothesis 3

The third hypothesis was that Political Ideology would mediate the relationship between Openness, Conscientiousness, cognitive ability and attitudes towards RCL. It was further hypothesised that such mediation may be moderated by Past Use of cannabis. We decided to include Agreeableness for these analyses since it also had a significant relationship with endorsement of RCL. We discuss the variables that were significant in the mediation analysis first.

4.4.1 Openness

The data revealed that Openness, Agreeableness and cognitive ability were significantly related to endorsement of RCL and this relationship was mediated by Political Ideology, offering a theoretical mechanism for how these variables relate to each other. This makes intuitive sense insofar as it is likely that personality and cognitive ability precede the formation of political beliefs (Block & Block, 2006; Deary et al., 2008) and views of RCL. It is also probable that

young people are exposed to political perspectives prior to forming opinions on RCL, making it logical that Political Ideology mediates the relationship between personality and RCL. Our results demonstrate that higher Openness, Agreeableness, and cognitive ability are associated with greater liberalism, which in turn is associated with a higher probability of endorsing RCL.

We found that higher Openness was associated with a greater likelihood of trying cannabis, which accords with previous findings (Fridberg et al., 2011). People higher in Openness tend to be more curious and seek out stimulating activities, and an individual changing their consciousness using cannabis is certainly one stimulating activity to satisfy this curiosity. Interestingly, Openness was the only individual difference variable whose relationship with RCL was moderated by Past Use of cannabis. Specifically, that for never-users, as Openness increases so does the likelihood of endorsing RCL, but for past users endorsement of RCL is constant independent of the level of Openness. Agreeableness and cognitive ability correlated with Past Use but they each influenced endorsement of RCL independently.

Openness was the strongest predictor of endorsement of RCL after Political Ideology. Higher Openness was associated with less importance on taxpayer money being spent on prohibition and criminal proceedings for cannabis possession, and was positively associated with cannabis being available in shops to adults, potential tax revenue, and job creation from the cannabis industry, which is consistent with the Openness characteristics of having a positive outlook towards change, unconventional values, and novel ideas.

4.4.2 Cognitive Ability

The findings of both Openness and cognitive ability are consistent with Political Ideology as motivated social cognition, in which people gravitate to ideological positions to satisfy psychological needs. Specifically, conservatives tend to resist change and accept inequality to

manage feelings of threat and uncertainty, whereas people higher in Openness and cognitive ability tend to be more liberal (Deary et al., 2008; Stankov, 2009), which is associated with promoting social change and rejecting inequality (Jost et al., 2008). Low cognitive ability has been suggested as another characteristic of conservatism, and consequently, people of low cognitive ability might perceive threat from sources of complexity or novelty (Stankov, 2009). It is therefore plausible that people higher in cognitive ability migrate towards liberal thinking because they have the capacity to consider a wider range of social or political perspectives, including those divergent from their own, without experiencing threat (McCourt, Bouchard, Lykken, Tellegen, & Keyes, 1999). Thus, while more conservative minded people might accept the hierarchies and inequality that exist in society, more liberal minded people might explore the reasons behind these inequalities and consider possible complex solutions to further equality.

For instance, cannabis is a known harmful substance (Fischer et al., 2017) and it is possible that people of lower cognitive ability may perceive greater threat from this and conclude that prohibition is in the best interests of everyone. However, prohibition comes with harms of its own including (but not limited to) enforcement being disproportionately aimed at minority groups (Room et al., 2010) and the far-reaching impact of a criminal record for cannabis-related offences (Erickson & Fischer, 1995). Although RCL is likely to have benefits, such as tax revenue and regulation, it is a complex issue and will likely have adverse outcomes too, such as increased health problems (Hall & Lynskey, 2016). Nevertheless, it is conceivable that the reasoning processes of people with higher cognitive ability enable them to take a more nuanced view, taking into consideration the positives and negatives associated with both prohibition and RCL and arrive at a more egalitarian and less simplistic, authoritarian solution. Our findings support this explanation, as higher cognitive ability is associated with less support for prohibition

and criminal prosecution for cannabis possession offences, less concern for increased use, and greater support for treating cannabis-related health problems and regulation through selling cannabis to adults in shops.

