http://researchspace.auckland.ac.nz

ResearchSpace@Auckland

Copyright Statement

The digital copy of this thesis is protected by the Copyright Act 1994 (New Zealand).

This thesis may be consulted by you, provided you comply with the provisions of the Act and the following conditions of use:

- Any use you make of these documents or images must be for research or private study purposes only, and you may not make them available to any other person.
- Authors control the copyright of their thesis. You will recognise the author's right to be identified as the author of this thesis, and due acknowledgement will be made to the author where appropriate.
- You will obtain the author's permission before publishing any material from their thesis.

To request permissions please use the Feedback form on our webpage. http://researchspace.auckland.ac.nz/feedback

General copyright and disclaimer

In addition to the above conditions, authors give their consent for the digital copy of their work to be used subject to the conditions specified on the Library Thesis Consent Form and Deposit Licence.
On the Dual Process Model of Ideology and Prejudice: Identifying Causal Personality Effects and Revising Worldview Measures

by

Ryan Perry

A thesis submitted to the University of Auckland in fulfilment of the requirements for the degree of Doctor of Philosophy in Psychology

University of Auckland

2013
Acknowledgements

I would like to sincerely thank a number of people who have helped me through the completion of my PhD thesis without whom, I suspect, I could never have come so far.

Foremost, I thank my supervisor, Chris Sibley for the generosity with which he shared his knowledge and expertise in preparing me to be an academic. Thanks Chris, I couldn’t have imagined a better supervisor, and still can’t. And John Duckitt, my secondary supervisor, who was always enthusiastic about my work and ready to offer valuable insight.

I also reserve a special thanks for my close friends and house-mates for the warmth and support I could always rely on. Particularly Ashley who also readily took on the inenviable task of proofreading this thesis.

I cannot possibly express how grateful I am to my parents, Carolyn and Allan, for their unfaltering belief in my ability. Mum, Dad and Alli, thank you for always standing behind me never having to question what I was doing.

I need to thank the University of Auckland for the generous research (and conference) funding, as well as Naomi Priest and Yin Paradies for trusting in my ability and making this all worthwhile (i.e., thank you for the post-doc!).

And finally, I thank Victoria Bennett for her love and support - especially considering you arrived at the hardest part. Writing this thesis was an amazing and formative experience, but I’m certainly ready to move on with psychology and with life.
Abstract

Despite the large body of research demonstrating good support for the Dual Process Model of ideology and prejudice (DPM; Duckitt, 2001), there is still a need for research examining whether these associations are truly causative and uni-directional as the model suggests. There is also a need to examine the mechanisms by which distal components of the model (personality traits and social worldview schemas) lead to the formation of more proximal ideological attitudes – indexed by the constructs Right-Wing Authoritarianism (RWA) and Social Dominance Orientation (SDO). Moreover, of the model components, *social worldviews* has garnered the least attention from researchers, and there are recent concerns about the construct validity of the DPM worldview measures that need to be addressed.

This thesis presents a series of six manuscripts that address issues around (a) the causative effects of Big-Five personality traits on RWA and SDO, as well as the specific hypothesised mechanism of one particular trait, Openness to Experience. The thesis also addresses (b) the lack of a comprehensive understanding of the worldview component in the DPM and issues pertaining to the measurement and operation of the two worldview components – dangerous and competitive. These interrelated issues were examined using a variety of study designs including short-term longitudinal, meta-analytic, and experimental. The converging lines of evidence are presented in three sections.

The evidence presented in Section 1 suggests that certain personality traits (Big-Five Agreeableness and Openness to Experience) causatively and unidirectionally predict individual differences in RWA and SDO using a national sample with structural equation modelling and longitudinal models. Section 2 confirms an asymmetry in effects sizes in the DPM (see Van Hiel, Cornelis & Roets, 2007) and demonstrates that this is likely due to item content overlap, particularly between measures of competitive social worldviews and SDO. This section employed meta-analytic and factor analytic scale development techniques. Section 2 also presents a novel
measure of social worldviews that addresses this content-overlap issue. Finally, and consistent with arguments made recently by Sibley and Duckitt (2012, 2013), my new measure of worldviews is utilised in Section 3 using novel experimental methods to show that Openness to Experience operates by biasing individuals low in this trait to be more attentive to and more influenced by normative information suggesting that the people “out there” in the social world are potentially dangerous and threatening. Taken together, these findings contribute to the current need for evidence demonstrating specific hypothesised causal associations in the DPM.
# Table of contents

**Acknowledgements**  

**Abstract**  

**List of tables**  

**List of figures**  

Chapter one  

**General introduction**  

A brief history of worldviews as a theoretical construct  

 Origins of a dual process model  

Worldviews in the DPM: A comprehensive review  

Summary and thesis overview  

SECTION 1: ADVANCING THE DUAL PROCESS MODEL  

Bridging comment  

Chapter two  

A dual-process motivational model of social and economic policy attitudes  

Abstract  

Introduction  

Method  

Results  

Discussion  

Bridging comment  

Chapter three  

Big-five personality prospectively predicts social dominance orientation and right-wing authoritarianism  

Abstract  

Introduction  

Method
SECTION 2: WHAT ABOUT WORLDVIEWS? CONCERNS AND RESOLUTION

Chapter four  Dangerous and competitive worldviews: A meta-analysis of their associations with social dominance orientation and right-wing authoritarianism

Abstract
Introduction
Method
Results
Discussion
Bridging comment

Chapter five  Dangerous and competitive schemas: A new frequency estimation index of the dual process model’s social worldviews component

Study 1
Method
Results
Discussion

Study 2
Method
Results
Discussion

General discussion
Bridging comment
<table>
<thead>
<tr>
<th>Chapter six</th>
<th>A comparison of broad-bandwidth and frequency-specific measures of competitive and dangerous worldviews</th>
<th>150</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Abstract</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>Introduction</td>
<td>151</td>
</tr>
<tr>
<td></td>
<td>Method</td>
<td>156</td>
</tr>
<tr>
<td></td>
<td>Results</td>
<td>157</td>
</tr>
<tr>
<td></td>
<td>Discussion</td>
<td>160</td>
</tr>
<tr>
<td></td>
<td>Bridging comment</td>
<td>163</td>
</tr>
</tbody>
</table>

**SECTION 3: AN EXPERIMENTAL TEST OF THE DUAL PROCESS MODEL**

<table>
<thead>
<tr>
<th>Chapter seven</th>
<th>Seize and freeze: Openness to experience shapes judgements of social threat</th>
<th>165</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Abstract</td>
<td>165</td>
</tr>
<tr>
<td></td>
<td>Introduction</td>
<td>166</td>
</tr>
<tr>
<td>Study 1a and 1b</td>
<td></td>
<td>174</td>
</tr>
<tr>
<td></td>
<td>Method</td>
<td>175</td>
</tr>
<tr>
<td></td>
<td>Results</td>
<td>176</td>
</tr>
<tr>
<td></td>
<td>Discussion</td>
<td>182</td>
</tr>
<tr>
<td>Study 2</td>
<td></td>
<td>184</td>
</tr>
<tr>
<td></td>
<td>Method</td>
<td>186</td>
</tr>
<tr>
<td></td>
<td>Results</td>
<td>187</td>
</tr>
<tr>
<td></td>
<td>Discussion</td>
<td>189</td>
</tr>
<tr>
<td></td>
<td>General discussion</td>
<td>189</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chapter eight</th>
<th>Grand discussion</th>
<th>196</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Overview and summary of findings</td>
<td>197</td>
</tr>
<tr>
<td></td>
<td>Comments on the present-day dual process model</td>
<td>213</td>
</tr>
<tr>
<td></td>
<td>Suggestions for future research</td>
<td>222</td>
</tr>
<tr>
<td></td>
<td>Concluding statement</td>
<td>230</td>
</tr>
</tbody>
</table>
List of tables

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 1.1</td>
<td>The Construct Definitions and Items of the two Worldview Dimensions in Duckitt’s (2001) Dual Process Model of ideology and prejudice (from Duckitt et. al., 2002).</td>
<td>25</td>
</tr>
<tr>
<td>Table 2.1</td>
<td>Bivariate correlations and descriptive statistics for personality, social worldviews, RWA and SDO, and economic and social policy support.</td>
<td>64</td>
</tr>
<tr>
<td>Table 3.1</td>
<td>Correlations between Time 1 and Time 2 for the Big-Five personality traits, SDO, and RWA.</td>
<td>88</td>
</tr>
<tr>
<td>Table 3.2</td>
<td>Path coefficients for the cross-lagged effects of Big-Five personality, RWA and SDO at Time 1 predicting SDO and RWA at Time 2.</td>
<td>91</td>
</tr>
<tr>
<td>Table 3.3</td>
<td>Path coefficients for the cross-lagged effects of Big-Five dimensions of personality, RWA and SDO at Time 1 predicting the Big-Five dimensions at Time 2.</td>
<td>94</td>
</tr>
<tr>
<td>Table 4.1</td>
<td>Sample details and correlation coefficients for all studies included in the meta-analysis of DPM worldview measures (DW and CW), RWA and SDO.</td>
<td>112</td>
</tr>
<tr>
<td>Table 4.2</td>
<td>Meta-analytic bivariate (and partial) correlations between DPM worldview measures, RWA and SDO.</td>
<td>113</td>
</tr>
<tr>
<td>Table 4.3</td>
<td>Inverse variance mixed-effects weighted regression analyses examining the effects of various study characteristics on the bivariate and partial (controlling for CW) relations between the dangerous worldview dimension and RWA.</td>
<td>115</td>
</tr>
<tr>
<td>Table 4.4</td>
<td>Inverse variance mixed-effects weighted regression analyses examining the moderating effects of various study characteristics on the bivariate and partial (controlling for DW) relations between the competitive worldview dimension and SDO.</td>
<td>117</td>
</tr>
<tr>
<td>Table 4.5</td>
<td>Inverse variance mixed-effects weighted regression analyses examining the effects of various study characteristics on the relation between DW and CW.</td>
<td>118</td>
</tr>
<tr>
<td>Table 5.1</td>
<td>Descriptive statistics and bivariate correlations between gender, age, SDO and RWA, and the FEI-DSW measures of dangerous and competitive worldviews in Study 1.</td>
<td>119</td>
</tr>
<tr>
<td>Table 5.2</td>
<td>Item content and pattern matrix coefficients from an Exploratory Factor Analysis for the Frequency Estimation Index of Dual Social Worldviews (FEI-DSW).</td>
<td>140</td>
</tr>
<tr>
<td>Table 6.1</td>
<td>Descriptive statistics and bivariate correlations between broad-bandwidth DPM social worldview measures, the FEI-DSW dimensions, RWA, and SDO.</td>
<td>158</td>
</tr>
<tr>
<td>Table 6.2</td>
<td>Multiple regression analyses examining the unique effects of FEI-CW vs. broad-bandwidth CW and FEI-DW vs. broad-bandwidth DW on attitude measures SDO and RWA.</td>
<td>159</td>
</tr>
<tr>
<td>Table 7.1</td>
<td>Bivariate correlations and reliability statistics for anchoring condition, worldview estimates, and HEXACO personality dimensions (Study 1a below diagonal, Study 1b above diagonal).</td>
<td>177</td>
</tr>
<tr>
<td>Table 7.2</td>
<td>Regression models of anchoring manipulation, HEXACO personality dimensions, and their interaction terms predicting frequency estimations in Study 1a and 1b.</td>
<td>178</td>
</tr>
<tr>
<td>Table 7.3</td>
<td>Bivariate correlations and reliability statistics for anchoring condition, worldview estimates, and Openness to Experience aspects (Study 2).</td>
<td>180</td>
</tr>
<tr>
<td>Table 7.4</td>
<td>Regression models of anchoring condition, Openness to Experience intellect and openness facets, and their interaction terms predicting frequency estimations in Study 2.</td>
<td>188</td>
</tr>
</tbody>
</table>
### List of figures

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1.1</td>
<td>A dual process motivational model of the impact of personality, social environment, and social worldview beliefs on the two ideological attitude dimensions of Right-Wing Authoritarianism (RWA) and Social Dominance Orientation (SDO) and their impact on socio-political behaviour and attitudes as mediated through perceived social threat or competitiveness over group dominance, power, and resources (adapted from Duckitt &amp; Sibley, 2010a, p. 1868).</td>
<td>11</td>
</tr>
<tr>
<td>Figure 2.1</td>
<td>Structural equation model of the DPM with standardized path coefficients predicting individual differences in support for three realms of social policy – a flat-tax, immigration, and religion in schools, * = p &lt; .01. Fit indices for this model were as follows: ( \chi^2(450) = 12387.068; \text{sRMR} = .063; \text{RMSEA} = .062 ).</td>
<td>63</td>
</tr>
<tr>
<td>Figure 3.1</td>
<td>Diagram outlining the path analysis used to test the cross-lagged effects of the Big-Five dimensions of personality, SDO and RWA on one another over nine months. Significant paths (with standardized path coefficients) between Time-1 and Time-2 measures are shown in bold. Path coefficients and significant tests for all cross-lagged paths are presented in Table 3.2 (predicting SDO and RWA) and Table 3.3 (predicting Big-Five personality).</td>
<td>89</td>
</tr>
<tr>
<td>Figure 4.1</td>
<td>Average meta-analytical bivariate (and partial) effect sizes between worldviews RWA and SDO across 46 studies. * = p &lt; .01</td>
<td>114</td>
</tr>
<tr>
<td>Figure 7.1</td>
<td>Interaction of Openness to Experience and dangerous-world anchor predicting frequency-of-danger estimations (Study 1a).</td>
<td>182</td>
</tr>
<tr>
<td>Figure 7.2</td>
<td>Interaction of Openness to Experience intellect facet and dangerous-world anchor predicting frequency-of-danger estimations (Study 2).</td>
<td>190</td>
</tr>
</tbody>
</table>
Chapter one

General introduction

“The imaginations people have of one another are the solid facts of society.”
Cooley (1902, p. 87).

“It's really a wonder that I haven't dropped all my ideals, because they seem so absurd and impossible to carry out. Yet I keep them, because in spite of everything, I still believe that people are really good at heart.”

Judging from the above epigraphs, it would seem that worldviews, as meaningful beliefs that shape our attitudes and behaviour, are fundamentally our perceptions of other people around us that make up our social world at large. There have been a wide variety of theoretical conceptualisations of worldviews however and, as one writer put it, “A given worldview encompasses assumptions about a heterogeneous variety of topics, including human nature, the meaning and nature of life, and the composition of the universe itself, to name but a few issues” (Koltko-Rivera, 2004). Although such broad perspectives are important from a theoretical standpoint, one provides a particularly useful conceptualisation of social worldviews that allows these to be examined empirically as part of a cognitive-motivational process underlying a wide range of prejudice-related attitudes.

A great deal of research reveals two relative stable and independent individual difference dimensions that are powerful predictors of generalised prejudice (Altemeyer, 1998). Right-Wing Authoritarianism (RWA; Altemeyer, 1996) is derived from classic measures of authoritarianism, perhaps most notably the F-Scale proposed by Adorno, Frenkel-Brunswick, Levinson and Sanford (1950). This RWA construct represents a cluster of attitudes including a
preference for powerful, autocratic authority figures, a preference for right-wing, conservative social political policies, and hostility toward outgroup members and minorities seen as dangerous, deviant and threatening to ingroup or majority social values and ways of life. The second of these two dimensions, Social Dominance Orientation (SDO; Pratto, Sidanius, Stallworth & Malle, 1994), represents a cluster of attitudes related to a preference for hierarchical social groups structures and meritocratic values in which the strong deservedly dominate the weak and disadvantaged.

What are the psychological bases that underpin such powerful and prevalent ideological attitude structures? Duckitt (2001) proposed that RWA and SDO express two distinct sets of motivational goals or values that are made chronically salient by an individual’s social worldview beliefs, which are in turn a product of personality dispositions combined with exposure to particular social environments. His Dual Process Model (DPM) of ideology and prejudice asserts that SDO and RWA are not personality traits, but rather two relatively independent dimensions of ideological attitudes that express motivations for group-based dominance and superiority in the case of SDO, and social cohesion and collective security in the case of RWA. A large body of research has accumulated since the DPM was first proposed, demonstrating that the model is a powerful and reliable indicator of prejudice and related attitudes across a wide range of domains. Despite this, the model is being steadily revised and refined as each of its many components are examined in depth. Much of this research is reviewed and summarised in the following introduction.

In a series of six manuscripts using diverse research methods, the thesis aims generally to address contemporary issues with the DPM that I have identified across three research sections that each comprise more specific research aims as I will outline. The first two chapters, in Section 1, test two original assumptions about the DPM. First, examining a national sample using structural equation modelling, that the model should predict support for
two independent dimensions of political policy, consistent with research to date that
demonstrates these two dimensions in more general intergroup attitudes (chapter two). Second,
using longitudinal methods, that the personality component of the model causally and
unidirectionally predicts individual differences in theoretically downstream ideological
attitudes, extending recent longitudinal research (chapter three).

Section 2 then presents three studies that seek to address recent concerns about the
social worldview component of the DPM (see Van Hiel, Cornelis & Roets, 2007) using meta-
analysis and scale development research techniques. Coupled with introductory material here
in chapter one, I provide the first comprehensive review and meta-analysis of the literature
concerned with DPM social worldviews and examine the extent of hypothesised item-content
overlap between the worldview and ideological attitude measures (chapter four). I then address
this concern by developing and validating a new measure of social worldviews using factor
analysis (chapters 5 and 6). Finally, Section 3 presents results from two experimental studies
that manipulate social worldviews, utilising my newly developed measure from Section 2 to
test a core causal mechanism proposed in the DPM that was not easily examinable using
existing measures and traditional correlational research designs. As a basis for this series of
studies, the following opening chapter traces prior theoretical conceptualisations of worldviews
and provides an overview of the DPM in general, and a comprehensive review of the literature
concerning the worldview component of the model more specifically.

A brief history of worldviews as a theoretical construct

Koltko-Rivera (2004) provided a comprehensive review of worldview concepts. Here I
will briefly summarise this theoretical history and examine how these perspectives contribute
to a social worldview concept as presented in Duckitt’s (2001) Dual Process Model of ideology
and prejudice, the key theoretical model that this thesis broadly aims to examine. Koltko-
Rivera (2004) defines the concept of worldviews as a very broad set of beliefs about one’s environment – including issues as diverse and encompassing as human nature, the meaning and nature of life, and the composition of the universe. As he notes, the term is derived from the German Weltanschauung – which can be defined as a subjective perception of reality and of how the perceiver relates to this reality. As the German psychologist and philosopher William Stern wrote, “A worldview recognises … there is no subject without an object. Because even if I cannot grasp the world in and of itself, I nevertheless grasp it as it is for me.” (Stern, 1915, p.4).

Koltko-Rivera (2004) reviewed theories and research relating to worldviews from a diverse range of cross-disciplinary perspectives. These included psychoanalytical origins of Weltanschauung (e.g., Freud, 1933/1964; Jung, 1942/1954, 1951/1954), and world hypotheses as derived from ancient metaphors used to understand the world and existence (Pepper, 1942/1970). The present review departs from Koltko-Rivera (2004) in focusing primarily on the role of worldviews from a cognitive-motivational perspective and, in particular, the role of this construct in the cognitive processes underlying ideology and prejudice. Koltko-Rivera (2004) does, however, provide an excellent review of pertinent social and cognitive psychology theory and research amongst his broader approach. A number of these earlier theorists are also drawn upon by Duckitt (2001) in developing his DPM. I shall return to a detailed discussion of Duckitt’s (2001) model in a later section of this introductory chapter.

Koltko-Rivera (2004) began his review with the precursory work on value orientations by anthropologist Florence Kluckhohn (1950; Kluckhohn & Strodtebeck, 1961/1973) that contributed to more recent psychological conceptualisations of the structure of human values (e.g., Schwartz, 1994). Kluckhohn (1950) proposed a model of six concerns about individuals in their environments that make up an individual or cultural worldview – innate human nature, the mutability of this nature, the relation of humans to the natural environment, the temporal
focus of decision-making and beliefs, a preference for “being” versus “doing” activities, and preferences for the modality of interpersonal relationships. Central to my thesis, and most relevant to a DPM conceptualisation of social worldviews, is her human nature orientation – the tendency for individuals to believe that human nature is good, evil, neutral or mixed.

Social worldviews as perceptions of human nature

Koltko-Rivera (2004) next reviewed a series of theoretical perspectives that collectively describe worldviews (a) as closely related to perceptions of human nature, or what other people at large are generally like, and what to expect from them collectively, and (b) as motivating beliefs or perceptions that determine how people respond to their social surroundings, be it ideologically or behaviourally. The idea that perceptions of human nature are an important component in social worldview beliefs is a pervasive one in the history of worldview-related theories. One of the earliest attempts to categorise social worldview beliefs in this way was Wrightsman’s (1964, 1992) concept of philosophies of human nature. In his model, Wrightsman (1992) poses six independent dimensions of human nature including beliefs about trustworthiness, strength of will and rationality, altruism, independence (versus conformity to group values and demands), the complexity of people’s character or personality, and the variability of this personality over time and from other personalities. Wrightsman’s (1964) model has since been applied largely in research investigating interpersonal trust which is outside of the scope of this thesis. Wrightsman (1964) nevertheless sets an important precedent that perceptions about the social world may centre primarily around perceptions about what other people are like in general, and that this in turn dictates our ideological and behavioural responses to this world and the people in it.

Lerner’s (1980) belief in a just world concept provides a related framework for understanding generalised beliefs about the nature of the social world from a cognitive motivation perspective. The construct describes a motivating belief in the nature of the world
that has indeed been linked to motivated outcomes, most prominently terror management (Greenberg, Pyszczynski & Solomon, 1986; Pyszczynski, Greenberg & Solomon, 1999).

Although just world beliefs and terror management theory tend to centre around self-esteem as a key motivator of various behavioural and attitudinal outcomes, Lerner’s theory provided one important theoretical basis for contemporary perspectives on motivated social cognition (e.g., Jost & Banaji, 1994). Terror management theory also offers a functional perspective of worldviews as a buffer against existential concerns (Koltko-Rivera, 2004). Maslow (1970) also proposed a theory of human motivation, arguing for a motivational hierarchy that determines human needs and functional behaviours and attitudes that serve to satisfy those needs. More fundamental or “prepotent” needs must be successfully addressed before needs higher up in the hierarchy can be addressed. In his review, Koltko-Rivera (2004) points out that each stage in this motivational hierarchy is characterised by a distinct worldview, suggesting that life is defined by one’s needs.

An important overall theme inherent in these diverse conceptualisations of worldviews appears to be their function as motivators of general ideological and behavioural responses. It is only more recently that a comprehensive model of such cognitive processes has been posed, defining worldviews as motivating schematic beliefs about the social world and formally stating the role of this construct in the formation of attitudes, particularly of those attitudes related to prejudice. This thesis aims to examine this worldview construct as it is presented in Duckitt’s (2001) Dual Process Model of ideology and prejudice with specific regard to existing construct definitions and measures.

**Social worldviews are schemas**

Although Koltko-Rivera (2004) explicitly distinguished worldviews from schemas, an argument can be made that worldviews are indeed schematic beliefs about the nature of other people in the social world. Koltko-Rivera (2004) suggested that the generality of schemas to a
vast range of belief structures may be extending the construct too far and criticises the idea that a worldview is simply the most superordinate schema, a belief structure applied to reality itself. He argues for a number of distinctions between worldviews and schemas (see his Table 1), but these distinctions seem to assume a very broad-band definition of worldviews and don’t necessarily apply to worldviews as defined from a cognitive-motivational perspective.

How might we define schemas from this perspective? Schemas are generally defined as organized cognitive representations of past experiences and knowledge that function as theories about reality and provide a guiding framework within which a person is better able to respond to novel situations and experiences (Fiske & Taylor, 1991; Baldwin, 1992; Bartlett, 1932; Markus & Zajonc, 1985). Paraphrasing Epstein (1973), Balwin (1992, p. 463) wrote that, “people develop personal theories of reality to help them organize their experience and anticipate events in their life. These theories are assumed to include major descriptive postulate systems, consisting of generalisations about the nature of the world and of the self, and motivational postulate systems, consisting of generalisations about how to act to reach certain goals or avoid undesired outcomes.” Baldwin (1992) also noted that many clinical and psychoanalytical models of social cognition emphasised the importance of significant interpersonal experience in defining personality and worldviews. Although there are some critical differences among the models reviewed by Baldwin (1992), most of the theorists seem to agree that people develop structured cognitive representations, or working models of the social world in order to navigate their social environment.

Baldwin (1992) described a hierarchy of schemas in which self-schemas are embedded in relational schemas – representations of interactions with other people and the social world in general. I argue that Baldwin’s (1992) hierarchy can be extrapolated to include worldviews – or beliefs about the social world in general – as the most superordinate category of schemas. In developing the DPM, Duckitt (2001) based his worldview component of this model on an
earlier concept of *motivational goal schemas* (D’Andrade, 1992; Ross, 1993; Strauss, 1992) – socialised beliefs about the nature of the social world that motivate specific ideological responses (Duckitt, 2001; Ross, 1993). Unlike relational schemas, worldview schemas should develop from broader socialisation experiences – probably at the group or cultural level of influence – rather than more specific interpersonal experiences (Seipel, Rippl, Kindervater & Lederer, 2012 recently provided an interesting discussion of socialisation processes leading to authoritarian attitudes). Worldview schemas should thus be concerned with beliefs about human nature, or what people are like, more generally.

What aspects of human nature would be most salient and therefore most responsible for motivating ideological responses? Duckitt’s (2001) model provides a framework that explicitly predicts worldview schemas are perceptions of, on the one hand, danger and, on the other, competition “out there” in the social world. In the next section I provide a detailed history and overview of Duckitt’s (2001) model and, in particular, an exhaustive review of the literature that specifically addresses worldviews from a DPM or motivated social cognition perspective.

**Origins of a dual process model**

This section reviews recent theory and research concerning John Duckitt’s (2001) Dual Process Model (DPM) of ideology and prejudice. The DPM identifies dual threat- and competition-based cognitive-motivational processes that drive individual differences in intergroup and socio-political attitudes. According to the model, these dual motivational-goal processes are indexed by measures of Right-Wing Authoritarianism (RWA; Altemeyer, 1981) and Social Dominance Orientation (SDO; Pratto et al., 1994).

Relating closely to different trait clusters of Adorno et al.’s (1950) F-scale, SDO and RWA were initially interpreted as forms of authoritarian personality (Altemeyer, 1998). Duckitt (2001) argued, however, that SDO and RWA are rather more appropriately defined as
ideological attitudes that express distinct underlying motivational goals – a competition-driven motivation for group-based dominance and superiority in the case of SDO, and a threat-driven motivation for collective security and social cohesion in the case of RWA (Duckitt, Wagner, du Plessis, & Birum, 2002). Moreover, these two motivational goals are derived from specific individual personality dispositions thought to interact with the social environment to produce stable perceptions of the nature of the social world: worldviews. These social worldview beliefs comprise the most salient and consistent information signaling competition and danger in an individual’s social environment. Once formed, worldview schemas should serve to anchor beliefs about the social world and thus predispose individuals to make ideological responses that are consistent with these perceptions.

As outlined in Figure 1.1, the DPM posits that specific facets of personality shape individuals’ schematic perceptions of the social world in combination with the social or group environment through two independent pathways. According to the model, consistent and repeated exposure to social environments perceived as highly competitive or threatening lead to lower levels of Openness to Experience and Agreeableness. These enduring personality traits then operate to bias or predispose individuals to perceive information signaling danger and threat, on the one hand, and competition, on the other, in the social environment. This interaction between personality and the social context should eventually produce stable schematic perceptions of the world as dangerous and competitive, and in turn motivational goals for competition and ingroup safety become chronically salient. These motivational goals are represented in the model as enduring individual differences in levels of SDO and RWA, which in turn lead to the expression of different forms of prejudice. Resultant prejudices should depend upon the perceived characteristics of a given target outgroup (Duckitt & Sibley, 2007).

*Developing a dual process model*
Theoretical frameworks of ideological attitudes have traditionally favoured a unidimensional approach in which these attitudes are organised along a single left/liberal to right/conservative dimension. It is becoming increasingly apparent, however, that ideological attitudes are more accurately represented by two relatively independent dimensions that each have distinct social, environmental, and psychological origins. These dual dimensions often produce similar discriminatory beliefs and patterns of support for political policies for example, but they also uniquely predict certain aspects of these attitudes and have distinct underlying cognitive processes (see Duckitt & Sibley, 2010a for a comprehensive review of the DPM’s development).

In their influential book, *The Authoritarian Personality*, Adorno et al. (1950) presented the first major psychological investigation of ideological attitudes. The authors reported that people’s socio-political attitudes are highly correlated and appear to represent a single, broad ideological dimension. Anti-Semitism, intergroup and minority prejudice, conservative political attitudes, and uncritical patriotism all covaried strongly and, according to Adorno et al. (1950), comprise an *authoritarian personality dimension*. Highly authoritarian individuals were characterised by nine interrelated traits including conventionalism, authoritarian aggression, authoritarian submission, a preoccupation with power and toughness, destructiveness, and cynicism. Those high on this personality dimension therefore should adopt a conservative, ethnocentric, nationalistic and fascist ideology whereas those who are less authoritarian should tend to adopt more liberal, left-wing ideologies (Adorno et al., 1950). This led the researchers to propose that ideological beliefs were organised along a single, unidimensional left-right continuum as measured by their F-scale.
Figure 1.1 A dual process motivational model of the impact of personality, social environment, and social worldview beliefs on the two ideological attitude dimensions of Right-Wing Authoritarianism (RWA) and Social Dominance Orientation (SDO) and their impact on socio-political behaviour and attitudes as mediated through perceived social threat or competitiveness over group dominance, power, and resources (adapted from Duckitt & Sibley, 2010a, p. 1868).
This basic assumption that socio-political attitudes are unidimensional was very influential and echoed in a number of theories that followed Adorno et al. (1950). For one, Allport (1954) characterised the underlying motivations of the authoritarian personality as personal insecurity and psychological inadequacy, which should lead authoritarians to require structure, order and social control. As a result, Allport (1954) argued, such individuals should fear and oppose novelty and change and support hard-line, anti-democratic, right-wing leaders and political parties. This characterisation of the authoritarian personality as driven by fearfulness and insecurity was adopted by later theorists (Altemeyer, 1981; Jost, Glaser, Kruglanski & Sulloway, 2003; Wilson, 1973). The F-scale and subsequent measures of socio-political attitudes of the time (e.g., Rokeach, 1960; Wilson, 1973), however, were criticised for spuriously inflating their internal consistency by not including balanced items. When this was corrected (Altemeyer, 1981; Wilson, 1973) the scales showed very low internal reliabilities, and factor analyses showed that they were not unidimensional.

Since Adorno et al.’s (1950) initial attempt to classify socio-political attitudes, a range of theorists have subsequently undertaken analyses of the structure of these attitudes and values (Duckitt, 2001; Duckitt and Sibley, 2009a, see their Table 1). These studies, however, tended to report at least two relatively independent and orthogonal dimensions of socio-political attitudes. One of these dimensions is characterised by authoritarianism and social conservatism at one pole versus openness, autonomy, liberalism, or personal freedom at the other pole. The second dimension is characterised by economic conservatism, power, and belief in hierarchy or inequality at one pole versus egalitarianism, humanitarianism, social welfare, or concern at its other pole (Duckitt, 2001).
A second weakness of the F-scale, as a number of researchers have noted since its inception (Duckitt, 2001; Feldman & Stenner, 1997; Goertzel, 1987; Stone, Lederer & Christie, 1993; Verkuyten & Hagendoorn, 1998), is that the scale items did not pertain particularly to stable personality traits as Adorno et al. (1950) had intended. Duckitt (2001) argued that the researchers assumed the ideological beliefs indexed by the F-scale were direct expressions of an underlying authoritarian personality. As research has shown since however, personality and ideological attitudes are fundamentally distinct constructs in a cognitive process determining expressions of authoritarianism.

Altemeyer (1981) revived interest in the authoritarian personality by developing a more refined measure comprising only three of Adorno et al.’s (1950) original nine facets – conventionalism, authoritarian aggression, and authoritarian submission. These covaried strongly to form a single attitude dimension that Altemeyer (1981) referred to as Right-Wing Authoritarianism (RWA). Altemeyer (1988, 1998) subsequently demonstrated that his RWA scale powerfully predicted a wide range of socio-political and intergroup attitudes and behaviours including generalised prejudice and ethnocentrism.

A second influential perspective on socio-political attitudes was developed during the 1990s by Sidanius, Pratto and their colleagues (Pratto et al., 1994; Sidanius & Pratto, 1993). Their Social Dominance Orientation (SDO) scale was closely related to a separate set of Adorno et al.’s (1950) scale facets pertaining to power and toughness, destructiveness and cynicism, and anti-intraception. They described SDO as measuring a “general attitudinal orientation toward intergroup relations, reflecting whether one generally prefers such relations to be equal, versus hierarchical” and “the extent to which one desires that one’s ingroup dominate and be superior to outgroups”
The SDO scale was initially demonstrated to powerfully predict a similar range of socio-political and intergroup phenomena to that of RWA (Altemeyer, 1998; Pratto et al., 1994; Sidanius, Pratto & Bobo, 1994). There are a number of critical differences between these two scales however that suggests they are largely independent from one another and should therefore differentially predict specific aspects of socio-political and intergroup attitudes (Duckitt, 2001; Duckitt & Sibley, 2009a).

Validation of the dual process model

Duckitt’s (2001) initial tests of the personality factors theorized to underlie social worldviews used trait-adjective ratings to assess two personality facets: tough-mindedness and social conformity. According to Duckitt et al. (2002), however, these trait-adjective ratings do not directly index behavioural regularities in the same manner as other common and well validated measures of personality and may overlap to an extent with measures of ideological attitudes. For example, Duckitt et al. (2002) excluded items such as “liberal”, “conservative”, “traditional”, and “religious” from the social conformity scale as these could refer not only to behavioural regularities but also to values and ideological attitudes, thus spuriously inflating the relationship between, in this case, social conformity and RWA. More recently, Sibley and Duckitt (2009) examined Duckitt’s (2001) DPM by simultaneously considering the effects of all five Big-Five personality dimensions on social worldviews and SDO and RWA. The Big-Five items, they argued, more directly assess behavioural regularities with items such as “feel other’s emotions” and “don’t talk a lot.” Sibley and Duckitt (2009, see also Van Hiel, Cornelis & Roets, 2007) argued that tests of the DPM should include the full spectrum of personality dimensions identified in such comprehensive inventories as the Big-Five (Goldberg, 1992, 1999).
In a meta-analysis of four studies examining the correlations between the Big-Five and SDO and RWA, Sibley and Duckitt (2008) observed that SDO was most strongly associated with low levels of Agreeableness whereas RWA was most strongly associated with low levels of Openness to Experience and was also positively associated with high levels of Conscientiousness. Van Hiel, Cornelis and Roets (2007) reported similar findings regarding Agreeableness and SDO. RWA however, was related to Openness to Experience as well as Neuroticism in this study. One important additional consideration in the Van Hiel, Cornelis and Roets (2007) study was the mediating role of dangerous and competitive worldviews. Consistent with the DPM, they reported that the relationship between Agreeableness and SDO was mediated by beliefs that the social world is highly competitive, whereas the relationship between personality and RWA was mediated by belief in a dangerous world. In their formal assessment of the DPM modelling the effects of all five Big-Five personality dimensions on social worldviews and SDO and RWA for the first time, Sibley and Duckitt (2009) generally found support for earlier models.

According to Sibley and Duckitt (2009), Agreeableness was both directly related to SDO and partially mediated through competitive worldview suggesting that “the tough-minded, limited concern for others’ characteristic of people low in Agreeableness should cause them to view the world as a socially competitive Darwinist jungle in which might is right and winning is everything, which then heightens SDO” (Sibley & Duckitt, 2009, p. 556) and that “the tendency to ruthlessly pursue hedonistic goals might also heighten motivations for dominance regardless of whether one sees the world as competitive” (p. 557). The authors also reported weak positive correlations of SDO with Extraversion and Neuroticism that were fully mediated by worldview. They suggested that the effect for Extraversion may occur
because leadership tendencies and a motivation to speak one’s mind predispose them to see others as competing for these goals also. Neuroticism may heighten perceptions of competition (Sibley & Duckitt, 2009) as well as cues for danger and threat (Van Hiel, Cornelis & Roets, 2007). Sibley and Duckitt (2009) emphasised, however, that the effects of Extraversion and Neuroticism on SDO were very small in comparison to that of Agreeableness, and these effects were most likely due to their large sample size enabling detection of very small effect sizes (Sibley & Duckitt, 2009).

In Sibley and Duckitt (2009), RWA was most strongly predicted by Openness to Experience, almost entirely independently of dangerous worldview. Conscientiousness was also found to predict RWA unmediated by worldview beliefs. The authors conclude that low Openness to Experience probably predicts RWA as this personality dimension should predispose individuals to identify with and value the existing social order as a normative referent for existing social stability and safety. Those both low in Openness to Experience and high in Conscientiousness should be especially supportive of the existing social order in response to their preference for stability and security (Sibley & Duckitt, 2009). Dangerous worldview, on the other hand, was predicted by personality traits previously associated with SDO. Sibley and Duckitt (2009) reported that Neuroticism, Agreeableness, and low Extraversion exerted weak indirect effects on RWA via dangerous worldview. The heightened perception of social danger and threat for those high in Neuroticism, and limited social networks of those less extraverted, may thus contribute to generalised perceptions of a more dangerous world (Sibley & Duckitt, 2009). Sibley and Duckitt (2009) thus proposed a dual personality structure underlying RWA. On the one hand, low Openness to Experience and high Conscientiousness index a personality tendency to seek out order, stability, and structure that directly predicts RWA. On the other
hand, the heightened perception of danger and threat indexed by Neuroticism, Agreeableness, and Openness to Experience indirectly predict RWA by heightening dangerous worldview (Sibley & Duckitt, 2009).

Recent longitudinal research has begun to indicate that the relationships of RWA and SDO with various outcomes relating to prejudice are not just correlational, but also causal, with these ideological attitudes consistently showing significant and generally unidirectional cross-lagged effects over time (Asbrock, Sibley, & Duckitt, 2010; Kteiley, Sidanius & Levin, 2011; Sibley & Duckitt, 2013; Sibley, Wilson, & Duckitt, 2007a; Thomsen, Green, Ho, Levin, van Laar, Sinclair & Sidanius, 2010). Causality is a fundamental issue in the continued validation of Duckitt’s (2001) model as a meaningful and valid framework for explaining the psychological and environmental bases of prejudice-related attitudes. It is a basic premise of the DPM that SDO and RWA are conceptualised as ideological beliefs or social attitudes that should, by definition, form later in life than causally prior personality dispositions. Altemeyer (1998) in fact suggested that RWA and SDO should form in late adolescence and this is consistent with research showing that political attitudes do not gain coherence until young adulthood (Hooghe & Wilkenfeld, 2008).

There is recent evidence, however, of a reciprocal effect of SDO on empathy (Sidanius, Kteily, Sheehy-Skeffington, Ho, Sibley & Duriez, 2013) which suggests that it may be necessary to reassess this core assumption of the DPM. It is plausible that ideological expressions (i.e., RWA and SDO indexed attitudes) could gradually influence one’s social surroundings and eventually one's personality may be re-socialised if the resultant environmental change is dramatic enough. Say, for example, a high-SDO individual motivated to see the world as competitive and cut-throat becomes wealthy and powerful as a result. If this wealth then increased their social
mobility and status leading them to associate exclusively with other wealthy and competitive individuals then this might constitute such a holistic cultural change, even one of social-class, that they would become permanently less Agreeable.

Furthermore, as Sibley and Duckitt (2012, 2013) have recently articulated, there is still a need for research demonstrating how personality dispositions causally influence RWA and SDO. The DPM stipulates that personality should operate indirectly through two distinct sets of social worldview beliefs (Duckitt et al., 2002; Sibley & Duckitt, 2009; Van Hiel, Cornelis & Roets, 2007) and, moreover, that they also interact with the social environment to produce these schematic worldview beliefs. Research modelling these associations, as discussed above, shows good fit for the hypothesised model, with all the predicted pathways (see Figure 1.1) significant (Duckitt, 2001; Duckitt et al, 2002; Sibley & Duckitt, 2009; Sibley, Harding, Perry, Asbrock, & Duckitt, 2010; Van Hiel, Cornelis & Roets, 2007). This research, therefore, supports the DPM in which dangerous and competitive worldview beliefs mediate the effect of personality on RWA and SDO as compared with simpler models of this process assuming more direct effects (e.g., Ekehammar, Akrami, Gylje & Zakrisson, 2004), and conceptualisations of RWA and SDO as personality traits themselves (Altemeyer, 1998). Because these studies comprise cross-sectional designs, however, they can only draw conclusions about correlational relationships between the components of the DPM, and therefore do not directly assess causality.

As Sibley and Duckitt (2012, 2013) noted, the difficulty of manipulating stable individual differences like personality dispositions is a major problem for testing these associations experimentally. Longitudinal research designs (e.g., Cohrs & Asbrock, 2009; Cohrs, Asbrock, & Sibley, 2012; Duckitt & Fisher, 2003; Duckitt & Sibley, 2010b) do provide a strong test of causal hypotheses but, unlike
experimental designs, these cannot necessarily exclude the effects of extraneous variables – particularly broad changes in the sociopolitical context that might occur over the time period of cross-lagged panel studies (Sibley & Duckitt, 2013).

Sibley and Duckitt (2013) also argued that proposed causal effects of systemic changes may only be possible to detect when these changes actually occur during the timeframe of a longitudinal study, and to the magnitude required to significantly impact the cognitive processes stipulated in the DPM. To address their concerns, Sibley and Duckitt (2013) employed a full crosslagged panel design with two waves administered roughly one year apart and during a period of marked economic instability in New Zealand – the global financial crisis of 2008. In the first longitudinal test of the full DPM, their model supported hypothesised associations in which low Openness to Experience predicted prospective change in dangerous worldview and low Agreeableness predicted prospective change in competitive worldview. In turn, these worldview beliefs prospectively predicted RWA and SDO, providing good support for the two causal sequences proposed in the DPM. Moreover, SDO predicted residualised change in RWA, which did not reciprocally predict SDO. Consistent with a DPM perspective, SDO thus appears to be the most salient ideological dimensions during times of economic uncertainty and resource scarcity (Sibley & Duckitt, 2013).

Taken together, more than a decade of research supports the DPM in which RWA and SDO express different motivational goals or ideological values that determine a wide range of outcomes related to prejudice. This research has shown that RWA and SDO often predict distinct forms of prejudice, are moderated by different situational factors, and each mediates the linear effects of distinct personality traits and social worldview beliefs. These findings have important implications for
understanding prejudice as part of intergroup processes related to threat and competition. Although levels of RWA and SDO certainly vary across individuals and situations, the robustness of these processes suggests that RWA and SDO reflect universal human motives for collective security and for power and dominance.

Nevertheless, issues still remain that require attention, notably the need for demonstrations of the predicted DPM associations as causative and unidirectional using novel longitudinal applications (e.g., Sibley & Duckitt, 2013). Related to this is the need for empirical demonstrations of the specific hypothesised mechanisms in the model (see Sibley & Duckitt, 2012). There have also been issues raised recently questioning the construct validity of the DPM worldview measures (Van Hiel, Cornelis & Roets, 2007), and additional research is still needed on the role of this component of the model in particular. In the following section I thus turn to a more in-depth look at dangerous and competitive social worldviews in the DPM.

Worldviews in the DPM: A comprehensive review

Koltko-Rivera (2004) distinguished worldviews from beliefs and values. This follows Rokeach's (1973) distinction between descriptive, evaluative and proscriptive beliefs; specifically, value beliefs reflect Rokeach's (1973) prescriptive or proscriptive belief category whereas worldviews can refer to beliefs from all three categories. As discussed, a recent motivational process model re-operationalises worldviews as a more narrow-bandwidth construct reflecting schematic beliefs about the nature of the social world and other people in this world (Duckitt, 2001; Duckitt et al., 2002). As I argue here, these schematic worldview beliefs are best defined strictly as descriptive beliefs about human nature, or what other people are like in general.
A distinction between worldviews and other beliefs or values can be made in terms of stages in a process of motivated cognitions. The DPM (Duckitt, 2001) is one such perspective that distinguishes worldviews in this way. In this model, the distinction between worldviews and ideological attitudes (i.e., values) can be thought of broadly as a distinction between beliefs about the way things are and the way things should be. Furthermore, the DPM suggests that these different belief categories occur in a linear and unidirectional cognitive process where more stable and earlier-forming cognitive structures (personality traits and worldview schemas) causally predispose individuals to certain ideological responses and expressions of prejudice.