4.4.3 Agreeableness

Because Agreeableness is characterised by compassion and generosity (Schulze & Roberts, 2006) it could be presumed that it would be associated with liberal political causes, but past research has found Agreeableness to have a weak and inconsistent relationship with Political Ideology (e.g., Carney et al., 2008). Gerber et al. (2010) found that Agreeableness was associated with economic liberalism (e.g., supportive of Government health care, higher taxes for higher earners) and social conservatism (e.g., opposed to abortion and civil unions). They concluded that previous inconsistent findings between Agreeableness and Political Ideology are partly due to the conflicting attitudes to social and economic policies. This makes our findings particularly interesting insofar as only liberalism, Past Use, and Openness, more strongly predicted endorsement of RCL. RCL is a socially liberal policy, and Agreeableness might, therefore, be expected to be negatively associated with it. However, there is a liberal economic aspect to RCL in the form of potential tax revenue, which had a positive association with Agreeableness, as did the importance of taxpayer-funded health-care for cannabis problems, and cannabis availability in shops for adults. These findings are compatible with the compassion, generosity, and trust characteristic of Agreeableness. Furthermore, the negative associations between Agreeableness and tax money being spent on prohibition and criminal proceedings for possession of cannabis could be due to the disruption to social harmony that is inherent in these enforcement interventions.

4.4.4 Conscientiousness

Conscientiousness and conservatism had negative relationships with endorsement of RCL. The relationship between conservatism and opposition to RCL is consistent with previous reporting (Galston & Dionne, 2013) and fits with the theory of motivated social cognition, which posits that conservatives resist change and accept inequality to manage psychological feelings of threat and uncertainty (Jost et al., 2003). Indeed, conservatism had a moderate correlation with concern for a potential increase in the number of users under RCL. It was expected that because Conscientiousness has an association with conservatism, this relationship would mediate the correlation between Conscientiousness and opposition to RCL, but this hypothesis was not supported. Interestingly, the relationship between conservatism and negative association with the endorsement of RCL was notably stronger than for Conscientiousness and negative association with the endorsement of RCL. Furthermore, conservatism significantly co-varied with the importance of taxpayer money being spent on prohibition and criminal proceedings for cannabis possession. Contrastingly, these aspects of cannabis prohibition did not have a statistically significant relationship with Conscientiousness. This could suggest that individuals higher in conservatism support prohibition while people higher in Conscientiousness do not want cannabis legalised, but also do not support the criminalisation aspects of prohibition, which implies they might be more favourable to decriminalisation.

4.5 Other Interesting Findings

Interestingly, nearly three-quarters of the sample for this study endorsed RCL. Despite support for RCL in Australia rising from 26% in 2013 to 35% in 2016 (AIHW, 2017), this is surprising. There are several plausible reasons for this. Firstly, Shanahan et al. (2014) observed that previous research investigating attitudes to cannabis legislation often do not clearly define

terms, such as legalisation, and whether these terms apply to consumption or supply. This could cause confusion and lead to unreliable results. However, our study presented participants with consequences of prohibition and RCL, without the potentially loaded terms "Prohibition" and "Legalisation", which they may have little knowledge of. Thus, after evaluating each approach based on their merits, a higher proportion of participants opted for RCL as the preferred option in comparison to previous research. Secondly, it is possible that the topic attracted people who were more motivated for change (i.e., favourable towards RCL), while people content with the current status quo were not sufficiently motivated to participate.