A model of ideology and prejudice

McFarland (1998; McFarland & Adelson, 1996) first identified SDO and RWA as two of the most robust individual differences in prejudice. The independent associations of these two constructs with prejudice has been widely replicated; to the point where it is safe to say, in paraphrasing Allport (1954), that the joint links of SDO and RWA with generalised prejudice and related attitudes is one of the findings of which we are most sure in research on individual differences in prejudice (Altemeyer, 1998; Pratto et al., 1994). As outlined in Figure 1.1, the DPM posits that these motivational goals are distally produced by different combinations of personality and situational factors, mediated by dual schematic-perceptual mechanisms that reflect beliefs about the social world as competitive (underlying SDO) or dangerous and threatening (underlying RWA).

So where do social worldviews fit within this general model of individual differences in the processes driving prejudice? A competitive worldview is thought to result from the combination of a personality disposition high in Agreeableness and exposure to social situations characterised by high levels of inequality and
competition. Perceptions of the world as a competitive jungle are characterised by a “ruthless, amoral struggle for resources and power in which might is right and winning is everything” (Duckitt, 2001, p. 68). A dangerous worldview, on the other hand, is thought to result from a personality disposition low in Openness to Experience and high in Conscientiousness combined with exposure to social situations highly threatening to ingroup norms and values. The resulting dangerous worldviews reflect perceptions of the world as a “dangerous and threatening place in which good, decent people’s values and way of life are threatened by bad people” (p. 61).

A central tenet of Duckitt’s (2001) DPM is that SDO should increase as a function of the degree to which people perceive the social world as competitive (versus cooperative and caring). Conversely, RWA should increase as a function of the degree to which the social world is perceived to be dangerous (versus safe, secure and stable). Schematised worldviews should, according to the model, reflect the most salient and consistent information about levels of competition and danger that characterise the social world. Consistent with classic research on anchoring and adjustment more generally, the DPM states that, once formed, social worldview schemas should anchor beliefs about the social world, predisposing individuals to unduly weight new information in line with their existing schemas (Sibley & Duckitt, 2009; Sibley, Wilson & Duckitt, 2007a).

According to the DPM, schematic beliefs about the social world have their origins in individuals’ personalities as well as in long-term socialisation experiences. Worldviews should therefore be relatively stable over time, operating as schemas that consistently influence individual perceptions of and responses to their social and interpersonal environments. Schematic social worldview beliefs should also continue
to be influenced by changes in the social environment, however, particularly if those changes were both substantial and relatively enduring. The items and construct definitions of the original DPM social worldview measures are provided in Table 1.1. There is a variety of evidence consistent with these basic premises of the DPM relating to the role and function of social worldviews, showing (a) that perceptions of the social world as competitive should predict SDO, and (b) that perceptions of the social world as dangerous and threatening should predict RWA. Longitudinal panel research by Sibley, Wilson and Duckitt (2007a; see also Sibley & Duckitt, 2013) found significant cross-lagged effects in support of these hypothesised causal pathways between social worldviews and ideological attitudes. Dangerous worldview at time one prospectively predicted hypothesised changes in RWA five months later whereas competitive worldview prospectively predicted SDO at time two. In their recent review of the DPM, Duckitt and Sibley (2010a) outlined evidence for systematic differences between RWA and SDO. Here I expand on this literature review with specific regard to the role of social worldviews in the DPM.

Previous historiometric and experimental research lends indirect support to the DPM. Historiometric analyses indicate that a number of societal-level indicators of authoritarian behavior can vary systematically according to differing levels of societal threat (Doty, Peterson, & Winter, 1991; McCann, 1997; McCann, 2009; McCann & Stewin, 1990; Peterson & Gerstein, 2005; Sales, 1973, 1972; Sharvit, Bar-Tal, Raviv, Raviv & Gurevich, 2010). Cross-national research comparing South Africa and New Zealand also identified social-environmental threat differences on RWA and SDO that were mediated by worldview beliefs (Duckitt, 2004). Afrikaners were markedly higher in both RWA and dangerous worldview beliefs. Duckitt (2004) argued that these effects occurred because of high levels of intergroup threat experienced by
white Afrikaners as their group lost political power in the post-apartheid era. European New Zealanders however were higher in both SDO and competitive worldview beliefs, probably as a result of increasing economic inequality following years of sweeping economic liberalization in New Zealand (Duckitt, 2004). In addition, RWA has been shown to reflect culture-specific conventionalism, corresponding to support for a Marxist/Leninist ideology and opposition to laissez-faire individualism in post-Soviet Russia – the reverse of a corresponding American sample (McFarland, Ageyev & Abalakina-Paap, 1992).

Other lines of evidence also support the function of social worldviews proposed by the DPM, revealing a variety of social or intergroup factors that activate concerns about collective security and cohesion or competitive dominance and studies have shown that RWA is more strongly predictive of discrimination or right-wing in patterns of voting behavior according to levels of societal threat. Doty et al. (1991), for example, reported that conservative political incumbents received greater support during periods of high social threat, whereas liberal political incumbents received greater support during less threatening periods. Possible markers of authoritarian submission – levels of censorship and laws requiring oaths of fealty for school teachers – have also been shown to vary systematically at different points in time depending upon levels of societal threat in the United States (Doty et al., 1991; Sales, 1973).

As one prominent case example, the September 11th attack on the World Trade Centre in 2001 prompted a number of more recent studies investigating the link between the threat posed to Americans and authoritarian attitudes including support for antiterrorism policies and the resultant War on Terror (Bonanno & Jost, 2006; Crowson, 2009; Huddy & Feldman, 2011; Huddy, Feldman, Taber & Lahav, 2005;
Table 1.1. The Construct Definitions and Items of the two worldview dimensions in Duckitt’s (2001) Dual Process Model of ideology and prejudice (from Duckitt et. al., 2002).

<table>
<thead>
<tr>
<th>Competitive Worldview</th>
<th>Dangerous Worldview</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belief that the social world is a competitive jungle characterised by a ruthless, amoral struggle for resources and power in which might is right and winning is everything versus belief that the social world is a place of cooperative harmony in which people care for, help, and share with one another.</td>
<td>Belief that the social world is a dangerous and threatening place in which good, decent people’s values and way of life are threatened by bad people versus belief that the social world is a safe, secure and stable place in which almost all people are fundamentally good.</td>
</tr>
<tr>
<td>1 It's a dog-eat-dog world where you have to be ruthless at times.</td>
<td>1 My knowledge and experience tells me that the social world we live in is basically a safe, stable and secure place in which most people are fundamentally good.</td>
</tr>
<tr>
<td>2 There is really no such thing as “right” and “wrong.” It all boils down to what you can get away with.</td>
<td>2 It seems that every year there are fewer and fewer truly respectable people, and more and more persons with no morals at all who threaten everyone else.</td>
</tr>
<tr>
<td>3 One of the most useful skills a person should develop is how to look someone straight in the eye and lie convincingly.</td>
<td>3 Although it may appear that things are constantly getting more dangerous and chaotic, it really isn’t so. Every era has its problems, and a person’s chances of living a safe, untroubled life are better today than ever before.</td>
</tr>
<tr>
<td>4 My knowledge and experience tells me that the social world we live in is basically a competitive “jungle” in which the fittest survive and succeed, in which power, wealth, and winning are everything, and might is right.</td>
<td>4 Any day now chaos and anarchy could erupt around us. All the signs are pointing to it.</td>
</tr>
<tr>
<td>5 Basically people are objects to be quietly and coolly manipulated for one’s own benefit.</td>
<td>5 There are many dangerous people in our society who will attack someone out of pure meanness, for no reason at all.</td>
</tr>
<tr>
<td>6 Life is not governed by the “survival of the fittest.” We should let compassion and moral laws be our guide.</td>
<td>6 The “end” is not near. People who think that earthquakes, wars, and famines mean God might be about to destroy the world are being foolish.</td>
</tr>
<tr>
<td>7 It is better to be loved than to be feared.</td>
<td>7 My knowledge and experience tells me that the social world we live in is basically a dangerous and unpredictable place, in which good, decent and moral people’s values and way of life are threatened and disrupted by bad people.</td>
</tr>
<tr>
<td>8 Do unto to others as you would have them do unto you, and never do anything unfair to someone else.</td>
<td>8 Despite what one hears about “crime in the street,” there probably isn’t any more now than there ever has been.</td>
</tr>
<tr>
<td>9 Honesty is the best policy in all cases.</td>
<td>9 If a person takes a few sensible precautions, nothing bad is likely to happen to him or her; we do not live in a dangerous world.</td>
</tr>
<tr>
<td>10 One should give others the benefit of the doubt. Most people are trustworthy if you have faith in them.</td>
<td>10 Every day as society become more lawless and bestial, a person’s chances of being robbed, assaulted, and even murdered go up and up.</td>
</tr>
</tbody>
</table>

Note. Items refined from the scale originally developed by Duckitt et al. (2002). Construct definitions are from Duckitt et al. (2002).
Lambert, Scherer, Schott, Olson, Andrews, O’Brien & Zisser, 2010; McFarland, 2005; Nagoshi, Terrell & Nagoshi, 2007; Nail & McGregor, 2009). Perrin (2005), for example, reported a systematic increase in indicators of authoritarian sentiment in letters to the editor published in newspapers increased following the attacks. Another line of research indicates that mortality salience can also serve as a moderating situational influence on RWA or SDO related attitudes (Greenberg, Pyszczynski, Solomon, Rosenblatt, Veeder, Kirkland, & Lyon, 1990). For example, exposure to mortality salience leads highly authoritarian individuals to seek out and favour attitude-congruent information (Lavine, Lodge & Freitas, 2005; Nail, McGregor, Drinkwater, Steele, & Thompson, 2009).

It has recently been demonstrated that people may use RWA as a coping mechanism when faced with threatening circumstances and feelings of vulnerability (Van Hiel & De Clercq, 2009). Those high in RWA are also more sensitive to threatening words and messages relative to those who are low (Lavine, Lodge, Polichak & Taber, 2002). But what are the cognitive processes by which the social environment affects social worldview schemas and prejudice? Gatto, Dambrun, Kerbrat and De Oliveira (2010) specifically address this question, investigating the complimentary processes of both group socialisation and self- or institutional-selection on increased prejudice and intolerance in newly recruited police officers. First, they found that recruits entering the police force are more strongly oriented toward RWA compared with controls. Therefore there is likely a selection effect in that recruits and the police force are reciprocally attracted to shared values of social security and order (Gatto et al., 2010). Second, police officers with one year of training were more prejudiced toward disadvantaged groups than new recruits, and perceived the norm in the police to be more intolerant. Gatto et al. (2010) concluded
that internalization of this group norm was thought to be the mechanism through which police recruits become increasingly prejudiced. Gatto and Dambrun (2010) showed that this intolerance norm is more likely to be activated when police officers perceived themselves to be in a position of numerical inferiority, relative to the number of young people in a video. This research may also indicate that peers and the social context can socialise a view of the world as dangerous and threatening as intolerance norms are strengthened in this more dangerous situation.

Haley & Sidanius (2005) provide a useful review of research indicating that hierarchy-enhancing organizations, like the police force, tend to be occupied by those with anti-egalitarian beliefs, whereas hierarchy-attenuating organizations employ those with relatively more egalitarian or democratic beliefs.

Research has shown that SDO also varies systematically according to the social context (Cozzolino & Snyder, 2008; Danso & Esses, 2001; De Oliveira, Dambrun & Guimond, 2008; Eibach & Keegan, 2006; Guimond, Dambrun, Michinov, & Duarte, 2003; Huang & Liu, 2005; Levin, 2004; Levin et al., 2011; Morrison, Fast & Ybarra, 2009; Morrison & Ybarra, 2008). The extent to which this occurs generally depends on an individuals’ social position and on societal levels of competition and resource scarcity. According to the DPM, schematic perceptions of the social world should act as an intermediary mechanism through which chronic exposure to different social contexts produces change in ideology over time, presumably mediating the effects of competitive social contexts on SDO. In response to a threatening social context SDO can either increase or decrease consistent with protecting ingroup identity (Rios, Morrison & Ybarra, 2009).

Research on university socialisation provides a good example of an institutional environment differentially affecting SDO, and provides further indication
of the dual selection and socialisation effects underlying the formation of worldview schemas. Although universities are generally considered hierarchy-attenuating environments that decrease anti-egalitarian attitudes (Sinclair, Sidanius & Levin, 1998), Guimond et al. (2003, see also Dambrun, Guimond & Duarte, 2002; Dambrun, Kamiejski, Haddadi & Duarte, 2009) further distinguished hierarchy-attenuating and hierarchy-enhancing majors within the university system. Participants who were higher in SDO were self-selectively more likely to major in university subjects that presumably afforded high status positions (such as law) relative to subjects that afford lower status positions (such as psychology) (but see Jetten & Iyer, 2010 for an alternative perspective). Guimond et al. (2003) reported that law students in their third or fourth year were higher in SDO than first year law students. Psychology students, on the other hand, were reportedly lower in SDO the further they progressed through university. Moreover, the effect on prejudice of studying law versus psychology was mediated by SDO. These findings are indicative of a hierarchy-enhancing or -attenuating normative socialisation process dependent upon subject. Guimond (2000) reported a comparable SDO socialisation process in majority-group prospective military officers. These findings are generally consistent with Duckitt’s (2001, 2005) premise that socio-structural or situational characteristics (both the individual’s situation and more pervasive socio-cultural realities) create or reinforce perceptions of the social world as a competitive place, in turn heightening the motivational goal for group-based dominance and superiority indexed by SDO (note that exposure to a cooperative environment may also reduce this SDO goal; e.g., Brown, 2011).

Sibley, Wilson and Robertson (2007) also sought to integrate the DPM with research examining the function of historical injustice representations and resultant dual opposition to resource-specific and symbolic aspects of political policy – in
short, ethnic prejudice or racism between groups in New Zealand. Consistent with this model, dangerous worldview predicted RWA and competitive worldview predicted SDO. In turn, SDO predicted decreased support for bicultural policies mediated through the refutation of responsibility for historical injustice. SDO also directly predicted opposition to symbolic aspects of policy in particular. Justification for opposing restorative policies thus stems from perceptions of a social world (i.e., New Zealand) in which ethnic intergroup relationships are characterised by dominance and competition – an “us versus them” mentality (Sibley, Wilson & Robertson, 2007).

Using an updated measure of individual differences in historical negation developed from content analysis of political speeches and quantitative research on race relations in New Zealand, Sibley, Liu, Duckitt and Khan (2008) replicated and extended Sibley, Wilson and Robertson (2007), reporting that dangerous worldview and RWA predicted historical negation and therefore indirect opposition to restorative policies. Taken together, these studies suggest that perceptions of New Zealand society provide a basis from which attitudes toward restorative policy are formed. A belief that intergroup relationships make New Zealand a relatively dangerous place for the dominant group indirectly produces historical negation through a motivation for group safety and security as indexed by RWA. A belief that these relations make New Zealand a competitive jungle predicts both historical negation and direct opposition to symbolic aspects of policy indirectly, in this case though a motivation for intergroup dominance and competitiveness as indexed by SDO.

Studies manipulating perceived social threat also indicate that dangerous worldviews affect RWA and competitive worldviews affect SDO in experimental settings (e.g., Altemeyer, 1988; Duckitt & Fisher, 2003; Jugert & Duckitt, 2009; Sales & Friend, 1973). Both Duckitt and Fisher (2003) and Jugert and Duckitt (2009) for
example, reported that participants who read a hypothetical future-scenario in which their county was described as having become threatening and dangerous exhibited higher scores on a subsequent measure of RWA than those in a control condition. The effect of this social threat manipulation on RWA was fully mediated by dangerous worldview. Manipulating social threat had much less of an effect on subsequent levels of SDO however, supporting the argument that SDO and RWA may have different antecedents in the threat posed by the social world.

Moreover, a number of studies have shown a differential moderation effect on both RWA and SDO by priming these measures with corresponding group values (Dru, 2007), descriptions of real or fictional outgroups (Cohrs & Asbrock, 2009; Costello & Hodson, 2011; Duckitt, 2006; Duckitt & Sibley, 2010c; Guimond, De Oliveira, Kamiesjki & Sidanius, 2010; Thomsen, Green & Sidanius, 2008), and social norms (Akrami, Ekehammar, Bergh, Dahlstrand & Malmsten, 2009). There is also research emerging in alternative areas of situational influence including intergroup contact that supports differential moderation (Dhont & Van Hiel, 2009; Hodson, in press; Van Laar, Levin, Sinclair & Sidanius, 2005). More positive contact with an outgroup produces lower levels of prejudice, and negative contact produces higher levels of prejudice, for those high in RWA and SDO (e.g., Dhont & Van Hiel, 2009).

Duckitt and Sibley (2010a) provide a comprehensive review of studies experimentally manipulating threat that do reveal differential moderation of both RWA and SDO however. Such studies primed group values relevant to either RWA or SDO (Dru, 2007), and manipulated descriptions of real or fictional outgroups (Cohrs & Asbrock, 2009; Costello & Hodson, 2011; Duckitt, 2006; Duckitt & Sibley, 2010c) or social norms (Akrami et al., 2009) pertaining to these differential values. In one example, Thomsen et al. (2008, see also Guimond, et al., 2010) showed that
RWA and not SDO predicted aggression toward immigrants who would not 
assimilate in both America and Switzerland, presumably because this is perceived as 
threatening to social cohesion and security. On the other hand, SDO and not RWA 
predicted aggression toward those who were assimilating, probably as this threatens 
the power differential between immigrants and the dominant majority.

There is promising research emerging in alternative areas of situational 
influences on RWA and SDO, such as intergroup contact (Dhont & Van Hiel, 2009; 
Hodson, in press; Van Laar et al., 2005), that are consistent with the DPM model. 
There are, however, some inconsistent findings where studies have not found 
moderating effects on RWA and SDO (Cohrs & Asbrock, 2009; Esses, Jackson & 
Armstrong, 1998), or have rather supported mediation effects of perceived threat and 
competition on the ability of RWA and SDO to predict prejudice (Sidanius, Haley, 
Molina & Pratto, 2007). Although, as Duckitt and Sibley (2010a) noted, there seem to 
be plausible methodological explanations in most cases. Weber and Federico (2007; 
see also Hart, Hung, Glick & Dinero, 2012) also demonstrated that dangerous 
worldview mediates a relationship between anxious attachment and RWA, and 
competitive worldview mediates a relationship between avoidant attachment and 
SDO.

*Personality and social worldviews*

Mediation analyses have consistently supported the DPM in which a five-
factor personality model is related to RWA and SDO through dual worldview 
channels, represented by dangerous and competitive worldview beliefs (Dallago, 
Mirisola & Roccato, 2012; Sibley & Duckitt, 2009; Van Hiel, Cornelis & Roets, 
examined whether the associations between three of the Big-Five personality
dimensions (Agreeableness, Openness to Experience, and Neuroticism) and SDO and RWA were mediated by dangerous and competitive social worldviews. Consistent with predictions derived from Duckitt’s (2001) original model, they found that Agreeableness was correlated with SDO, and this association was fully mediated by competitive worldview. Openness to Experience and Neuroticism, on the other hand, were associated with RWA, and these associations were partially mediated by dangerous worldview.

Van Hiel, Cornelis and Roets (2007) argued that schematised perceptions of the social world as dangerous and competitive function as two proximal mechanisms through which particular personality traits affect ideological attitudes. Similar mediation relationships were reported by Sibley and Duckitt (2009) who extended this line of research to also test for possible indirect effects of the remaining two primary Big-Five dimensions of personality: Extraversion and Conscientiousness. Assessing a full five-factor model of personality, Sibley and Duckitt (2009) found that Openness to Experience (as well as Conscientiousness) predicted RWA directly and therefore independently of dangerous worldview. They also reported that dangerous worldview was predicted by Neuroticism, Agreeableness and Extraversion, each of which exerted only weak indirect effects on RWA. RWA, therefore, may be predicted by two distinct constellations of personality (Sibley & Duckitt, 2009).

More recently, Dallago et al. (2012) tested for interactive effects of personality and dangerous worldview on RWA (see also Dallago & Roccato, 2010). They found that dangerous worldview not only mediated the effect of Openness to Experience but that this personality variable also moderated the association between dangerous worldview and RWA. Dangerous worldview predicted RWA, but only for those low in Openness to Experience. Such studies are providing valuable new insights into the
cognitive mechanisms that better our understanding of the precise processes in Duckitt’s (2001) model.

Social worldviews and intergroup attitudes

A number of studies, including Van Hiel, Cornelis and Roets (2007), have recently demonstrated the role of dangerous and competitive social worldviews in the DPM as indirect predictors of a variety of prejudice-related and political attitudinal outcomes, mediated by the attitude constructs RWA and SDO. These include attitudes toward the War on Terror (Crowson, 2009), ambivalent sexism (Lee, 2012; Sibley, Wilson & Duckitt, 2007b), opposition to restorative social-justice policies (Sibley et al., 2008; Sibley, Wilson & Robertson, 2007), political expertise (Federico, Hunt & Ergun, 2009) and morality (Federico, Weber, Ergun & Hunt, in press). Some studies attempt to synthesise previous observations of apparent dual attitude structures with Duckitt’s (2001) DPM and, in doing so, determine the cognitive mechanisms behind system-justifying intergroup attitudes (e.g., Sibley et al., 2008; Sibley, Wilson & Robertson, 2007). By including worldviews in this process, the research literature is able to more convincingly show that different forms of prejudice and related attitudes are grounded in actual social conditions, or at least the subjective perceptions of such.