4.6 Alternative Explanation

There may be an alternative explanation for our findings. For instance, it is conceivable that when an individual self-identifies on the Political Ideology spectrum, they then feel the need to hold certain views or exhibit certain behaviours to live up to this label. This could be potentiated by ideological polarisation, which Abramowitz and Saunders (2008) claim has increased considerably since the 1970s, among the general public and political elites. This is manifested in support across a range of social and cultural issues along ideological lines. Examples of this include the correlations between liberals and conservatives on views about climate change (McCright & Dunlap, 2011) and religiosity and secularism (Abramowitz & Saunders, 2008). There is currently little reason to think that ideological polarisation has diminished since Abramowitz and Saunders's review, and support for RCL could be another example of holding a view to maintain consistency with one's Political Ideology.

4.7 Strengths of the Study

Whereas polls on RCL often simply ask participants whether or not they support it, we presented participants with consequences of each legislative approach to contextualise their

preference. Furthermore, because the terms "Prohibition" and "Legalisation" are potentially loaded, we used the labels Policy A and Policy B in an attempt to elicit rational, rather than emotional, responses based on the characteristics of each policy. For further insight, we also formulated questions around the consequences of each approach to enable us to measure how they correlated with the individual difference variables. Furthermore, it is common in psychological research for the sample to be comprised exclusively of university students, which can diminish the generalizability of results. We tried to overcome this by recruiting the general public as well as students.

4.8 Limitations of the Study

This study has some limitations. Firstly, we used self-report measures of personality and attitudes to RCL, which relies on participants answering honestly. To encourage honest responses we advised that the study was anonymous, which can be beneficial when the research involves illegal topics (Rains, 2013). The potential problem is that this could lead to participants providing false answers, and decreasing the reliability of results. However, we do not believe this to be the case because the individual differences alpha levels were high and the correlations between policy endorsement and the questions concerning consequences of legislation were consistent in direction and of medium to large size. Secondly, because this study was cross-sectional and correlational in design, causality cannot be claimed nor the directionality of the relationships between variables. Nevertheless, the empirical data fits the mediation models used and are theoretically consistent. Although it is theoretically possible, we did not include a single model featuring all of the variables that significantly related to RCL (e.g., Openness, Conscientiousness, Agreeableness, cognitive ability). This is because it would have been too complex a model for our limited sample size. We also did not directly fit the model in terms of

R^2 because we used binary variables in the analyses. Finally, the measure of Political Ideology was basic and meant that potential differences in social and economic conservatism/liberalism could not be analysed. This means a growing political group, known as libertarians, who are economically conservative but socially liberal (Iyer, Koleva, Graham, Ditto, & Haidt, 2012) are unrepresented.

4.9 Future Research

This study provides evidence that personality and cognitive ability play a role in attitudes to RCL. Future research could use a considerably larger sample and incorporate a longitudinal design to increase understandings of the directionality of the findings. Furthermore, to gain better insight into how different political attitudes affect views on RCL a more sophisticated political tool could be used that goes beyond the traditional liberal-conservative continuum to include libertarians. Finally, a more nuanced understanding of the role that personality plays could be obtained by using a more in-depth personality inventory, such as the Big Five Aspects Scale (BFAS; DeYoung, Quilty, & Peterson, 2007), which measures the broad Big Five dimensions as well as the lower level aspects. Measuring the lower levels aspects has generated interesting results in previous research concerning personality and Political Ideology. For example, one aspect of Agreeableness (Compassion) is associated with liberalism while the other aspect (Politeness) is associated with conservatism (Hirsh, DeYoung, Xu, & Peterson, 2010). However, the drawback of the BFAS (DeYoung et al., 2007) is that it is 100 items, which is considerably longer than the 45 items of the OCEANIC (Schulze & Roberts, 2006).

4.10 Conclusion

In this study, we investigated whether personality and cognitive ability influence attitudes to RCL. We found evidence that they do and that this is partially accounted for by Political Ideology.