For example, Sibley, Wilson and Duckitt (2007b) included dangerous and competitive worldviews in a model to test for antecedents of individual differences in men’s expressions of hostile and benevolent sexism. Benevolent sexism stemmed from an RWA-indexed threat-driven motivation for social control and security, in turn driven by perceptions of the world as a dangerous place. Hostile sexism, on the other hand, was produced by SDO-indexed competition-driven motivations for intergroup dominance and superiority, in turn driven by perceptions of the world as characterised by intergroup competition. Consistent with Ambivalent Sexism Theory (Glick &
the inclusion of indirect worldview effects here indicates that sexism appears to be firmly rooted in the socio-structural relationships between genders.

Worldview beliefs appear to be an important factor in explaining politicised attitudes, too, presumably as political beliefs are so strongly aligned with contemporary societal conditions and structures (see Jost et al., 2003 for example). To this end, a number of recent studies included dangerous and competitive worldviews and ideological attitudes as pre-political bases of political ideology. First, Federico et al. (2009) investigated the moderating effect of political expertise on social worldviews. They hypothesised that in this case worldview beliefs represent one’s understanding of politics and political beliefs and therefore experts should be more able to select ideological content that best conforms to these beliefs. Consistent with their interpretation, expertise strengthened the relationship between dangerous worldview and RWA, and between competitive worldview and SDO. RWA and SDO also mediated the effect of each respective worldview dimension on left- or right-wing political identification. Federico et al. (2009) posited that because worldview beliefs are sensitive to expertise they most likely represent an unambiguous individualised and ideology-consistent perspective of the social world, rather than more generalised heuristic bases for political judgement that people at all levels of expertise can rely on.

Building upon these findings, Federico, et al. (in press) have recently proposed that the mechanism through which dual cognitive-motivational processes determine one’s placement on the political spectrum is that of moral foundations. Federico et al. (in press) reported that the dual pathways in the DPM are differentially predictive of five foundations central to moral intuition. In their study, competitive worldview was indirectly predictive of individualizing moral foundations – harm/care and
fairness/reciprocity – through SDO. Dangerous worldview was indirectly predictive of both individualizing morals and binding or communal morals – ingroup/loyalty, authority/respect, and purity/sanctity – through RWA. Alongside both expertise and moral belief foundations, social worldviews therefore appear to be an integral factor in determining not just intergroup prejudice but also political attitudes – both of which are embedded in perceptions of the social world in which they formed.

Finally, contributing to cross-national evidence that RWA and SDO are key predictors of support for military aggression and human rights/civil liberties, Crowson (2009) showed that dangerous worldview predicted RWA and competitive worldview predicted SDO and, in turn, RWA and SDO differentially predicted support for the War on Terror. Tests of indirect effects suggested that dangerous worldview indirectly (through RWA) decreased support for human rights and increased support for military aggression. Competitive worldview, on the other hand, indirectly decreased support for human rights through SDO, but directly increased support for military aggression. The implications for this pattern of direct and indirect effects of worldviews on attitudes toward war were not elaborated in the study, but from what I have observed across the field it seems safe to assume that worldviews in this case also function as an important perceptual basis from which attitudes toward the War on Terror are derived. Namely, American participants justified the war through reduced concern for human rights if they happened to feel that society is characterised by dangerous people that threaten the security of their own group and way of life. Support for the war is also more likely from those who believe the world is inherently competitive and dog-eat-dog, in which the strongest countries have a right to take what they can because they are more powerful and because hierarchy is the natural social order.
In addition to the research thus far supporting the idea of social worldview beliefs as a basis from which pre-political or pre-prejudicial attitudes form, one further study has examined another possible socialisation correlate to worldviews. Weber and Federico (2007; see also Hart et al., 2012) proposed that attachment styles would provide a useful proxy for the socialisation experiences from which social worldviews and personality dispositions are thought to originate (see Duckitt, 2001; D’Andrade, 1992; Strauss, 1992; Ross, 1993). Weber and Federico (2007) reported that attachment anxiety exerted a significant direct effect on dangerous worldview, which in turn predicted RWA. This, they explained, occurs because attachment anxiety is linked to a desire for security in relationships, dogmatism and a need for cognitive closure, leading such individuals to go on to perceive the social world as threatening to their security. On the other hand, attachment avoidance was directly related to competitive worldview and indirectly to SDO. They argued that attachment avoidance is characterised by interpersonal distrust and a desire to control others, leading such individuals to perceive the social world as an hierarchical, dog-eat-dog, competitive jungle. Consistent with this, Cross and Fletcher (2011) reported that adolescents’ levels of SDO were related to their parents’ level of responsiveness. Weber and Federico (2007) related their findings to one of the key insights from attachment theory – that attachment styles might contribute to one’s generalised view of the social world.

There is compelling evidence that socio-structural conditions relating to competition and danger shape corresponding schematic beliefs about these aspects of the social world. Dual social worldviews of danger and competition, in turn, predict corresponding change in RWA and SDO, and thus prejudice. Some unresolved issues remain however, and I seek to address these in the present thesis. First, the DPM
seems to imply that the effect of dangerous worldview on RWA, and competitive worldview on SDO should be fairly equivalent processes that are reasonably comparable in their magnitude of effects size between respective worldview and ideological attitude components. Recent evidence has raised the possibility that there may however be a marked asymmetry in the size of these dual effects (Van Hiel, Cornelis & Roets, 2007). Second, existing ideological-type measures of social worldviews in the DPM do not entirely conform to original definitions of worldviews as schematic belief structures (Duckitt, 2001; Duckitt et al., 2002; see also D’Andrade, 1992; Strauss, 1992). I elaborate on these general aims of the thesis below.

Summary and thesis overview

This thesis focuses on a number of as yet untested assumptions about Duckitt’s (2001) Dual Process Model (DPM) of ideology and prejudice and the series of studies presented here seek to provide converging lines of evidence testing two core premises.

Premise one. The dual cognitive processes underlying prejudice as stipulated in the DPM comprise causative and unidirectional effects of personality traits on worldview beliefs and, subsequently, ideological attitudes. These personality effects should also manifest as specific testable cognitive mechanisms that predispose people to see the world in specific ways and respond consistently with these perceptions.

Premise two. The social worldview component of the DPM indexes schematic perceptions of the social world that comprise descriptive beliefs along two orthogonal dimensions – dangerous and competitive – about what other people “out there” are like in general, and this component is fundamentally distinct from ideological
attitudes which should reflect prescriptive beliefs about appropriate responses to such worldview perceptions.

To assess these two core premises, this thesis presents research and theory examining various aspects of the DPM across three interrelated sections. Section 1 presents research assessing the validity of the DPM in a large nationally representative sample, and research examining whether the causal effects of personality on RWA and SDO are unidimensional. Section 2 presents research assessing the robustness of the associations between worldviews, RWA and SDO in meta-analysis of the field, and research developing and validating a new measure of social worldview schemas. Finally, Section 3 presents research testing a novel hypothesis about the causal mechanism of one personality trait, Openness to Experience, elaborating on the processes detailed in Section 1, and utilising my new measure from Section 2.

The following chapters present a series of six consecutive manuscripts which are written as stand-alone pieces that together provide an empirical foundation for the integrative theoretical framework that seeks to contribute to contemporary calls for a greater understanding of the specific causal mechanisms by which the pathways in the DPM operate to influence prejudice.

Section 1: The full DPM and causative personality effects

Section 1 comprises two studies that address core lacunas in DPM research concerning the model in general. In this section, chapter two presents a structural equation model of the full DPM predicting political policy attitudes. This study extends prior structural models of the DPM (Sibley & Duckitt, 2009; Van Hiel, Cornelis & Roets, 2007) as no prior studies have assessed the full model simultaneously. This is also the first time the full DPM has been modelled using a
large and nationally representative sample, examining data from the 2011 wave of the New Zealand Attitudes and Values Survey (NZAVS). As well as modelling the full DPM, this study examines a premise of the DPM initially proposed by Duckitt (2001) that has thus far not been addressed in the literature. Specifically, Duckitt (2001) proposed that the DPM should not only predict dual dimensions of generalised intergroup attitudes related to prejudice, but also more specific sociopolitical beliefs and values, and thus support for political policies. Duckitt (2001, see his Table 3) identified a large number of earlier investigations that had reported social-political attitudes and values organised around two orthogonal dimensions that generally correspond to each of RWA and SDO, and a number of these specifically identified dual dimensions of social and economic conservatism (e.g., Hughes, 1975; Middendorp, 1991; Vollebergh, Iedema & Meeus, 1999).

Duckitt’s (2001) proposition corresponds to more recent political psychology research also arguing for dual social and economic dimensions of political policy support (Feldman & Johnston, 2009; Gerber, Huber, Ha, Dowling & Doherty, 2009; Zumbrunnen & Gangl, 2008). Feldman and Johnston (2009) specified that RWA and SDO represent different aspects of political conservatism (see also Altemeyer, 1998), arguing that RWA, representing values of security and tradition, should be a stronger predictor of cultural conservatism whereas SDO, more associated with values of power and inequality, should be more predictive of economic conservatism. Choma, Hanoch, Gummerum and Hodson (2012) also recently showed that risk perceptions of conservatives and liberals differed over domains related to either RWA or SDO. The structural model presented in chapter two thus includes, as endogenous variables, measures of attitudes toward specific political policies that correspond to social and economic issues.
Chapter three also addresses a lacuna in DPM research concerning the model in general. Recent research is building a strong case for the DPM as a causal attitude formation process in which RWA and SDO prospectively and unidirectionally predict different forms of prejudice (Asbrock, et al., 2010; Kteiley et al., 2011; Sibley, Wilson, & Duckitt, 2007a; Thomsen et al., 2010; Sibley & Duckitt, 2010a) and in which social worldviews (Sibley, Wilson & Duckitt, 2007b) and personality traits (e.g., Duckitt & Sibley, 2010b) exert prospective effects on RWA and SDO over time. Causality is fundamental to the DPM (Sibley & Duckitt, 2013). The model implies that personality dispositions, which are generally assumed to form relatively early in life, should be developmentally and thus causally prior to RWA and SDO (Altemeyer, 1998). RWA and SDO should theoretically emerge and stabilise later in life as these are conceptualised as social beliefs or attitudes that form gradually in response to this personality basis (but see Thomsen, Frankenhuis, Ingold-Smith & Carey, 2011).

Inherent in this argument is that the relationships in the DPM should not only be causal, but generally unidirectional. In their assessment of the Big-Five personality traits prospectively predicting SDO and RWA, however, Sibley and Duckitt (2010b) were unfortunately unable to measures these personality dimensions at time 2, and thus were unable to examine the possibility (although theoretically unlikely) that RWA and SDO might reciprocally influence those personality traits.

The study presented in chapter three thus replicates and extends Sibley and Duckitt (2010b), using a full cross-lagged panel design to examine the bidirectional effects of Big-Five personality dimensions on SDO and RWA over nine months. Ruling out reciprocal effects contributes to the growing body of research demonstrating causal and generally unidirectional relationships between the components of the DPM and specifically supports Duckitt’s (2001; see also
Altemeyer, 1998) contention that personality traits form first, early in life, and ideological attitudes form later, probably around mid- to late-adolescence.

Section 2: Social worldviews as schemas

Section 2 specifically addresses concerns in the literature that relate to the worldview component of the DPM. The first such concern I identified was that the original measures (see Table 1.1 above) derived from Altemeyer’s (1988) Belief in a Dangerous world scale, in the case of the DPM dangerous worldview dimension, and Altemeyer’s (1998) PP-MAD and EE-MAD scales, in the case of the DPM competitive worldview dimension, relied on ratings of ideological statements such as “If a person takes a few sensible precautions, nothing bad is likely to happen to him or her; we do not live in a dangerous world” (Duckitt et al., 2002). The ideological or prescriptive content in items such as this do not necessarily conform to the definition of social worldviews as schemas (D’Andrade, 1992; Strauss, 1992), and as a result the content of these worldview items might overlap with those in the ideological attitude measures. This concern has been noted by other researchers who reported an asymmetry in the strength of the worldview associations with RWA and SDO that they attributed to content overlap, particularly between the competitive worldview and SDO scales (Van Hiel, Cornelis & Roets, 2007).

In chapter four I first address this concern by conducting a meta-analysis of 46 independent datasets with more than 12,000 participants to investigate the robustness of this asymmetry across the DPM worldview literature. I argue that should the asymmetry be robust across studies in seven different countries and across a number of potential study-level moderators, this would indicate it is most likely to do with measurement characteristics (i.e., item-content overlap) rather than study characteristics (i.e., moderators). Effectively this meta-analysis aimed to determine
whether the asymmetry between the DPM pathways reported by Van Hiel, Cornelis and Roets (2007) was an anomaly, or whether this is a more general concern for the DPM considering the associations are generally assumed to be similar in magnitude. To address this asymmetry concern directly I also present a refined and balanced measure of social worldviews intended to produce an association between competitive worldview and SDO similar in magnitude to that between dangerous worldview and RWA.

Although ideological-type measures of social worldviews do index subjective evaluations of the level of danger and competition in the social world, they do not entirely conform to original definitions of worldviews as schemas. Worldview schemas can be defined as descriptive beliefs about the nature of the social world, and other people in that world. As I argue in this thesis, there is a need for alternative measures of dangerous and competitive worldviews that assess these constructs strictly as descriptive schematic beliefs, eschewing any potentially ideological (and prescriptive) item content that could potentially overlap with RWA and SDO – beyond that presumably responsible for the asymmetry in effect sizes identified by Van Hiel, Cornelis and Roets (2007). Chapter five and 6 in my thesis present the development and validation of such a measure.

Chapter five presents two studies in which I devise a new measure of social worldviews operationalising this component strictly as schemas about the frequency of dangerous and competitive events in the social world: the Frequency Estimation Index of Dual Social Worldviews (FEI-DSW). This new scale presents participants with a list of possible behaviours or events that other people at large in society might conceivably carry out. The measure asks participants to “give your best guess about the percentage of people that would do each of the following things provided there
were no apparent personal gains or losses as a result of their action. That is, the percentage of people in New Zealand that would do these things just because they could.” The FEI-DSW is discussed in detail in chapters five and six (and see the for a full list of the scale items and construct definitions). In chapter six, I validate the FEI-DSW by demonstrating that this new scale reliably overlaps with the original Likert scale worldview measure, and thus that the FEI-DSW dimensions constitute valid measures of dangerous and competitive social worldviews.

Section 3: Personality mechanisms in the DPM

Section 3 of this thesis consolidates findings from Sections 1 and 2 to investigate a specific hypothesised causal mechanism in the DPM. Here, chapter seven comprises two experimental studies that examine an interaction between personality (Big-Five Openness to Experience) and social context (perceptions of danger and threat) that produces dangerous social worldviews as proposed in the DPM. I test this predicted mechanism in an experimental study design that elaborates on the cross-lagged personality effects reported in Section 1. This interaction is difficult to assess as relatively stable personality traits cannot be easily manipulated in cross-sectional study designs (Sibley & Duckitt, 2012, 2013). Demonstrating this hypothesised function of Openness to Experience as a motivating cognitive bias have thus eluded the DPM field.

Having developed and validated my new frequency estimation measure of DPM social worldviews (as presented in chapters five and six), I utilised this to experimentally manipulate subjective perceptions of the social world as dangerous and threatening (as well as competitive). In chapter seven, the FEI-DSW is employed in a classical experimental design used to test cognitive anchoring and adjustment (Tversky & Kahnemann, 1974) to determine whether Openness to Experience
moderates the impact of perceived danger in the social world on the formation of
dangerous social worldviews. This final chapter of my thesis thus addresses an
important contemporary validation issue around the DPM – demonstrating that the
processes posed in the model are causal and operate via specific interactions between
individual differences in personality and the social environment. Finally, chapter eight
offers a summary and general discussion of the major implications of this research for
DPM theory, and possible directions for future research employing and seeking to
further validate Duckitt’s (2001) model.
SECTION 1
ADVANCING THE DUAL PROCESS MODEL

The first section of this thesis presents novel validation tests of the Dual Process Model of ideology and prejudice in a series of studies that test (a) a full structural model of the DPM in a very large and representative national New Zealand study predicting distinct dimensions of social and economic political policy support and (b) a full cross-lagged model of the personality and ideological attitude dimensions. In terms of contributing to the field in general, this section of my thesis examines each of the aforementioned tests for the first time. The DPM is certainly well validated in the literature, but not exhaustively. I elaborate on these novel contributions to the field in respective chapters.

Moreover, Section 1 aims to contribute a sound empirical basis from which to examine more specific hypotheses about the definition and operation of the social worldview component of the DPM (Section 2), and about a specific causal mechanisms by which one personality dimension is thought to operate in the model (Section 3). Given the wealth of research already supporting the hypothesised model even very recently and in a similar context (New Zealand), Section 1 nevertheless examines novel hypotheses and contributes to this thesis as a cohesive holistic assessment of contemporary issues with the DPM.
Bridging comment

Chapter two presents the first of two studies validating the DPM, and hence provides an empirical basis from which to propose the more specific scale development and experimental research in Section 2 and 3. In the following chapter, I sought to provide novel validation of the full DPM by elaborating on previous structural models and examining the full DPM predicting differential support for domain-specific political policies. I also extend previous findings in this chapter by testing the full DPM using a very large and representative nation probability sample.

Chapter two

A dual-process motivational model of social and economic policy attitudes

Abstract

The Dual Process Model (DPM) of ideology and prejudice suggests that Right-Wing Authoritarianism (RWA) and Social Dominance Orientation (SDO) should differentially predict support for social versus economic policies. I test a differential prediction hypothesis in which support for social policies should be predicted by RWA, and support for economic policies should be predicted by SDO. I further test a dual mediation hypothesis suggesting that RWA and SDO differentially mediate the indirect effects of distinct combinations of personality traits and social worldviews on these policy attitudes. The hypothesized model provided a reasonable fit in a large New Zealand sample ($N = 6,886$). Policy attitudes thus consist of at least two dimensions: social versus economic. Individual differences in these attitudes are differentially predicted by RWA and SDO – in much the same way as generalized intergroup attitudes and prejudice.

Note. An earlier version of this chapter has been accepted for publication in the journal Analyses of Social Issues and Public Policy and is hereafter referenced as follows:

Introduction

In contrast to a unidimensional left-right or liberal-conservative structure of political ideology (Adorno et al., 1950; Jost et al., 2003), a number of studies have suggested that these attitudes may consist of distinct dimensions. Recent research detailing the structure of political ideology suggests that they may consist of a combination of social-type attitude content, on the one hand; and economic-type content, on the other (Feldman & Johnston, 2009; Treier & Hillygus, 2009; Zumbrunnen & Gangl, 2008). I use the term social policy attitudes to refer to attitudes toward polices relating to the maintenance of symbolic elements of culture, the maintenance of particular group values, and cultural practices. I refer to economic policy attitudes, in contrast, to describe attitudes toward policies concerned with hierarchy and inequality versus egalitarianism and humanism (see Duckitt, 2001 for a detailed review of these dimensions of policy attitude). A theoretical structure has been proposed in which the two dimensions are differentially determined by a distinct attitude-formation processes – the Dual Process Model of ideology and prejudice (DPM; Duckitt, 2001).

The DPM has been used to predict dual dimensions of generalized intergroup attitudes. In the initial formulation of the model, however, Duckitt (2001) argued that the distinct cognitive processes posited by the DPM should differentially predict not only qualitatively different types of generalized prejudice, but also distinct dimensions of political ideology. Drawing upon previously reported attitude dimensions reflecting dual social and economic content, Duckitt (2001) proposed that these should be differentially related to underlying threat- and competition-driven
“motivational goals”.

Formally, two ideological attitude dimensions – Right-Wing Authoritarianism (RWA; Altemeyer, 1998) and Social Dominance Orientation (SDO; Sidanius & Pratto, 1999) – index motivational goals for social order as opposed to personal freedom and autonomy (in the case of RWA), and for personal or group dominance and superiority as opposed to egalitarianism (in the case of SDO). These motivational goals are, in turn, the product of a process in which particular personality traits and social context factors jointly produce stable beliefs about what other people in the social world are like in general.

Here, I extend Duckitt’s (2001) model by formulating a differential prediction hypothesis in which support for social policies should be predicted by RWA and support for economic policies should be predicted by SDO in a large, national New Zealand sample. I argue that these differential effects should occur to the extent that individual differences in policy attitudes are produced by distinct combinations of personality traits and social worldviews. The present study provides the first formal assessment of this comprehensive framework by framing policy support as a product of dual attitude formation processes, consistent with the DPM.

**Social and psychological bases of RWA and SDO**

---

1 In their early theoretical formulation of fundamental human values, Schwartz and Bilsky (1987, 1990) reasoned that the function of values is primarily to motivate individuals to address biological or evolutionary concerns for their own and their groups’ survival. Duckitt (2001) incorporated this cognitive-motivational mechanism to describe the motivational goal function of RWA and SDO, which he saw as attitude clusters that directly reflect Schwartz’s (1996) major value dimensions of conservatism (conformity and tradition) versus openness (hedonism and self-direction) and self-enhancement (hierarchy or power) versus self-transcendence (egalitarianism or social concern).
Duckitt’s (2001) DPM specifies dual attitude-formation processes composed of specific combinations of cognitive components (along with context effects) underlying both generalized prejudice and more specific political ideology indicators. According to the DPM, RWA and SDO index specific motivational goals that stem primarily from two distinct aspects of personality – low Openness to Experience (as well as high Conscientiousness) in the case of RWA and low Agreeableness in the case of SDO (Sibley & Duckitt, 2008). Individuals low in Agreeableness are more likely to pursue hedonistic and self-interested goals, displaying little concern for potentially conflicting interests of others. They should also tend to value power and be sensitive to situations signalling resource scarcity and competition. Low Agreeableness should thus predict SDO as such characteristics cause individuals to see the world as a socially competitive Darwinist jungle in which might is right and winning is everything (Sibley & Duckitt, 2008). This worldview presumably motivates individuals to hold SDO-indexed beliefs that groups ought to be ruthless and competitive in order to survive and thrive in a dog-eat-dog world.