As more nations comparable to Australia take a less punitive approach to recreational cannabis use the issue of RCL will likely become increasingly salient, particularly if New Zealand does indeed hold a referendum on the issue by 2020, as their new Prime Minister has proposed (Australian Broadcasting Corporation, 2017). Furthermore, the support of RCL is likely to increase with the widespread use of cannabis and the high proportion of people with a history of Past Use supporting RCL. This support could be potentiated as more social benefits, such as fewer criminal records incurred for cannabis offences (DPA, 2018), and economic benefits, such as tax revenue and job creation (NFD, 2018), gain widespread recognition in countries that have legalised. In a democracy, the Government ultimately represents the wishes of the people and, if there is strong support for changing public policy, the Government has a responsibility to address it.

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Appendix A

Attitudes to Recreational Cannabis Legalisation (General Public Version)

Cannabis Policy Features

Below are several defining features of either current or potential cannabis policy. Please indicate how strongly you feel about each feature.

* 28. How important to you is it that taxpayer money is spent on attempting to prohibit cannabis use?

Not at all important						Extremely important
○	○	○	○	○	○	○

* 29. How important to you is it that people can receive taxpayer-funded treatment for cannabis-related health problems?

Not at all important						Extremely important
○	○	○	○	○	○	○

* 30. If someone is found with cannabis how important to you is it that criminal proceedings commence (e.g., arrested and go to court)?

Not at all important						Extremely important
○	○	○	○	○	○	○

* 31. If cannabis were legalised how important to you is the potential tax revenue it would generate?

Not at all important						Extremely important
○	○	○	○	○	○	○

* 32. It is currently estimated that 13 out of 100 people currently use cannabis and it is estimated this could increase to 18 in 100 people if it were legalised. How important is this increase to you?

Not important at all						Extremely important
○	○	○	○	○	○	○

* 33. If cannabis were legalised how do you feel about the jobs this industry would potentially create?

Very Negative						Very Positive
○	○	○	○	○	○	○

* 34. If cannabis were legalised what is your attitude about it being sold in shops to people 18 years and older compared to the current situation of drug dealers selling to anyone?

Very Negative						Very Positive
○	○	○	○	○	○	○

Appendix B

Cannabis Legalisation

The School of Psychology at the University of Adelaide is conducting a research project that is examining the relationship between individual differences (e.g., personality traits and cognitive ability) and attitudes towards cannabis legalisation.

There is growing interest around the world with respect to the legalisation of cannabis and developing greater understanding of this from a psychological perspective could make a valuable contribution to society.

You are invited to complete a questionnaire at www.surveymonkey.com/r/cannabisoz which should take no longer than 30 minutes maximum. If you would like to participate you must be over the age of 18 and have a good grasp of the English language.

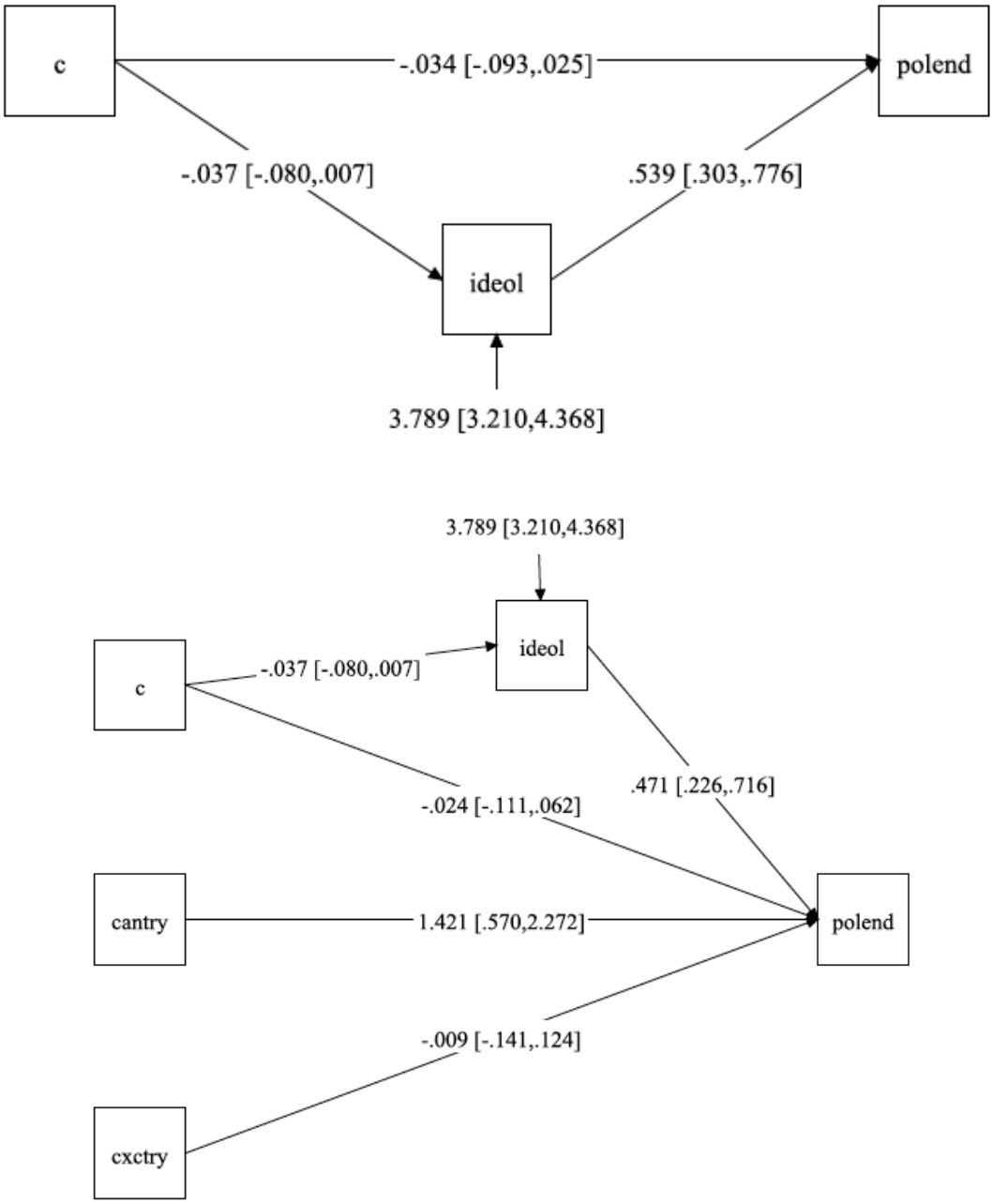
This research has been approved by the Human Research Ethics Subcommittee in the School of Psychology. All data will be kept strictly confidential and anonymous and individuals will be not identifiable in the final presentation of the results.

Any ethical concerns should be addressed to Prof Paul Delfabbro, convenor of the School of Psychology Human Ethics sub-committee:

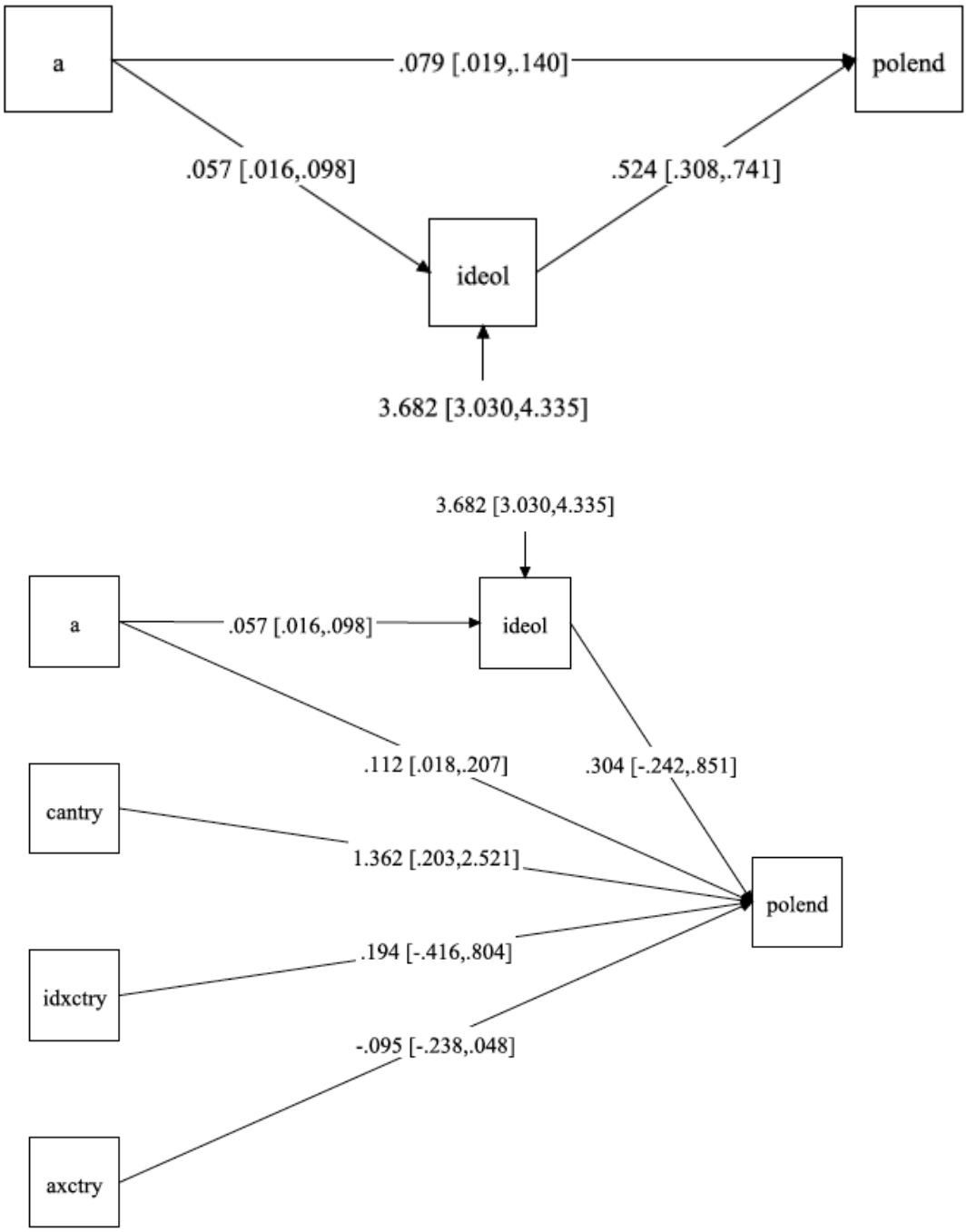
[redacted]

For questions about the conduct of the study itself, please contact any of the principal investigators listed below.
We look forward to your involvement in the project.

Appendix C



Mediation (upper) and moderated mediation (lower) models for Conscientiousness as predictor for Policy Endorsement. C is Conscientiousness, ideol is Political Ideology, polend is Policy Endorsement, cantry is Past Use status, idxctry is the product of Political Ideology and Past Use, oxctry is the product of Conscientiousness and Past Use. Unstandardised path coefficients are shown, 95% CIs in brackets.



Mediation (upper) and moderated mediation (lower) models for Agreeableness as predictor for Policy Endorsement. A is Agreeableness, ideol is Political Ideology, polend is Policy Endorsement, cantry is Past Use status, idxctry is the product of Political Ideology and Past Use, oxctry is the product of Agreeableness and Past Use. Unstandardised path coefficients are shown, 95% CIs in brackets.