Individuals low in Openness to Experience, on the other hand, should be more likely to value clear and unambiguous moral prescripts and rules describing how the social world should operate (Sibley & Duckitt, 2008). People low in Openness to Experience should therefore be more sensitive to threats to social stability and security, and consequently become increasingly motivated to seek group-based social cohesion, control and collective security as indexed by RWA (Sibley & Duckitt, 2008). Structural Equation Modelling (SEM) of DPM components indicates that dangerous and competitive worldviews mediate the effects of Big-Five personality on SDO and RWA (Sibley & Duckitt, 2009; Van Hiel, Cornelis & Roets, 2007). Although such methods cannot rule out alternative explanations of observed effects,
longitudinal research also supports the predicted causal pathways in which personality prospectively predicts SDO and RWA (Perry & Sibley, 2011b; Sibley & Duckitt, 2010a), dangerous and competitive social worldviews predict SDO and RWA (Sibley, Wilson & Duckitt, 2007a), and SDO and RWA predict various forms of prejudice (Asbrock, Sibley & Duckitt, 2010; Sibley & Duckitt, 2010a; Sibley, Wilson & Duckitt, 2007b). A more comprehensive longitudinal test also recently supported these predicted causal pathways between personality, social worldviews and ideology (Sibley & Duckitt, in press).

**Differentiating social and economic policies**

Recent findings suggest that political ideology, and policy support in particular, may be represented by at least two dimensions: economic and social (Duckitt & Sibley, 2009; Feldman & Johnston, 2009; Treier & Hillygus, 2009; Zumbrunnen & Gangl, 2008). In Feldman and Johnston (2009), for example, traditional conservatism (i.e., conservative on both dimensions) and liberalism (i.e., liberal on both dimensions) accounted for only two of six classes of political ideology, with the remaining four comprising different combinations of economic and social dimensions. These authors argued that political ideology may therefore be best represented as a set of distinct classes arranged on two dimensions that are only weakly to moderately correlated. Economic and social dimensions of political ideology are often highly intercorrelated, however (Benoit & Laver, 2006), and a single dimension of liberalism-conservatism has been shown to predict a number of psychological constructs (Jost et al., 2003) and behavioural outcomes (Carney, Jost, Gosling and Potter, 2008; Jost, Federico & Napier, 2009).

Likewise, Duckitt (2001) observed that political ideology, and other social beliefs and values often tend to be organized around two related but distinct content
dimensions that reflect, on the one hand, preferences for equality versus inequality and, on the other hand, preferences for autonomy and freedom versus conformity and tradition (e.g., Braithwaite, 1997; Eysenck, 1954; Rokeach, 1973; Schwartz, 1992). Distinct factors of policy attitudes have also been demonstrated in earlier political science research (Chong, McClosky & Zaller, 1983; Conover & Feldman, 1981). Drawing on these widely reported distinctions between dual attitude dimensions, Duckitt (2001) argued that dimensions of political ideology should be differentiated in the extent to which they reflect distinct motivational-goal processes as indexed by RWA and SDO. This has not been explicitly tested within a DPM framework, although similar differential effects have been observed when assessing different dimensions of more generalized intergroup attitudes and prejudice.

Previous findings indicate that the dual pathways of the DPM predict distinct but related dimensions of generalized prejudice (Asbrock et al., 2010; Duckitt & Sibley, 2007). Policy attitudes should be similarly differentiated to the extent that they also fulfil or frustrate the motivational goals indexed by RWA and SDO. For example, studies have revealed two dimensions underlying policy attitudes in diverse European samples – one representing cultural policies and most strongly associated with RWA, and the other representing economic policies and relating most strongly to SDO (Duriez, Van Hiel & Kossowska, 2005; Van Hiel & Kossowska, 2007). RWA and SDO have also been shown to differentially predict support for dimensions of human rights endorsement (McFarland & Matthews, 2005), harsher criminal sentencing (McKee & Feather, 2008) and restrictive policies against gay and lesbian individuals and groups (Poteat & Mereish, 2012).

In validating their SDO scale, Pratto et al. (1994) reported that the construct was associated with support for a wide range of policy issues. SDO showed specific
support for policies concerned with maintaining intergroup hierarchies including military programs, women’s rights and racial policies when partialling out economic conservatism and RWA. RWA correlated with issues that SDO was not so closely associated with; for example, gay rights and chauvinism. SDO is also highly associated with right-wing party support (Pratto, Stallworth & Sidanius, 1997), and support for punitive punishment (Sidanius & Liu, 1992; Sidanius, Liu, Shaw & Pratto, 1998) and military programs (Pratto, Stallworth & Conway-Lanz, 1998).

Napier and Jost (2008) suggested that people who are low in socioeconomic status are more likely to endorse right-wing ideology because of largely social or cultural issues, whereas people who are high in socioeconomic status are more likely to endorse right-wing ideology because of economic reasons. Perhaps consistent with this, research indicates that SDO tends to predict economic rather than social aspects of conservatism, whereas RWA tends to predict social rather than economic conservatism (e.g., Duriez et al. 2005). There are also a number of studies suggesting that RWA and SDO differentially predict support for redistributive policies in New Zealand where RWA is most related to symbolic aspects of policy and SDO to resource-specific aspects (Sibley & Liu, 2004; Sibley et al., 2008; Sibley, Wilson & Robertson 2007). Although these studies did model indirect effects of personality and social worldviews (Sibley et al., 2008; Sibley, Wilson & Robertson, 2007), the full model predicting differential support for broader social and economic policy domains rather than more narrow-bandwidth symbolic and realistic threat-type outcomes has yet to be demonstrated. Moreover, these previous SEM studies employed Duckitt’s (2001) trait-adjective ratings of personality rather than more up to date and well-validated indexes of behavioural regularities such as the now widely accepted (in DPM research) Big-Five inventory (see Sibley & Duckitt, 2009).
Big-Five dimensions of personality may also differentially relate to social and economic policy attitudes, which would be consistent with a DPM perspective. Carney et al. (2008) reported that Openness to Experience and Extraversion were significantly related to social conservatism, whereas none of the personality dimensions predicted economic conservatism. In contrast, Gerber et al. (2010) found that all five personality dimensions were significantly associated with support for economic policies. Though indicative that individual differences in political ideology and policy preferences are grounded in personality, these findings are not entirely consistent with a differential prediction hypothesis that might be expected from previous structural analyses of the DPM (Duckitt & Sibley, 2009; Van Hiel et al., 2007). Gerber et al. (2010) and Carney et al. (2008) assessed proximal policy variables that may not sufficiently reflect distinct underlying motivational-goals, or may potentially overlap with one another in relating to RWA and SDO. The DPM explicitly proposes that these attitude formation processes function via distinct motivated goals, and that support for political policies should differentially relate to personality traits to the extent they fulfil or frustrate these goals. Nevertheless, research assessing personality differences across social and economic policy support is scarce and the DPM is probably the most comprehensive framework from which to approach a detailed and theory-driven assessment of possible differential personality effects on dimensions of political ideology.

The two major dimensions of ideological attitudes, according to the DPM, do tend to correlate with a general liberal-conservative dimension of political ideology (Federico, Hunt & Ergun, 2009; Weber & Federico, 2007), and correlate with one another to varying degrees depending on the socio-political context (Duriez et al., 2005) and individual differences including political expertise and involvement.
(Duriez et al., 2005; Federico et al., 2009). Nevertheless, the range of evidence demonstrating two distinct dimensions of social and economic political ideology that correspond to the motivational goals underlying SDO and RWA (Duckitt, 2001) suggests that a DPM framework describes distinct cognitive pathways that differentially determine political attitude domains, supporting recent claims that social and economic political ideology should be treated as distinct (e.g., Feldman & Johnston, 2009). I propose a SEM of the full DPM predicting support for policies that differentially and explicitly relate to the motivational goals underlying RWA and SDO. I further propose that this differentiated pattern of policy support, consistent with the DPM, will emerge because social policies should be concerned with (RWA-indexed goals for) collective security and social order, whereas economic policies should be concerned with (SDO-indexed goals for) group dominance and superiority. Also consistent with the DPM, Big-Five personality traits should differentially determine policy attitudes via social worldviews and RWA and SDO. These specific predictions are detailed below.

**A dual process model of social and economic policy support**

I present a SEM of inferred causal associations between the components of the DPM as they predict policy support. Three Big-Five personality traits (Agreeableness, Conscientiousness and Openness to Experience), social worldviews (perceptions of the social world as dangerous versus competitive), and RWA and SDO are modelled as predicting differential support for social policy (religious education in schools), economic policy (a flat-tax) and policy relevant to both dimensions (support for immigration). As well as being the first study of which I am aware to test a differential prediction hypothesis of policy support in a DPM framework, this is the first study to test the full DPM in a large national sample.
Consistent with Duckitt’s (2001) DPM, I hypothesize that dual motivational goals indexed by RWA and SDO will differentially predict individual differences in support for each policy. Support for a flat-tax, where everyone in society is taxed at the same rate, should be primarily determined by low levels of Agreeableness and perceptions that the social world is competitive, which should operate indirectly on flat-tax policy support by increasing the motivational goal for group dominance (as indexed by SDO). A flat-tax can be considered an effectively regressive economic policy that disproportionately benefits wealthier members of society – those with lower incomes overall have a smaller percentage of disposable income, and so will feel the burden of taxes on purchasing power related to life necessities more acutely. Hence, supporting such a policy should be (at least) hierarchy-maintaining: fulfilling SDO-indexed motivational goals by reinforcing normative economic inequality.

On the other hand, support for religious education in public schools should be determined by low levels of Openness to Experience and perceptions that the social world is dangerous and threatening. These components should operate indirectly on support for religious education by increasing the motivational goal for social security and cohesion (as indexed by RWA). Religion is closely associated with high levels of RWA (but see Mavor, Louis & Laythe, 2011), and probably serves as an ideological framework that provides cohesion and security (Hoverd & Sibley, 2008; Robertson, 2006). Robertson (2006), for example, reported a positive relationship between emphasis on religion in childhood and a dangerous worldview in adulthood, which in turn predicted higher levels of RWA. Group security and cohesion should be attained by including religion in official school curriculums as religious ideology would hence become more normative.
Finally, I argue that support for immigration should be determined by both pathways because immigrant groups in general are seen as both dangerous and competitive in New Zealand (Duckitt & Sibley, 2007). Thus, opposition to immigration and immigrant-rights should generally fulfil the motivational goals for ingroup security and cohesion (RWA), and for group dominance (SDO). My hypothesized model is presented in Figure 1.

I modelled two distinct pathways through which personality, social worldviews and ideological attitudes should differentially predict policy attitudes modelled as support for economic versus social policies. Consistent with the DPM and my differential prediction hypothesis, SDO was modelled as predicting support for a flat-tax and immigration, whereas RWA was modelled as predicting attitudes toward religious education and immigration. In turn, SDO was predicted by competitive worldview, and RWA was predicted by dangerous worldview. Competitive worldview was also modelled as predicting dangerous worldview\(^2\), and SDO and RWA were allowed to correlate with one another. Of the Big-Five personality traits, Agreeableness was modelled as predicting competitive worldview and also as directly predicting SDO. Openness to Experience and Conscientiousness, on the other hand, were modelled as predicting dangerous worldview, and Openness to Experience was also modelled as directly predicting RWA. Modelling the full

\(\text{-------------------------}\)

\(^2\) In his formative paper, Duckitt (2001) argued that there is good theoretical reasoning to expect that competitive worldview predicts dangerous worldview and my unidirectional effect between these components in the model is consistent with this. Perceiving higher levels of competition in the social world would make society seem more dangerous as competition can be typified by aggression, and those that miss out would suffer.
DPM, I therefore tested indirect paths between personality and policy support in which (a) Agreeableness predicted support for a flat-tax and immigration indirectly through competitive worldview and SDO, and (b) Openness to Experience and Conscientiousness predicted support for religious education and immigration indirectly through dangerous worldview and RWA.

Method

Sampling procedure

This study is based on data collected from the third wave of the New Zealand Attitudes and Values Study (NZAVS-2011). The NZAVS-2011 sampled a total of 6,886 respondents derived from two sources. Firstly, 3,914 (56.8%) participated in the earlier NZAVS-2010 (the second wave of the annual longitudinal study), at a retention rate of 68% from the initial wave in 2009. Participants in the initial wave of the NZAVS-2009 (N = 6,518) were randomly sampled from the electoral roll (a nation-wide registry of all registered voters in New Zealand) which, after adjusting for the accuracy of voters’ addresses (and including anonymous responses), had a response rate of 16.6%. The retention rate for participants in the NZAVS-2011 was 60%. Secondly, an additional 2,972 (43.2%) participants included in the NZAVS-2011 were part of a booster sample recruited through the website of a major New Zealand-based newspaper in 2011.

Participants

Of the 6,886 people who participated in the NZAVS-2011, 62.4% (n = 4,300) were women and 37.5% (n = 2,583) were men. The mean age of the sample was around 50 years (M_{age} = 50.66, SD_{age} = 15.98). Consistent with population estimates from the 2006 census, most participants identified as either New Zealand European
A small portion of the sample identified as Asian (3.4%; n = 235) or Pacific Islander (2.2%; n = 149). The remainder of the sample (14.5%; n = 998) identified with another ethnic group or failed to indicate their ethnicity. In keeping with other New Zealand data, 39.2% of the sample identified as religious (33.9% of these as Christian), and 58.7% stated that they were non-religious (Hoverd, 2008). Seventy-two percent of participants had given birth to, fathered or adopted children with the mean number of children being 1.97. Thirty-three percent lived with their child(ren), the mean number of children per household being 0.82. Reported household incomes ranged from $1 to $8,000,000 (M = $97,283). A total of 73.7% of participants were employed or studying. I did not delete any outliers, and missing data in my SEM was estimated using Full Information Maximum Likelihood.

**Instruments**

Descriptive statistics and correlations between scale means for all measures are provided in Table 2.1.3

**Big-Five personality.** The personality dimensions were assessed using the Mini-IPIP (Donnellan, Oswald, Baird & Lucas, 2006). This scale has been validated for use in the New Zealand context and provides reliable short-form measures of Big-Five personality (Sibley, 2012; Sibley et al., 2011; Sibley & Pirie, 2013). The Mini-IPIP contains a four-item measure of each of the five broad-bandwidth dimensions of the Big-Five model. Items were rated on a scale ranging from 1 (very inaccurate) to 7 (very accurate).

3 A copy of the survey, along with supplementary materials is available on the NZAVS website: http://www.psych.auckland.ac.nz/uoa/NZAVS.
Social worldviews. The worldview dimensions were assessed using shortened two-item versions of Duckitt et al.’s (2002) DPM social worldview measures. Dangerous worldview was assessed using the items, “There are many dangerous people in our society who will attack someone out of pure meanness, for no reason at all” (pro-trait) and, “Despite what one hears about ‘crime in the street’, there probably isn’t any more now than there has ever been” (con-trait). Competitive worldview was assessed using, “It’s a dog-eat-dog world where you have to be ruthless at times” (pro-trait) and, “Life is not governed by the ‘survival of the fittest.’ We should let compassion and moral laws be our guide” (con-trait). Items were rated on a scale ranging from 1 (strongly disagree) to 7 (strongly agree).

Ideological attitudes. SDO and RWA were both assessed using six balanced items from the scales developed by Pratto et al. (1994) and by Altemeyer (1996). Examples from the SDO scale include, “It is ok if some groups have more of a chance in life than others” (pro-trait) and, “We should do what we can to equalise conditions for different groups” (con-trait). Examples from the RWA scale include, “Our country will be destroyed some day if we do not smash the perversions eating away at our moral fibre and traditional beliefs” (pro-trait) and, “Some of the best people in our country are those who are challenging our government, criticizing religion and ignoring the ‘normal way’ things are supposed to be done” (con-trait). Items from both scales formed a reliable composite and were averaged to give an overall scale score. Items were rated on a scale ranging from 1 (strongly disagree) to 7 (strongly agree).

Political policy items. Support for a flat-tax and religious education in schools was assessed by asking participants to rate how strongly they opposed or supported, “A ‘flat’ tax rate (everyone pays the same percentage of tax on their income)” and,
“Including religious instruction in Christianity as part of the school curriculum.”

Items were rated on a scale ranging from 1 (strongly oppose) to 7 (strongly support). To assess attitudes toward immigration, participants were asked to rate their support for, “Policies promoting more immigration from India to New Zealand” \((M = 3.33, \ SD = 1.39)\) and, “Policies promoting more immigration from China to New Zealand” \((M = 3.34, \ SD = 1.43)\) on a scale ranging from 1 (strongly oppose) to 7 (strongly support). See Table 2.1 for all other scale and item means. These policy items were included specifically for the purposes of testing the model reported in this paper, and have not been previously reported elsewhere.

Results

Correlations between mean scale scores for personality, social worldviews, SDO and RWA, support for a flat-tax, support for religious education in schools, and support for immigration are presented in Table 2.1. Consistent with my differential prediction hypothesis, SDO was moderately positively related to support for a flat-tax \((r = .200)\), negatively to support for immigration \((r = -.143)\), and weakly to support for religious education in schools \((r = .091)\). RWA, by contrast, was strongly positively associated with support for religious education \((r = .531)\) and moderately negatively associated with immigration \((r = -.185)\), but weakly with support for a flat-tax \((r = .107)\).

I tested a SEM in which latent variables representing Openness to Experience, Agreeableness and Conscientiousness predicted dangerous and competitive worldviews, which in turn predicted RWA and SDO, which then differentially predicted support for political policies. The model is presented in Figure 1. Note that residual variances for manifest and latent variables are omitted from the diagram for
ease of presentation. The model was estimated in Mplus 7 using a 5,000 bootstrapped resampling procedure to determine bias corrected confidence intervals for the indirect effects.

Consistent with a DPM perspective, the model considered two pathways of association that differentially predicted support for economic versus social policies. As shown in Figure 1, I estimated latent variables using all available observed item scores for each construct (note that the number of items differed per construct). Latent variables representing each personality dimension were estimated using four manifest item scores. Latent variables representing each worldview dimension were estimated using two manifest item scores, and latent variables representing SDO and RWA were each estimated using six manifest item scores. A latent variable assessing support for immigration was estimated using two manifest item scores. Support for a flat-tax and religious education were modelled as manifest variables given that they were each assessed using only a single item. All manifest indicators were allowed to load only on their specified latent variable and I did not allow any residual associations between manifest indicators.

Given my extremely large sample size, I assessed the hypothesized model using indices of relative fit. When evaluating model fit, Hu and Bentler (1999) suggested that reasonably well-fitting models should generally have a standardized Root Mean Square Residual (sRMR) below .080 and a Root Mean Square Error of Approximation (RMSEA) below .060. The model presented in Figure 1 provided a
Figure 2.1. Structural equation model of the DPM with standardized path coefficients predicting individual differences in support for three realms of social policy – a flat-tax, immigration, and religion in schools, * = p < .01. Fit indices for this model were as follows: \( \chi^2(450) = 12387.068; \) sRMR = .063; RMSEA = .062.
Table 2.1. Bivariate correlations and descriptive statistics for personality, social worldviews, RWA and SDO, and economic and social policy support.

<table>
<thead>
<tr>
<th></th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
<th>6.</th>
<th>7.</th>
<th>8.</th>
<th>9.</th>
<th>10.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Agreeableness</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Conscientiousness</td>
<td>.142*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Openness to Experience</td>
<td>.259*</td>
<td>-.030</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Competitive worldview</td>
<td>-.265*</td>
<td>-.029</td>
<td>-.147</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Dangerous worldview</td>
<td>-.033</td>
<td>.067*</td>
<td>-.186</td>
<td>.207</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. SDO</td>
<td>-.320*</td>
<td>.004</td>
<td>-.217</td>
<td>.419</td>
<td>.168</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. RWA</td>
<td>-.045</td>
<td>.138*</td>
<td>-.333</td>
<td>.063</td>
<td>.325</td>
<td>.262</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Flat-tax</td>
<td>-.097*</td>
<td>.013</td>
<td>-.057</td>
<td>.159</td>
<td>.117</td>
<td>.200</td>
<td>.107</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Religious Education</td>
<td>.046</td>
<td>.071*</td>
<td>-.150</td>
<td>-.065</td>
<td>.132</td>
<td>.091</td>
<td>.531</td>
<td>.053</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Immigration</td>
<td>.054*</td>
<td>-.047*</td>
<td>.128*</td>
<td>-.109*</td>
<td>-.206*</td>
<td>-.143*</td>
<td>-.185*</td>
<td>-.041*</td>
<td>-.023*</td>
<td></td>
</tr>
<tr>
<td>Standard deviation</td>
<td>.950</td>
<td>1.037</td>
<td>1.112</td>
<td>1.230</td>
<td>1.408</td>
<td>.966</td>
<td>1.148</td>
<td>2.038</td>
<td>1.916</td>
<td>1.331</td>
</tr>
<tr>
<td>Cronbach’s alpha</td>
<td>.69</td>
<td>.65</td>
<td>.70</td>
<td>.46</td>
<td>.42</td>
<td>.75</td>
<td>.73</td>
<td>-</td>
<td>-</td>
<td>.88</td>
</tr>
</tbody>
</table>

* $p < .001$, $n = 6,886$. Correlations are between scale (mean) scores.
reasonable fit to the observed data according to these indices ($\chi^2(450) = 12387.068$; sRMR = .063; RMSEA = .062). According to Hu and Bentler’s (1999) criteria, the hypothesized model performed well and yielded a sRMR that fell well within the ranges recommended, as well as an acceptable RMSEA. All hypothesized paths between variables specified in the model were statistically significant ($z_\text{s} > -4.13, p < .001$). The paths from each latent variable to their respective manifest indicators were also highly significant ($z_\text{s} > 17.12, p < .001$). The model accounted for 5.4% of the variance in support for a flat-tax, 33.2% of the variance in support for religion in education, and 6.3% of the variance in attitudes toward immigration. The personality and social worldview dimensions of the model predicted 47.4% of the variance in SDO and 34.4% of the variance in RWA.

As outlined in Figure 1, the paths between personality, social worldviews, and ideological attitudes (RWA and SDO) were all significant and consistent with the processes specified in the DPM (Duckitt, 2001). Conscientiousness and Openness to Experience were directly related to dangerous worldview ($\beta = .206, se = .020, z = 9.21, p < .001$ and, $\beta = -.307, se = .045, z = -9.51, p < .001$ respectively). Dangerous worldview was in turn directly related to RWA ($\beta = .433, se = .044, z = 10.06, p < .001$). As expected, there was a direct relationship between Openness to Experience and RWA ($\beta = -.271, se = .036, z = -10.74, p < .001$). Agreeableness was directly related to both competitive worldview ($\beta = -.424, se = .035, z = -12.04, p < .001$) and SDO ($\beta = -.150, se = .022, z = -6.52, p < .001$). Competitive worldview was in turn directly related to SDO ($\beta = .611, se = .037, z = 15.58, p < .001$). I also allowed the residual variance of SDO and RWA to relate, and thus estimated the unique effect of each construct on different policy outcomes.
The findings presented in Figure 1 are also consistent with a differential prediction hypothesis. SDO significantly predicted support for a flat-tax ($\beta = .232, se = .042, z = 15.51, p < .001$), and RWA significantly predicted support for religious education ($\beta = .576, se = .048, z = 24.48, p < .001$). SDO and RWA both significantly predicted opposition toward immigration ($\beta = -.137, se = .033, z = -7.96, p < .001$ and, $\beta = -.172, se = .025, z = -10.07, p < .001$ respectively). In the case of attitudes toward immigration I hypothesized that SDO and RWA would both predict opposition toward policies in this domain, and with comparable magnitudes. I tested this ancillary prediction by imposing a univariate Wald test of parameter constraint in which the effects of SDO and RWA on immigration attitudes were set to equality. This test indicated that the size of the effect of SDO and RWA on immigration policy support did not differ in magnitude ($\chi^2(1) = 0.02, p = .887$).

I examined the differential prediction hypothesis by testing a model in which SDO and RWA were both allowed to relate to attitudes toward a flat-tax and religious education, and then imposed additional specific model constraints testing whether the association of SDO and RWA with each policy outcome differed in magnitude. When included in the model, RWA was significantly, although weakly, predictive of

---

4 Despite the potential for content overlap between some RWA items and the social policy content, religion in the RWA items tend to be framed quite differently to my policy item measuring support for religious education in schools. Religion in the RWA scale is framed very generally and equated with other institutional and normative aspects of traditionalism. Thus, this broad ideological framing should be qualitatively distinct from framing religion within specific narrow-bandwidth policy issues. Nevertheless, I re-ran the analysis without RWA items referring to religion. The link between this refined estimate of RWA and the religious education policy item remained significant ($\beta = .393, se = .024, z = 26.90, p < .001$) and a univariate Wald test of parameter constraint indicated that this effect was stronger than that of SDO when also included in the model ($\chi^2(1) = 146.23, p < .001$).
attitudes toward tax policy ($\beta = .062, se = .032, z = 4.31, p < .001$). Univariate Wald tests of parameter constraint indicated that SDO was, as expected, a significantly stronger predictor of tax policy relative to RWA ($\chi^2(1) = 52.95, p < .001$). When included in the model, SDO was significantly, negatively, and weakly predictive of support for religious education ($\beta = -.145, se = .037, z = -10.39, p < .001$). Univariate Wald tests of parameter constraint indicated that RWA was a significantly stronger positive predictor of religious education relative to SDO as expected ($\chi^2(1) = 733.19, p < .001$).

The predicted indirect effects of Openness to Experience and Agreeableness on different political attitude domains were also significant. Agreeableness was significantly indirectly associated with attitudes toward a flat-tax via competitive worldview and SDO ($b = -.159$, Lower 99.5% CI = -.208, Upper 99.5% CI = -.121) and Openness to Experience was significantly indirectly associated with attitudes toward religious education via dangerous worldview and RWA ($b = -.225$, Lower 99.5% CI = -.308, Upper 99.5% CI = -.165). Finally, both Agreeableness and Openness to Experience were indirectly associated with support for immigration at very similar magnitudes, but through different pathways as predicted: Agreeableness via competitive worldview and SDO ($b = .063$, Lower 99.5% CI = .041, Upper 99.5% CI = .090), and Openness to Experience via dangerous worldview and RWA ($b = .048$, Lower 99.5% CI = .030, Upper 99.5% CI = .073).

Testing alternative models

Four alternative models were also considered in which the four components of the predicted model (personality, social worldviews, SDO and RWA, and policy attitudes) were rearranged to test different implied causal directions of effect. SDO and RWA were allowed to correlate in each alternative, consistent with my
hypothesized model. All other latent variables were only allowed to correlate with one another when they were modelled as the final endogenous outcome. All four alternative models yielded poorer fit indices than the hypothesized model. The first alternative modelled worldviews as exogenous variables predicting personality that directly predicted RWA and SDO, and these in turn predicted policy support ($\chi^2(452) = 13957.605; \text{sRMR} = .074; \text{RMSEA} = .066$). Fit indices for this model were poorer than those for the hypothesized model. Personality is most appropriately modelled antecedent to worldviews as hypothesized, and is consistent with the DPM which suggests that certain personality traits predispose people to be more or less likely to perceive the world as dangerous or competitive. It was important to examine if personality might be more appropriately modelled as directly influencing ideology, however, as Openness to Experience (at least) does tend to retain a weak direct association with RWA.

The second alternative modelled personality as exogenous variables directly predicting worldviews, which then directly predicted policy attitudes, and these in turn directly predicted RWA and SDO ($\chi^2(450) = 14279.110; \text{sRMR} = .083; \text{RMSEA} = .067$). Fit indices for this model were poorer than those for the hypothesized model. This indicates that ideological attitudes (RWA and SDO) are more accurately modelled as antecedent to policy support as hypothesized. Support for political policies may have instead lead to RWA and SDO as ideological attitudes which are almost certainly influenced by institutionalized norms and the socio-political context. Ideological attitudes and political policy probably do operate reciprocally, but I have at least demonstrated that the implied direction of effects is most accurately modelled as RWA and SDO predicting policy support (this also seems expected given that I am
assessing policy attitudes rather than policy as part of a broader socio-political context).

The third alternative modelled worldviews as exogenous variables directly predicting personality that, in this case, directly predicted policy support, and policy support in turn predicted RWA and SDO (χ²(451) = 14853.548; sRMR = .086; RMSEA = .068). Fit indices for this model were poorer than those for the hypothesized model. When the latter two alternatives are modelled simultaneously, it seems that personality is more appropriately modelled as antecedent to worldviews and ideological attitudes as antecedent to policy support, consistent with my hypothesized model. The fourth and final alternative model operationalized personality as exogenous and directly predicting RWA and SDO, which directly predicted worldviews, which directly predicted policy attitudes (χ²(453) = 12783.894; sRMR = .063; RMSEA = .063). The RMSEA for this alternative indicated a poorer fit than the hypothesized model, although the sRMRs were comparable. This generally indicates that the hypothesized model provides a more accurate summary of the observed data, although both models were fairly similar (I consider this alternative model in more detail in the discussion).

Discussion

The present study examined a model of dual cognitive pathways that differentially predicted support for economic versus social political policies in an extremely large sample (N = 6,886 New Zealanders). This analysis was designed to test two hypotheses consistent with Duckitt’s DPM (2001). First, I tested a differential prediction hypothesis stating that two distinct dimensions of policy attitudes – economic and social – would be differentially predicted by two sets of motivational
goals indexed by SDO (in the case of attitudes toward economic policy content) and RWA (in the case of attitudes toward social policy content). Second, I predicted a mediational model in which the differential effects of RWA and SDO on policy support mediate the indirect effects of distinct combinations of personality traits and social worldviews. I detail the findings with respect to my hypotheses as follows. As far as I am aware this is the first study to test the differential prediction of policy attitudes using a DPM framework.

**Differential prediction and mediation hypotheses**

**Hypothesis 1: RWA and SDO differentially predict policy attitudes.** In support of my first hypothesis, a structural model in which RWA and SDO differentially predicted social and economic policy support provided a reasonable fit to the data. My findings support recent evidence that individual political ideology can be more complex than a single liberal-conservative dimension accounts for (Feldman & Johnston, 2009; Treier & Hillygus, 2009; Zumbrunnen & Gangl, 2008) and is consistent with research showing that RWA is most related to social-type policy support whereas SDO is more related to economic-type policy support (e.g., Duriez et al., 2005; Van Hiel & Kossowska, 2007). In showing that support for economic and social policy is differentially predicted by SDO and RWA, I argue that, as is the case toward generalized intergroup attitudes, policy attitudes are composed of distinct dimensions produced in response to distinct sets of motivational goals (see Duckitt, 2001). It is possible, in fact, to construe each of the policy issues as derived from intergroup identities. For example, support for immigration reflects a distinction between immigrants and New Zealanders, support for religion in schools between religious and non-religious people, and support for a flat-tax between wealthier social groups that benefit from such a tax policy and those who don’t. Political policies,
therefore, are intimately linked with the intergroup relations that make up a particular society and hence support for such policies is determined by the same motivational goal processes underling more generalized intergroup attitudes and prejudice.

**Hypothesis 2: Indirect personality and social worldview effects on policy attitudes.** Extending previous observations of differential effects, RWA and SDO mediated the indirect effects of personality and social worldviews on dual dimensions of policy attitudes, consistent with the attitude-formation processes described in the DPM (Duckitt, 2001). Average levels of support for social policies (i.e., those related to RWA-indexed motivational goals) depended on perceptions of the degree to which society is dangerous and threatening as well as individual differences in Openness to Experience and Conscientiousness. Support for economic policies (i.e., those related to SDO indexed goals), on the other hand, depended on the degree to which the social world is perceived as a competitive place characterized by inequality and resource scarcity, as well as individual levels of Agreeableness. Individual-level personality traits and perceptions of societal-level threat and competition therefore produced the motivational goals for social security and cohesion (indexed by RWA) and intergroup dominance and hierarchical group structures (indexed by SDO), which determined support for social versus economic policies. The hypothesized model provided a better fit to the data than four alternative models assessing different implied causal directions of effect between the components of the model.

Previous SEM studies (with smaller convenience samples) suggest RWA and SDO mediate the effect of personality and social worldviews on more general dimensions of prejudice or intergroup attitudes (Duckitt, 2001; Duckitt et al., 2002; Duckitt & Sibley, 2007). The present study extended these findings in a large-scale national sample and suggests that both generalized intergroup prejudice and more
specific political policy support originate from the same dual sets of values or motivational goals, and thus probably arise from the same socialization experiences that produce particular personality characteristics and schematic perceptions of the social world as either dangerous or competitive. Thus, I provide direct evidence for the parallels that Duckitt (2001) originally drew between generalized prejudice and ethnocentrism on the one hand, and individual differences in political ideology on the other. Policy attitudes and generalized intergroup prejudice, alike, should operate as responses to motivational goals that arise from perceptions of the social world as either dangerous (versus safe) or competitive (versus cooperative).

Motivated political ideology

The present study demonstrates the process by which political policies structure society to maintain broad goals for both dominant-group security and superiority. The DPM literature has consistently shown that there are two ideological attitude dimensions expressing distinct sets of motivational goals or values (see Duckitt & Sibley, 2010 for a review). One of the key implications of this model is that these dual dimensions work together to maintain and justify dominant group superiority (in the case of SDO), as well as ingroup security and the stability of group values and beliefs (in the case of RWA). Maintenance of prevailing social hierarchies and norms can also be achieved directly through legislation and other institutionalized values. It follows, then, that support for political policies should be structured around the same dual dimensions captured by RWA and SDO. In the present study, people high in SDO were especially supportive of policies that promote or maintain group dominance and superiority as well as social inequality, and people high in RWA were more supportive of policies that promote or support normative dominant-group values and ingroup security.
Introducing a flat-tax, including religious education in schools, and regulating immigration (particularly from Southeast Asian nations) all relate to topical political issues in New Zealand. The current government has recently pursued regressive tax policies (e.g., cutting top income-tax brackets while increasing value-added tax on goods and services), privatisation of state assets, and implementation of austerity measures to combat the recent economic recession. The current major opposition party is traditionally opposed to each of these policy measures resulting in economic issues, such as taxation, being hotly contested in this country. My findings suggest that this contention results from individual differences in motivational goals for group dominance and maintaining social inequality. Introducing a flat-tax is not under serious consideration in New Zealand at present, and therefore is at less risk of being associated with the social implications of other regressive tax policies. Although the model explained a relatively modest amount of variance in this specific indicator of economic policy, I felt that a flat-tax would be sufficiently independent from the social dimension of policy attitudes.

Social policy issues also feature prominently in the national debate, with the present government reducing social and education spending and restricting access to welfare, for example. My findings suggest that support for such policies results from individuals being motivated to maintain normative (i.e., dominant) group values, which probably reflect individualistic and materialistic beliefs in industrialized countries like New Zealand (see, for example, Ger & Berk, 1996). With Christianity being the major religion in New Zealand, Christian values should be considered normative by many New Zealanders, and religious identity in New Zealand has been shown to relate to support for social policies (Hoverd & Sibley, 2010). As is the case in the USA, there is some public debate as to the extent public schools should be
required to teach religion alongside secular content, and perhaps given the relatively
high amount of variance explained in support for this policy, this may indeed be a
particularly “hot” issue that is central to the current political context in New Zealand.
I felt that religious education as an indicator of social policy is sufficiently
independent from economic concerns, relative to social policies involving
government spending issues, such as welfare, or relevant to existing dominance
relationships such as women’s rights.

New Zealand attracts a large number of immigrants from Asian countries and
these populations tend to be considered culturally very different from the majority
ethnic group in New Zealand (people of European descent), and are stereotyped as
being prepared to work hard for comparatively low wages (Sibley, 2011; Sibley et al.,
2011). Government policies in New Zealand have tended to favour immigrant groups
who are more culturally and ethnically similar to the dominant group in New Zealand,
such as those from the United Kingdom and Western Europe. My findings here
suggest that support for this bias in immigration policy stems primarily from those
New Zealanders high in both RWA and SDO, who are motivated to maintain
dominant group values and culture as well as ingroup dominance and economic
prosperity – both of which are threatened by immigrants who are culturally different
and economically competitive.

It is also interesting to note that SDO explained a relatively small portion of
variance in support for a flat-tax compared to the variance in religious education
explained by RWA. I suspect that this is likely due to differences in the extent to
which these two social policy issues have been framed and made salient by political
elites along moral-threat and economic-competitiveness lines. The variance explained
in support for immigration also suggests that this may be a political issue that is not
necessarily highly relevant to ideologies along moral-threat or economic-competitiveness lines, at least relative to religious education in schools.

These findings were based on a large national sample of New Zealanders, reinforcing my claims that the chosen policy issues are broadly recognised and relevant in New Zealand. The current study may help to explain why many voters appear able to disregard social inequalities as well as the humanistic appeal of socially cooperative values and actions – even to the extent of supporting policies and political parties against their own interests (see Jost et al., 2003). Consistent with the DPM, I have demonstrated that support for socially and economically salient policies is grounded in relatively stable individual differences in personality. Therefore, factors affecting policy support (and probably political party affiliations) must occur at a broad level, influencing basic socialization and early experiences that shape personality.

Caveats and conclusions

One weakness of my study concerns the low alpha reliability scores for my two-item social worldview measures. This is most likely due to the use of such short versions of the scales, rather than a lack of generalizability of the worldview constructs per se, as longer versions of these scales typically demonstrate much higher reliabilities. My structural model is highly consistent with past research validating the DPM (Duckitt, 2001; Duckitt et al., 2002; Sibley & Duckitt, 2009; Van Hiel et al., 2007), and these low reliabilities do not detract from my main finding that different pathways underlie social versus economic policy support. Moreover, the use of structural equation analysis adjusts for the reliability of measures when estimating model parameters. My model should not, however, be viewed as a formal test of the social worldview and personality component of the DPM, but rather is intended to
integrate marker items of these constructs given these paths have been established in previous research. A second, and related, weakness concerns the use of one-item measures for my flat-tax and religious education dependent variables. Though less than ideal, it was necessary to use proxy measures to represent support given space constraints in the NZAVS questionnaire.

There have also been some concerns in the literature about the independence of social worldviews from SDO and RWA – particularly between competitive worldview and SDO. Indeed, studies have observed potential item content overlap between these components of the DPM (Perry & Sibley, 2010; Perry, Sibley & Duckitt, 2013a; Van Hiel et al., 2007) and my fourth alternative model in which SDO and RWA predicted worldviews provided a fit similar to the hypothesized model. There is good evidence, however, that competitive worldview and SDO (as well as dangerous worldview and RWA) are clearly distinct factors (Duckitt et al., 2002). Longitudinal research also clearly indicates that competitive and dangerous worldviews predict SDO and RWA (Sibley et al., 2007). Duckitt et al. (2002), for example, conducted initial Confirmatory Factor Analyses (CFAs) that showed two-factor models of each pathway provided a superior fit to the data in both cases, compared with one- and three-factor models. An additional CFA using my data indicated a four-factor solution in which worldviews, RWA, and SDO were modelled as independent from one another. This model showed significantly superior fit to the data relative to a two-factor solution modelling the items assessing RWA and dangerous worldview as indicators of one factor, and the items assessing SDO and competitive worldview as another ($X^2_{diff}(5) = 703.482, p < .001$). I note that the items included in the present study were consistent with my refined social worldview scale
designed to address content overlap between SDO and competitive worldview, thus more accurately distinguishing these components (see Perry & Sibley, 2010).

One possible aspect of the DPM not tested in the present study is the moderating effects of social context. Research has shown that levels of social threat (e.g., Feldman & Stenner, 1997) and competition (e.g., Dru, 2007; Sibley & Duckitt, in press) may moderate the associations of RWA and SDO with various outcomes. Recent research has also indicated a number of individual difference factors that potentially moderate these relationships. One line of evidence suggests that ideological consistency (i.e., the independence between RWA and SDO) depends on a number of moderating factors including (a) the degree to which society is politically organised along a single left-right dimension (Duckitt, 2001; Duriez et al., 2005), and (b) individual differences in political interest and participation (Mirisola, Sibley, Boca & Duckitt, 2007), political and religious identity (Dallago, Cima, Roccato, Ricolfi & Mirisola, 2008; De Regt, 2012), and education (Achterberg & Houtman, 2009). These findings suggest that the motivational goals described in the DPM are closely related to the socio-political context. Along similar lines, recent research has also indicated that Openness to Experience moderates the relationship between dangerous worldview and RWA (Dallago, Mirisola & Roccato, 2012; Dallago & Roccato, 2010), and that particular authoritarian concerns can differ depending on socio-economic status (Napier & Jost, 2008). Future research could expand upon the contribution I make here (in showing the DPM is predictive of distinct policy domains) by also examining the moderating effects of socio-structural and individual factors. Some obvious candidates would be political sophistication or more extant social context effects (for example neighbourhood levels of crime or unemployment) as potential moderators of ideological consistency.
Consistent with Feldman and Johnston (2009), my findings indicate that measuring conservatism as a single left-right continuum may fail to identify critical yet potentially subtle differences in the prediction of policy attitudes. Elaborating upon Duckitt’s (2001) DPM, I demonstrate that policy support is represented across dual economic and social dimensions that are differentially predicted by two relatively independent attitude-formation processes. Demonstrating this differential prediction process in a narrow-bandwidth attitudinal domain also has important implications for the DPM itself. The DPM is a general framework outlining dual processes that lead to a variety of distinct outcomes, including, as I have shown here for the first time, specific and concrete social and economic policy attitudes that can have broad reaching effects across all of society.
Bridging comment

Having presented promising initial validation of the Dual Process Model (DPM) of ideology and prejudice (Duckitt, 2001) in a very large and representative New Zealand sample, I next sought to address a second validation criteria consistent with the first major premise of this thesis. In chapter two I will examine causal associations between the personality dimensions of the DPM and the ideological attitude dimensions, indexed by RWA and SDO. As well as broadly confirming hypothesised DPM patterns of association, these two chapters both address more specific lacunas in research examining this model. Chapter one demonstrated that the attitudes formation processes in the DPM determine specific attitude domains like policy support, and Chapter two aims to demonstrate that RWA and SDO do not reciprocally influence personality.

Chapter three

Big-Five personality prospectively predicts Social Dominance Orientation and Right-Wing Authoritarianism

Abstract

A full cross-lagged panel design examined the bidirectional effects of the Big-Five personality dimensions on Social Dominance Orientation (SDO) and Right-Wing Authoritarianism (RWA) over nine months ($N = 190$ undergraduates). Consistent with the Dual Process Model (DPM) of ideology and prejudice, SDO and RWA exhibited markedly different personality bases. Low Agreeableness predicted change in the motivational goal for group-based dominance and superiority (SDO), whereas Openness to Experience predicted change in the motivational goal for social cohesion and collective security (RWA). Extending previous longitudinal research, the study presented in this chapter indicates that the effect of personality on ideology is unidirectional, as RWA and SDO did not predict reciprocal prospective change in broad-bandwidth personality. These findings are consistent with a model in which relatively stable broad-bandwidth personality traits shape ideological attitudes over even relatively short time periods, and not the reverse.

Note. An earlier version of this chapter has been published in the journal Personality and Individual Differences and is hereafter referenced as follows:

Introduction

Duckitt (2001) argued that Social Dominance Orientation (SDO; Pratto et al., 1994) and Right-Wing Authoritarianism (RWA; Altemeyer, 1998) reflect dual aspects of a cognitive-motivational system underlying individual differences in prejudice. According to Duckitt, SDO and RWA are defined, not as immutable personality-type traits, but rather as ideological attitudes that express relatively independent motivational goals for group-based dominance and superiority (in the case of SDO), and social cohesion and collective security (in the case of RWA). Duckitt’s (2001) Dual Process Model (DPM) of ideology and prejudice posits that these two motivational goals are made chronically salient by schematic perceptions of the social world, which are in turn the result of a linear combination (and possible interaction) of sociostructural characteristics and stable individual differences in personality (see Duckitt & Sibley, 2010a, for a review). The model thus makes explicit predictions about the direction of causal effects between personality, ideology, and prejudice.

A good case is emerging from a number of independent longitudinal studies examining causal effects consistent with the DPM. SDO and RWA have been shown to exert cross-lagged effects on sexism (Sibley, Wilson & Duckitt, 2007a), generalised prejudice (Asbrock et al., 2010), and meritocracy and social policy attitudes over time (Sibley & Duckitt, 2010a). These and other findings generally suggest that, consistent with the DPM, SDO and RWA prospectively predict prejudice and related system-justifying ideologies (Duckitt & Sibley, 2009b). A picture of the variables that predict SDO and RWA longitudinally is also beginning to emerge. Consistent with the DPM, dangerous and competitive worldview have been shown to prospectively predict SDO and RWA over time (Sibley, Wilson & Duckitt, 2007b) and, of direct relevance to the current investigation, Agreeableness and Openness to
Experience have been shown to exert independent cross-lagged effects on SDO and RWA (Sibley & Duckitt, 2010b).

While these studies generally provide support for the hypothesised direction of effects in the model, there is less evidence ruling out alternative reverse pathways. In their assessment of the longitudinal effects of personality on SDO and RWA, Sibley and Duckitt (2010b) did not test a full cross-lagged panel design, and thus were unable to examine whether SDO and RWA might exert reciprocal cross-lagged effects on personality. Testing this alternative causal direction is important for the DPM, as a central tenet of the model is that personality should predict ideology and not the reverse. As Sibley and Duckitt (2010b) asserted, if SDO and RWA were shown to have equivalent, or possibly even stronger cross-lagged effects on broad-bandwidth dimensions of personality, this would raise serious questions about whether SDO and RWA are ideological-attitude variables produced by personality (Duckitt, 2001), or are more trait-like in nature as Altemeyer (1998) initially implied.

In this chapter I provide the first full cross-lagged design assessing the causal relationships between personality and ideological attitudes in the DPM. In doing so, I am able to examine potential reciprocal effects, predicting that SDO and RWA will not determine changes in personality over time.

*The dual process model*

Generalised prejudice may stem primarily from two distinct aspects of personality, characterised by low Openness to Experience in the case of RWA, and low Agreeableness in the case of SDO (Sibley & Duckitt, 2008; Ekehammar & Akrami, 2003). According to the DPM, individuals low in Agreeableness are more likely to pursue hedonistic and self-interested goals, displaying little concern for conflicting interests of others. Agreeableness should thus predict SDO as the tough-
minded, self-centred characteristics of those low in this personality trait should cause them to see the world as a socially competitive Darwinist jungle, in which might is right and winning is everything (Sibley & Duckitt, 2008). Moreover, those low in Agreeableness should tend to value power and be sensitive to situations signalling resource scarcity and competition. Individuals low in Openness to Experience, on the other hand, should be more likely to value clear and unambiguous moral prescripts and rules describing how the social world should operate (Sibley & Duckitt, 2008). People low in Openness to Experience should therefore be more sensitive to threats to social stability and security (see chapter seven) and consequently become increasingly motivated to seek group-based social cohesion, control and collective security as indexed by RWA.

Research examining the antecedents of ideology indicates that heightened exposure to societal threat increases RWA (Duckitt & Fisher, 2003) whereas heightened exposure to social competition and resource scarcity increases SDO (Guimond et al., 2003; Sibley, Wilson & Duckitt, 2007b). In contrast, research directly testing the hypothesised causal effects of personality on SDO and RWA remains limited and, when available, tends to rely on analyses of cross-sectional data (e.g., Duckitt, 2001; Sibley & Duckitt, 2009; Van Hiel, Cornelius, & Roets, 2007). Sibley and Duckitt (2010b) recently sought to address this shortcoming, providing a unique test of the hypothesised causal relationship between the personality and ideological DPM components using longitudinal data. Examining the cross-lagged effects of Big-Five personality (measured at Time 1) on RWA and SDO (measured at Time 1 and 2) over a 1-year period, low levels of Agreeableness increased competitive-driven motivations for group-based dominance and superiority (indexed by SDO) and low levels of Openness to Experience increased threat-driven
motivations for social cohesion and collective security (indexed by RWA). These effects controlled for the concurrent associations of personality with RWA and SDO at Time 1, and the within-measure longitudinal associations between RWA and SDO. Sibley and Duckitt (2010b) thus provided preliminary evidence consistent with the premise that personality predicts residualised change in SDO and RWA. Sibley and Duckitt (2010b) acknowledged that they were unable to rule out the possibility of bi-directional effects where SDO and RWA may predict personality over time, however. Reciprocal effects within the DPM have, in fact, been observed on at least one occasion; an unexpected reciprocal effect was identified in which RWA predicted changes in dangerous worldview over time (Sibley, Wilson & Duckitt, 2007b; see also recent evidence of this in Sibley & Duckitt, 2013). Openness to Experience has been consistently shown to relate directly to RWA independently of dangerous worldview whereas the association between Agreeableness and SDO is fully mediated by competitive worldview (Duckitt, 2001; Sibley & Duckitt, 2009). Changes in Openness to Experience over time therefore may result in increasingly authoritarian attitudes that must in turn be justified by viewing the social world as more dangerous rather than RWA determining levels of Openness to Experience (Sibley, Wilson & Duckitt, 2007b).

The present research

In this chapter, I examine the differential effects of Big-Five personality dimensions on SDO and RWA as predicted by the DPM in a longitudinal (9-month) cross-lagged panel design. Longitudinal data allows an assessment of potential causality that can only be inferred from cross-sectional designs. Moreover, I was able to extend prior research by testing a full cross-lagged design including personality and ideological attitude measures at both times to assess simultaneous change in both the
hypothesised direction (personality predicting SDO and RWA) and the reverse direction (SDO and RWA predicting changes in personality).

Consistent with Sibley and Duckitt (2010b), Agreeableness should exert a causal effect on the competition-driven motivation for group-based dominance and superiority as indexed by SDO, whereas low levels of Openness to Experience and high levels of Conscientiousness should causally affect RWA by heightening the threat-driven motivation for social cohesion and collective security. Extending their findings, I predict that neither SDO nor RWA will demonstrate a significant reciprocal effect on any of the Big-Five personality dimensions – any such effects would probably only manifest over a very long timeframe, or in response to dramatic environmental change (see Sibley & Duckitt, 2013).

Method

Participants and procedure

Data were collected from 475 participants (128 male, 347 female; \( M_{\text{age}} = 19.63, \ SD = 3.34 \)) at Time 1 (267 White/European, 39 Māori/Pacific Nations, 122 Asian, 34 Indian, 13 ‘other’). Participants in the Time 1 sample completed the questionnaire voluntarily at the end of undergraduate laboratory sessions. Participants were asked to list their email address on the last page of the survey so that they could be contacted to participate in an online follow-up questionnaire. All participants consented to being contacted and listed their email addresses.

The 191 people (42% of the initial Time 1 sample) included in the final analysis responded to the email follow-up questionnaire, administered nine months later (46 male, 81 female; 118 White/European, 13 Māori/Pacific Nations, 46 Asian, 13 Indian, 1 other). These data have not been previously published.
Materials

Identical measures were administered at both time points. SDO and RWA were each measured during both phases using eight balanced items from the respective scales developed by Sidanius and Pratto (1999) and Altemeyer (1998). The SDO scale included items such as, “Some groups of people are simply inferior to other groups” (pro-trait), and “No one group should dominate in society” (con-trait). The RWA scale contained items such as “The only way our country can get through the crisis ahead is to get back to our traditional values, put some tough leaders in power, and silence the troublemakers spreading bad ideas” (pro-trait), and “Our country needs free thinkers who will have the courage to defy traditional ways, even if this upsets many people” (con-trait). Items were rated on 7-point scales ranging from 1 (strongly disagree) to 7 (strongly agree) and were averaged so that higher scores represented higher levels of SDO and RWA.

Big-Five personality markers were each assessed using 6-item scales selected from the IPIP (Goldberg, 1999). Example items were as follows: “Talk to a lot of different people at parties” (portrait Extraversion), and “Am quiet around strangers” (con-trait Extraversion); “Sympathize with others’ feelings” (portrait Agreeableness), and “Feel little concern for others” (con-trait Agreeableness); “Like order” (pro-trait Conscientiousness), and “Often forget to put things back in their proper place” (con-trait Conscientiousness); “Have frequent mood swings” (pro-trait Neuroticism), and “Am relaxed most of the time” (con-trait Neuroticism); “Am full of ideas” (pro-trait Openness to Experience), and “Am not interested in abstract ideas” (con-trait Openness to Experience). Items were rated on a scale ranging from 1 (very inaccurate) through the midpoint of 4 (neither inaccurate nor accurate) to 7 (very accurate). Sibley and Duckitt (2009) reported that these shortened measures were all
strongly positively correlated with their 10-item counterparts developed by Goldberg (1999), with $r$s ranging from .93 to .97.

Cronbach’s alphas for all scales at both times are presented in Table 3.1. As shown, all measures evidenced acceptable internal reliability ($\alpha$s > .70).

Sample attrition

The sample of people who participated at both times ($n = 191$) did not differ significantly from those who participated during only the first testing phase ($n = 284$) in terms of ethnic group distribution ($\chi^2(4, n = 475) = 8.62, p = .07$). However, women (45.5% response rate) were more likely than men (25.8% response rate) to participate at both times ($\chi^2(1, n = 475) = 15.17, p < .05$). Importantly, comparison of the people who responded only at Time 1 with those who participated during both phases indicated that these two groups did not differ in Time 1 levels of SDO ($F(1,473) = 1.29, p = .26, \text{partial } \eta^2 < .01$), RWA ($F(1,473) = 2.39, p = .12, \text{partial } \eta^2 < .01$), or any of the Big-Five dimensions of personality ($Fs < 2.40, ps > .12$).

Results

Descriptive statistics and bivariate correlations between Time 1 and Time 2 measures of Big-Five personality, SDO and RWA are presented in Table 3.3. As shown, Extraversion ($r = .87$), Agreeableness ($r = .71$), Conscientiousness ($r = .79$), Neuroticism ($r = .78$), and Openness to Experience ($r = .78$) were all relatively stable over the nine-month period. SDO ($r = .74$) and RWA ($r = .79$) were also fairly stable. Correcting for attenuation due to scale reliability indicated that the measures were all highly stable and in many cases approached values as high as $r = .90$. 
Table 3.1. Correlations between Time 1 and Time 2 for the Big-Five personality traits, SDO, and RWA.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1 E</td>
<td>.38*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T1 A</td>
<td>-.05</td>
<td>.10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T1 C</td>
<td>-.14</td>
<td>-.07</td>
<td>-.09</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T1 N</td>
<td>.16*</td>
<td>.26*</td>
<td>.04</td>
<td>-.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T1 SDO</td>
<td>-.10</td>
<td>-.44*</td>
<td>.00</td>
<td>.01</td>
<td>-.18*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T1 RWA</td>
<td>-.01</td>
<td>.02</td>
<td>.06</td>
<td>-.03</td>
<td>-.26*</td>
<td>.12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T2 E</td>
<td>.87*</td>
<td>.36*</td>
<td>-.08</td>
<td>-.09</td>
<td>.19*</td>
<td>-.09</td>
<td>-.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T2 A</td>
<td>.32*</td>
<td>.71*</td>
<td>.05</td>
<td>-.12</td>
<td>.27*</td>
<td>-.37</td>
<td>.01</td>
<td>.34*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T2 C</td>
<td>-.09</td>
<td>.05</td>
<td>.79*</td>
<td>-.08</td>
<td>-.03</td>
<td>-.02</td>
<td>.02</td>
<td>-.05</td>
<td>.08</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T2 N</td>
<td>.10</td>
<td>.02</td>
<td>.78*</td>
<td>.06</td>
<td>-.04</td>
<td>.06</td>
<td>-.04</td>
<td>.02</td>
<td>-.03</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T2 SDO</td>
<td>.13</td>
<td>.24*</td>
<td>.01</td>
<td>-.02</td>
<td>.78*</td>
<td>-.14</td>
<td>-.29*</td>
<td>.16*</td>
<td>.34*</td>
<td>.05</td>
<td>.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T2 RWA</td>
<td>-.04</td>
<td>-.39*</td>
<td>.07</td>
<td>-.01</td>
<td>-.13</td>
<td>.74*</td>
<td>.11</td>
<td>-.06</td>
<td>-.41*</td>
<td>.07</td>
<td>-.06</td>
<td>-.12</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| M    | 4.24  | 5.59  | 4.60  | 3.88  | 5.51  | 2.49  | 3.27  | 4.31  | 5.56  | 4.47  | 4.06  | 5.24  | 2.46  | 3.23  |
| SD   | 1.13  | .82   | 1.12  | 1.09  | .85   | .97   | 1.15  | 1.33  | .92   | 1.12  | 1.13  | .88   | 1.00  | 1.12  |
| α    | .86   | .73   | .79   | .78   | .75   | .79   | .78   | .89   | .82   | .78   | .81   | .76   | .85   | .77   |

n = 191.*p < .05
Figure 3.1. Diagram outlining the path analysis used to test the cross-lagged effects of the Big-Five dimensions of personality, SDO and RWA on one another over nine months. Significant paths (with standardized path coefficients) between Time-1 and Time-2 measures are shown in bold. Path coefficients and significant tests for all cross-lagged paths are presented in Table 3.2 (predicting SDO and RWA) and Table 3.3 (predicting Big-Five personality).
This serves to emphasise the high levels of stability of personality and ideology over short time periods in this population. Considering the concurrent Time 1 associations, results indicated that Agreeableness exhibited a moderate negative concurrent association with SDO \((r = -.44)\), whereas Openness to Experience exhibited a moderate negative concurrent association with RWA at Time 1 \((r = -.26)\). Broad-bandwidth indices of Conscientiousness, Neuroticism, and Extraversion were not concurrently associated with either SDO or RWA. This pattern of effects was also replicated cross-sectionally at Time 2.

Extending these cross-sectional analyses, I tested whether Agreeableness predicted SDO and Openness to Experience predicted RWA using path analysis. I tested these predictions using a full cross-lagged panel design in which indices of all five dimensions of personality, SDO, and RWA were included at both time points. Thus, I tested not only the predicted paths, but also the opposing (non-predicted) paths (i.e., SDO and RWA predicting change in personality over time).

Cross-lagged paths testing longitudinal effects of Time 1 measures on Time 2 outcomes are represented by the diagonal paths in Figure 3.1. These cross-lagged paths were calculated simultaneously with the direct within-measure longitudinal paths (horizontal paths in Figure 3.1). A significant cross-lagged path indicates that a given variable at Time 1 predicted change in a given variable measured nine months later. I also included residual correlations between Time 2 measures (represented by the curved paths between Time 2 measures on the right hand side of the model). This provides a more conservative test of cross-lagged effects as it controls for any remaining associations between Time 2 measures when modelling the longitudinal effects. Standardized \((\beta s)\) and unstandardized \((B s)\) path coefficients and significance tests \((t\text{-values})\) for all cross-lagged paths tested in this model are presented in
Table 3.2. Path coefficients for the cross-lagged effects of Big-Five personality, RWA and SDO at Time 1 predicting SDO and RWA at Time 2.

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>β</th>
<th>SE</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Predicting T2 SDO</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T1 Extraversion</td>
<td>.07</td>
<td>.08</td>
<td>.04</td>
<td>1.54</td>
</tr>
<tr>
<td>T1 Agreeableness</td>
<td>-.17</td>
<td>-.14</td>
<td>.07</td>
<td>-2.27*</td>
</tr>
<tr>
<td>T1 Conscientiousness</td>
<td>.07</td>
<td>.08</td>
<td>.04</td>
<td>1.60</td>
</tr>
<tr>
<td>T1 Neuroticism</td>
<td>-.01</td>
<td>-.01</td>
<td>.05</td>
<td>-.12</td>
</tr>
<tr>
<td>T1 Openness to Experience</td>
<td>.02</td>
<td>.02</td>
<td>.06</td>
<td>.36</td>
</tr>
<tr>
<td>T1 SDO</td>
<td>.70</td>
<td>.69</td>
<td>.06</td>
<td>12.44*</td>
</tr>
<tr>
<td>T1 RWA</td>
<td>.03</td>
<td>.03</td>
<td>.04</td>
<td>.58</td>
</tr>
<tr>
<td><strong>Predicting T2 RWA</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T1 Extraversion</td>
<td>-.02</td>
<td>-.02</td>
<td>.04</td>
<td>-.44</td>
</tr>
<tr>
<td>T1 Agreeableness</td>
<td>-.05</td>
<td>-.03</td>
<td>.07</td>
<td>-.61</td>
</tr>
<tr>
<td>T1 Conscientiousness</td>
<td>-.00</td>
<td>.00</td>
<td>.04</td>
<td>-.01</td>
</tr>
<tr>
<td>T1 Neuroticism</td>
<td>-.08</td>
<td>-.07</td>
<td>.05</td>
<td>1.67</td>
</tr>
<tr>
<td>T1 Openness to Experience</td>
<td>-.15</td>
<td>-.11</td>
<td>.06</td>
<td>-2.31*</td>
</tr>
<tr>
<td>T1 SDO</td>
<td>-.05</td>
<td>-.04</td>
<td>.06</td>
<td>-.87</td>
</tr>
<tr>
<td>T1 RWA</td>
<td>.75</td>
<td>.77</td>
<td>.05</td>
<td>16.57*</td>
</tr>
</tbody>
</table>

*p < .05

Table 3.2 (predicting SDO and RWA) and Table 3.3 (predicting Big-Five dimensions of personality). Note that the model was saturated, thus fit indices are irrelevant in this context. Note also that the coefficients presented in these two tables were all calculated simultaneously, as represented in Figure 3.1.

I also examined unsaturated models in which only the predicted causative Big-Five dimension (Openness to Experience or Agreeableness) was included, and RWA and SDO were controlled for at Time 1. Results indicated that Openness to Experience still had a cross-lagged effect on RWA, however the cross-lagged effect of Agreeableness on SDO was marginal when not also controlling for the other Big-Five dimensions. Controlling for the other Big-Five dimensions allowed me to derive
a more pure estimate of the cross-lagged effect of Agreeableness independent of other aspects of personality and thus detect the effect.

As reported in Table 3.2, Agreeableness exerted a significant cross-lagged effect on SDO measured nine months later ($\beta = -.14, t = -2.27, p = .02$); none of the other Big-Five dimensions predicted change in SDO. Also as predicted, Openness to Experience exerted a significant cross-lagged effect on RWA ($\beta = -.11, t = -2.31, p = .02$) and, once again, no other dimensions of personality predicted change in RWA longitudinally. These results support the proposed differential causal effects of Agreeableness and Openness to Experience on SDO and RWA. A low level of Agreeableness predisposes people to become higher in SDO over time, whereas a low level of Openness to Experience predisposes people to become higher in RWA over time.

My model also allowed a full test of the reverse causal paths leading from Time 1 indices of SDO and RWA to Time 2 measures of personality. In addition, the model allowed me to examine the possible effects of Big-Five personality traits on one another over this same time period. As shown in Table 3.3, SDO did not predict change in Agreeableness over time, nor did it predict change in any of the other dimensions of personality. Likewise, RWA did not predict change in Openness to Experience over time (although this effect did approach significance; $\beta = -.07, t = -1.95, p = .06$). The cross-lagged effects of RWA on the other four Big-Five dimensions were also non-significant. These results provide good evidence that the effects of Agreeableness and Openness to Experience on respective levels of SDO and RWA are unidirectional, or at the least (in the case of RWA), are more substantial in magnitude than effects in the opposing direction.
Finally, it is also noteworthy that changes in the different Big-Five dimensions of personality were almost entirely independent of one another. Of all the possible cross-lagged effects of the Big-Five dimensions on one another (20 possible paths), only one significant effect was observed: Agreeableness predicted increased levels of Neuroticism over time ($\beta = .14$, $t = 2.53$, $p = .01$).

Discussion

This study tested a full cross-lagged model assessing the effects of the Big-Five dimensions of personality, SDO, and RWA on one another over a 9-month period. I observed good support for the predicted cross-lagged effects, with Agreeableness predicting change in SDO, and Openness to Experience predicting change in RWA. These results replicated the pattern of cross-lagged effects observed by Sibley and Duckitt (2010b), and extended this prior research by demonstrating that ideological attitudes generally do not reciprocally predict personality over time. This manuscript was the first published study (i.e., Perry & Sibley, 2011b) of which I am aware to test a model of the relations between personality, SDO and RWA using a full cross-lagged design. This study provides good evidence for unidirectional causal effects of personality on ideology; of course, two-wave longitudinal designs do not allow me to prove these relationships, but they do provide convergent evidence in support of the predicted effects.

Duckitt (2001) based his original rationale for the causal direction of effects in which personality determines ideology in the DPM on two key theoretical arguments. First, dimensions of ideology, such as SDO and RWA, and prejudice toward other groups appear to form around mid- to late-adolescence as they generally can only be
Table 3.3 Path coefficients for the cross-lagged effects of Big-Five dimensions of personality, RWA and SDO at Time 1 predicting the Big-Five dimensions at Time 2.

<table>
<thead>
<tr>
<th></th>
<th>Predicting T2 Extraversion</th>
<th>Predicting T2 Agreeableness</th>
<th>Predicting T2 Conscientiousness</th>
<th>Predicting T2 Neuroticism</th>
<th>Predicting T2 Openness to Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$B$</td>
<td>$\beta$</td>
<td>$SE$</td>
<td>$t$</td>
<td>$B$</td>
</tr>
<tr>
<td>T1 Extraversion</td>
<td>.92</td>
<td>.85</td>
<td>.04</td>
<td>21.56*</td>
<td>.04</td>
</tr>
<tr>
<td>T1 Agreeableness</td>
<td>.07</td>
<td>.04</td>
<td>.07</td>
<td>.97</td>
<td>.70</td>
</tr>
<tr>
<td>T1 Conscientiousness</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
<td>.07</td>
</tr>
<tr>
<td>T1 Neuroticism</td>
<td>-.05</td>
<td>-.04</td>
<td>.04</td>
<td>-.81</td>
<td>-.02</td>
</tr>
<tr>
<td>T1 SDO</td>
<td>-.07</td>
<td>-.08</td>
<td>.05</td>
<td>-1.36</td>
<td>.03</td>
</tr>
<tr>
<td>T1 RWA</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
<td>.09</td>
</tr>
</tbody>
</table>

* p < .05
reliably assessed from this stage in life onwards (Altemeyer, 1998). Conversely, personality appears to form earlier in life and can be reliably assessed at a considerably younger age (Block & Block, 2006). Second, D’Andrade (1992) and Strauss (1992) proposed a theoretical distinction between personality and subsequent ideological attitudes in which childhood socialisation produces particular chronic personality dispositions that could lead to prejudice and ethnocentrism. Duckitt (2001) incorporated these personality dimensions, one characterised by punitive, strict and harsh socialisation and the other by unaffectionate socialisation, into the initial DPM as the trait adjective personality scales social conformity and tough-mindedness.

The hypothetical causal sequence, as I have outlined, is one in which personality dispositions facilitate the adoption of particular social worldviews through a heightened experience of worldview-consistent socialisation and information processing. In turn, worldviews and personality dispositions combine to produce particular motivational goals that are indexed by the ideological attitude measures SDO and RWA. Though there is some evidence for reciprocal effects of RWA on dangerous worldview beliefs (Sibley, Wilson & Duckitt, 2007b), the process underlying the formation of prejudice should generally be unidirectional where relatively slow and infrequently changing socio-structural conditions and personality dispositions produce more temporal salience effects (worldviews) and attitudinal responses (ideology). Theoretically it is unlikely that in turn these relatively temporal components would cause significant variance in personality which theoretically should be more likely to change in response to more long-term chronic exposure to different environments (but see Sibley & Duckitt, 2013 for a recent alternative perspective).

*Summary and conclusions*
Overall, ideological attitudes do not appear to reciprocally influence personality in the present study, nor is this prospect supported by cross-sectional modelling of the reverse paths in previous work (Ekehammar et al., 2004; Duriez & Soenens, 2006). I therefore find good support for the causal effects between these two components of the DPM as predicted. Most importantly, I was able to test for and discount potential reciprocal effects in support of the argument that SDO and RWA are motivational-goal based ideological attitude variables produced by personality traits, rather than being more trait-like in nature themselves as was once generally assumed.
Bridging comment

Ruling out a reciprocal pattern of influence in which RWA and SDO predict personality traits, the chapter contributes to the growing corpus of longitudinal research on the DPM. I anticipate more detailed longitudinal studies that will further contribute to an understanding of this pattern of influence, for example by including situational difference variables (e.g., Sibley & Duckitt, 2013). Offering an alternative approach, the following sections of my thesis contribute to understandings of how personality operates on subsequent beliefs about the social world through experimental manipulations of social worldviews (Section 3). First, to enable appropriate manipulations of the DPM social worldview dimensions, I develop a new frequency estimation measure of this component in Section 2.
SECTION 2
WHAT ABOUT WORLDVIEWS? CONCERNS AND RESOLUTION

This section represents a more concerted effort to address recent issues with the social worldview component of the DPM in particular. As I have noted, this component has probably garnered the least attention in research to date and has not been as systematically validated compared with ideological attitudes and personality. These latter components of the DPM have a longer history in psychology, stemming from a long cannon of research beginning in the middle of the 20th century. Social worldviews are comparatively more variously defined and employed as I established in the introductory chapter of this thesis. A compelling criticism has arisen recently, that the DPM worldview measures may contain ideological item content that overlaps with RWA and SDO, calling into question whether these components of the DPM are independent. The research presented in Section 2 therefore broadly aims to (a) provide a systematic meta-analysis of the DPM worldview measures in the literature and (b) present updated and novel measures of dangerous and competitive social worldviews that address possible content overlap and frame worldviews as schematic beliefs about what other people are like in general, consistent with the theoretical basis from which these measures were originally drawn.

Chapter four

Dangerous and competitive worldviews: A meta-analysis of their associations with social dominance orientation and right-wing authoritarianism

Abstract

A meta-analysis of 46 studies ($N = 12,939$) examined the cross-sectional associations between dangerous worldview and Right-Wing Authoritarianism (RWA), and between competitive worldview and Social Dominance Orientation (SDO). These dual associations were asymmetric; the dangerous worldview-RWA partial-correlation was moderate ($r = .37$), whereas the competitive worldview-SDO partial-correlation was stronger in size ($r = .53$). The results support a DPM perspective and indicate that RWA and SDO are consistently linked with distinct social schemas of the social world as dangerous and threatening (versus safe and secure), and competitive and cut-throat (versus co-operative and characterised by mutually beneficial exchange). I present a refined competitive worldview scale that reduces content overlap and provides a more accurate estimate of association between competitive worldview and SDO.

Note. An earlier version of this chapter has been published in the Journal of Research in Personality and is hereafter referenced as follows:

Introduction

The Dual Process Model of ideology and prejudice (DPM; Duckitt, 2001) identifies dual threat- and competition-based cognitive-motivational processes that determine individual differences in prejudice. According to the model, dual dimensions of prejudice proneness are reliably indexed using measures of Right-Wing Authoritarianism (RWA; Altemeyer, 1981) and Social Dominance Orientation (SDO; Pratto et al., 1994). The DPM further asserts that SDO and RWA are not personality traits, but rather two dimensions of ideological attitudes that express relatively independent motivations for group-based dominance and superiority in the case of SDO, and social cohesion and collective security in the case of RWA. Activation of these motivational goals is influenced by differences in personality, and beliefs about the social world as dangerous and threatening (versus safe and secure), and as competitive and cut-throat (versus co-operative and characterised by mutually beneficial exchange). According to the DPM, differences in personality are derived from individual socialisation experiences. These influences probably interact with more contemporary socio-environmental cues that some individuals attend to more or less so than others depending upon their personality (Duckitt, 2001; Duckitt et al., 2002).

The motivational goal process in general, and the DPM worldview concept in particular, were drawn from an earlier theoretical construct developed by D’Andrade (1992), Strauss (1992), and Ross (1993). Social attitudes, these scholars suggested, are an expression of motivational goals – motivating beliefs that have been made salient for the individual by the activation of specific social schemas. These schemas can be seen as forming coherent social worldviews – relatively stable interpretations or beliefs about the social world and other people in that world (Ross, 1993). There is
a variety of evidence consistent with the basic premises of the DPM relating to the role and function of social worldviews, showing (a) that perceptions of the social world as competitive should predict SDO, and (b) that perceptions of the social world as dangerous and threatening should predict RWA. For example, a longitudinal panel study by Sibley, Wilson and Duckitt (2007a) found significant cross-lagged effects in support of these hypothesised causal pathways between social worldviews at time one and ideological attitudes five months later.

Another highly informative, but little known, example of the worldview socialisation process was provided by Robertson (2006) in his unpublished doctoral dissertation. Proposing that fundamentalist religious socialisation contributes to the development of a threatening worldview, Robertson (2006) reported that, in a large community sample of Christian New Zealanders, an emphasis on religion in childhood was positively related to a dangerous worldview which in turn predicted RWA. Religious socialisation thus emphasises the notion that the world is becoming more dangerous, with these experiences leading people to form stable perceptions of the world as threatening and unpredictable. This worldview triggers a motivation for religious group security and social control, which in turn leads to prejudice toward groups seen as threatening their safety and social values.

In this chapter I present a meta-analysis of associations between the worldview and ideology components of the DPM. That is, the respective associations of dangerous and competitive worldviews with RWA and SDO. A substantial research literature investigating the relationships between different components of the DPM has often included these worldview constructs, modelled as mediating factors linking individual differences in personality to ideological attitudes captured by SDO and RWA (these are reviewed in detail in chapter one). Relative to other components
of the DPM, however, worldview beliefs tend not to be the focus of such studies and as such are probably not as systematically or thoroughly understood as they could otherwise be (but see Duckitt & Fisher, 2003; Federico et al., 2009; Sibley, Wilson & Duckitt, 2007a). An exhaustive meta-analysis of this relationship in the DPM remains lacking and would contribute to the literature by providing a more conclusive assessment of the role of worldviews (as they relate to ideology and prejudice) than has been previously available from stand-alone studies. Here I aim to make such a contribution.

An asymmetry in the worldview-ideology association

Although never stated explicitly, the DPM implies that competitive worldview should predict change in SDO at a comparable rate to the extent dangerous world predicts change in RWA. However, a possible asymmetry in the associations between worldviews and ideological attitudes in the DPM was first highlighted by Van Hiel, Cornelis and Roets (2007). These authors reported that the correlation between competitive worldview and SDO was markedly stronger than that between dangerous worldview and RWA across undergraduate and community samples. On the one hand, this might occur because of unique study or sample factors that differentially impact the extent to which dangerous versus competitive worldview beliefs lead to changes in RWA and SDO. Another possibility, however, is that the asymmetry results from possible contamination due to differences in item content overlap between the worldview measures and their respective ideological attitude indexes.

Van Hiel, Cornelis and Roets (2007) extracted two separate dimensions, representing worldviews and ideological attitudes, for each of the dual pathways. Items loading on the counter-dimensional factor (e.g., a competitive worldview item loading on the SDO factor) or with a weak loading on their intended factor were then
discarded from reanalysis. Critically, discarding problematic items substantially reduced the association between competitive worldview and SDO, but not between dangerous worldview and RWA. Van Hiel, Cornelis and Roets (2007) concluded that content overlap between items in the competitive worldview and SDO scales may therefore have been artificially inflating the relationship between these two components of the DPM beyond the more reasonable and valid associations observed between dangerous worldview and RWA.

Is this asymmetry reliable across samples and contexts? The current meta-analysis assesses an asymmetry hypothesis across all studies that assess these components of the DPM. If asymmetry is highly consistent, this would concur with Van Hiel, Cornelis and Roets’ (2007) concerns that the worldview and ideological attitude measures in the DPM may not be sufficiently independent from one another, and would support their proposal that the worldview constructs ought to be re-operationalised. If, however, the association between competitive worldview and SDO is not consistently stronger across samples, my meta-analysis may be able to shed light on the study and sample factors that determine the asymmetrical relationship.

**Overview and aims of the meta-analysis**

Despite the substantial research literature assessing the relationships of dangerous and competitive worldviews with RWA and SDO as components in a process underlying prejudice, much of the research is unpublished and, moreover, many of the published studies do not report the full correlations between all measures. A systematic empirical review of this research remains lacking, and is required in order to provide a coherent and thorough picture of the relationship between worldview beliefs and ideological attitudes. I aim to address this deficit, presenting a
meta-analysis of the associations between dangerous worldview, competitive worldview, RWA and SDO. Meta-analysis provides an indication of the average effect sizes between the DPM worldview indexes, SDO and RWA across all available research in the area. Further to this, meta-analytic assessment of effect sizes from multiple independent studies will allow me to examine possible moderating factors (differences between studies) that might influence the degree to which worldview beliefs correlate with SDO and RWA.

My primary aim is to determine the average effect sizes between worldviews and ideological attitudes based on prior research. Consistent with a DPM perspective, I expected that (a) dangerous worldview would predict RWA and weakly predict SDO and (b) competitive worldview would predict SDO and weakly predict RWA. I note that these weaker effects should only reach significance given the power of my very large meta-analytic sample size however. Consistent with Van Hiel, Cornelis and Roets (2007), I also hypothesise an asymmetry in which the relationship between competitive worldview and SDO should appear to be consistently and substantially stronger than that between dangerous worldview and RWA across samples. I aim to determine the reliability of this effect across all available samples to ascertain whether this is something specific to certain studies (including Van Hiel, Cornelis & Roets, 2007), or represents a more spurious phenomenon related to construct design. If this is the case, then a refined worldview measure would be warranted – an issue I return to later in the discussion and subsequent chapters in this section of my thesis.

**Moderating factors**

I examined the extent to which associations between worldviews and ideological attitudes were consistent (or varied) across a number of sample
characteristics: publication status, student versus adults samples, number of scale items, and cross-national differences in income inequality.

Publication bias. Meta-analytic research often finds a publication bias in which published studies tend to report stronger effects (Rosenthal, 1979). I thus sought to examine (and control for) potential differences in effect sizes between worldview beliefs and RWA and SDO across published and unpublished studies.

Number of scale items. Duckitt et al. (2002) originally developed 10 items assessing dangerous worldview beliefs and 20 items assessing competitive worldview beliefs. Although there is a general consensus regarding these two dimensions of worldviews, studies routinely use various shortened versions of these scales. This is also the case for RWA and SDO. I therefore controlled for potential differences in effect sizes between studies resulting from the number of scale items included. Considering the generally high reliability of these dimensions, I expect similar effect sizes regardless of the number of scale items, however. Any differences should be in the magnitude rather than direction of effects.

Undergraduate students versus community samples. As is often the case in social psychological research, the majority of studies measuring worldview beliefs and ideological attitudes sampled undergraduate student populations, limiting the ability to generalise results from these studies to non-student populations. Although schematic worldview beliefs are presumably relatively stable over time, the process by which worldviews are formed and in turn influence ideological attitudes should also be cumulative to an extent, with different critical developmental periods in times of chronic and powerful situational influence (for example, see Newcomb’s Bennington College study, 1943/1967); this suggests potential for changes across the life span. Duckitt (2001) also reported a significant effect of age on the association.
between RWA and SDO where the two are consistently more closely associated in older participants. The implication here is that competitive and dangerous worldviews may become more strongly associated as people are exposed to consistent socialisation experiences.

Income Inequality. My sample enabled me to examine differences (or consistencies) in the magnitude of associations between worldviews and ideological attitudes across nations as well as across sample characteristics. The GINI index is a measure of the inequality of personal incomes in a nation and ranges from 0 (where everyone has the same income) to 1 (where one person has all the income and everyone else has no income). The global GINI coefficient is thought to be around .60 to .70 and has been steadily increasing (i.e., becoming more unequal) in most countries since the 1980s (United Nations Development Program, 2010).

Averaged indexes for the years 2000-2010 were taken from the Human Development Report of the United Nations (United Nations Development Program, 2010) using data for each of the seven countries included in my meta-analysis. Income inequality has been shown to have particularly strong and pervasive effects on a broad range of social and psychological indicators (Wilkinson & Pickett, 2009). Typically, more unequal societies exhibit more prevalent social problems, abuse, violence and other negative social indicators. Recent meta-analyses including RWA and SDO do not support a direct link between these attitude indices and income inequality, however. In Cohrs and Stelzl (2010), the GINI index was not correlated with the effect of either RWA or SDO on attitudes toward immigrants (when outlying countries were controlled for). And in Fischer, Hanke and Sibley (2012) the GINI index did not predict national levels of SDO overall. Mean levels aside, I do not expect that greater income inequality in a society (as measured by the GINI index)
will moderate *associations* between dangerous worldview and RWA, or competitive worldview and SDO, across nations either.

**Method**

*Literature search*

My literature search was conducted using the PsychINFO and SCOPUS online databases and the Google Scholar internet search engine and was finalized in early 2010. When searching for relevant articles, I combined terms such as *social worldviews, schemas, beliefs, dangerous, competitive, jungle, Right-Wing Authoritarianism, RWA, authoritarianism, Social Dominance Orientation, SDO, dominance, dual process model* and *DPM*. I also reviewed articles citing the original DPM papers by Duckitt (2001) and Duckitt et al. (2002). In addition, I contacted numerous researchers who had previously published research on the DPM, or of whom I knew to be currently conducting research in the area, and requested unpublished or in-press manuscripts and data. I also posted a request on the Society for Personality and Social Psychology *SPSP Discuss* electronic mailing list. All studies included in my analysis used a recognizable measure of one or both (dangerous and competitive) DPM worldview dimensions (Duckitt, 2001) and included (a) a full or shortened version of the SDO scale developed by Pratto et al. (1994), or (b) a full or shortened set of items from one of Altemeyer’s (1981, 1988, 1996, 1998) measures of RWA.

*Study characteristics*

As shown in Table 4.1, *k* = 46 studies with a total of *N* = 12,939 participants were identified. The majority of studies were unpublished (*k* = 25 [54.3%]), and the remaining studies (*k* = 21 [45.7%]) were published or in-press (note that this included...
reanalyses of published data in which the relevant correlations had not been reported). All 46 studies included both a measure of dangerous worldview beliefs and RWA. Thirty-nine studies (84.8%) contained a measure of competitive worldview beliefs and 41 studies (89.1%) contained a measure of SDO. Of these, 37 studies (80.4%) contained all four measures of interest. Forty-four studies (95.7%) assessed the worldview factors using the measures developed for the DPM (Duckitt, 2001) and only two studies (4.3%) used ad-hoc, single-item indices (in both cases these were reportedly modelled on the DPM worldview component definitions). The majority of studies were conducted in New Zealand ($k = 23 \ [50.0\%]$), the remainder were conducted in a further six countries including Belgium ($k = 7 \ [15.2\%]$), the USA ($k = 7 \ [15.2\%]$), Germany ($k = 4 \ [8.7\%]$), Italy ($k = 2 \ [4.3\%]$), South Africa ($k = 2 \ [4.3\%]$), and Canada ($k = 1 \ [2.2\%]$). The majority of studies assessed undergraduate student participants ($k = 33 \ [71.7\%]$), and the remainder ($k = 13 \ [28.3\%]$) assessed adult (i.e., non-undergraduate student) populations.

**Data analysis**

I followed the meta-analytic procedures outlined by Hedges and Olkin (1985) and Lipsey and Wilson (2001). Bivariate correlations between measures of worldview beliefs and SDO and RWA were transformed to Fisherised $z$-score effect sizes using the formula $z^r = 0.5 \log_e \left[ \frac{(1 + r)}{(1 - r)} \right]$ and then weighted by their inverse variance ($n_i - 3$, where $n_i$ is the number of participants in study $i$) and averaged before being converted back to $r$ using the formula $r = \left( e^{2z} - 1 \right) / \left( e^{2z} + 1 \right)$. According to Cohen’s (1988) widely accepted effect size conventions, $r$ values less than or approaching .10 represent weak effects. Only bivariate associations greater than .10 were therefore treated as noteworthy.
To determine the extent to which associations of each worldview dimension with RWA and SDO might be due to shared association with the other worldview dimension, I calculated partial correlations controlling for the other dimension in each case. For example, when examining the association between dangerous worldview beliefs and RWA (with SDO also included in the model), I calculated partial correlations between these two variables that controlled for their shared association with competitive worldview beliefs. Partial correlations were calculated using the formula $r_{12,3} = \frac{r_{12} - (r_{13} \cdot r_{23})}{\sqrt{(1 - r_{13}^2)} \sqrt{(1 - r_{23}^2)}}$. Meta-analyses of partial correlations were conducted using the same procedures as those assessing bivariate correlations (outlined above) but with the inverse variance adjusted to reflect the reduced degrees of freedom (e.g., inverse variance = $n - 4$).

To examine whether variation in effect sizes was greater than could be attributed solely to chance, I conducted initial homogeneity tests using a fixed-effects model: $Q_t = \sum \text{Inverse Variance}_i (z_i - \text{Mean } z_r)^2$. Here $Q_t$ is distributed as a $\chi^2$ statistic with $k - 1$ degrees of freedom and $k$ is the number of studies. A significant $Q_t$ statistic would thus indicate that there was significantly more variation in an effect size than expected by chance and that this variation might be attributable to systematic differences across studies. I examined whether such variation could be attributed to cross-study differences using a combination of inverse-variance-weighted one-way analysis of variance and inverse-variance-weighted regression analysis.

For both methods of analysis, I adopted a mixed-effects model using an iterative method based on maximum likelihood (Raudenbush, 1994). This approach allowed me to model the variance in effect sizes beyond that expected by chance or sampling error deriving from two components: i.e., distinguishing variance attributable to systematic between-study differences and variance deriving from other
(essentially) random sources. Much like a fixed-effects model, this method of analysis allowed me to examine the extent to which effect sizes were moderated by between-study differences. However, the model also includes a random component representing the effect of unmeasured (and, as Lipsey & Wilson, 2001 noted, potentially unmeasurable) random effects. Mixed-effects models thus provide a more conservative test of cross-study differences than fixed effects models and are generally recommended in cases, such as this one, in which effect sizes are generally not homogeneous. Mixed-effects models are more accurate in such cases because they are less prone to Type I errors (Overton, 1998). I conducted these analyses using the macros provided by Lipsey and Wilson (2001).

Results

**Bivariate and partial correlations**

A summary of the bivariate and partial correlations between dangerous and competitive worldview measures, SDO and RWA for each study is presented in Table 4.1. Coefficients in parentheses represent the partial associations between each worldview dimension and RWA or SDO controlling for the other worldview dimension. Table 4.2 presents the average bivariate and partial correlations between the worldview factors, SDO and RWA. Average weighed $r$ values, lower and upper 95% confidence intervals (CIs), homogeneity statistics ($Q_t$), number of studies ($k$), and total number of participants ($n$) for analyses of the bivariate and partial associations are presented in Table 4.2.

As shown in Table 4.2, meta-analytic averages indicated that dangerous worldview was positively correlated with RWA ($r = .41$), with a moderately strong effect size. Dangerous worldview was also positively correlated with SDO, although
this effect was smaller in magnitude \((r = .17)\). Competitive worldview, in contrast, was positively and strongly correlated with SDO \((r = .55)\), and more weakly positively correlated with RWA \((r = .19)\). In addition, dangerous worldview and competitive worldview were positively correlated with one another \((r = .24)\), with a moderate effect size. RWA and SDO were also moderately positively correlated with one another \((r = .31)\).

Also shown in Table 4.2, effects remained comparable when examining partial correlations of each worldview dimension with RWA and SDO, controlling for the other worldview dimension in each case. As shown in Figure 4.1, meta-analytic averages indicated that dangerous worldview was moderately positively correlated with RWA \((r = .37)\) when controlling for competitive worldview. Likewise, competitive worldview was strongly positively correlated with SDO \((r = .53)\) when controlling for dangerous worldview. Partial correlations also indicate that dangerous worldview was weakly positively correlated with SDO \((r = .08)\), whereas competitive worldview was weakly correlated with RWA \((r = .11)\).

The fixed-effects homogeneity tests reported in Table 4.2 indicated that there was significantly more variation in the bivariate associations of both worldview dimensions with SDO and RWA than expected by chance (assuming that such variation is not random). Variation was considerably pronounced in all associations. As noted earlier, these significant \(Q\) statistics suggest that there were systematic differences across studies that might moderate the association of worldviews with SDO, RWA and prejudice. I thus tested mixed-effects models (which included both a fixed and random component) to assess potential sources of variation.
Table 4.1. Sample details and correlation coefficients for all studies included in the meta-analysis of DPM worldview measures (DW and CW), RWA and SDO.

<table>
<thead>
<tr>
<th>Reference</th>
<th>Sample Details</th>
<th>No. items in scales</th>
<th>Nation</th>
<th>Publication Status</th>
<th>Sample Size</th>
<th>SD-O (DW)</th>
<th>CW (DW)</th>
<th>CW-SO</th>
<th>CW-RWA</th>
<th>DW-RWA</th>
<th>DW-SO</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Altemeyer (1998)</td>
<td>Undergrad</td>
<td>14</td>
<td>30</td>
<td>14</td>
<td>Canada</td>
<td>Pub.</td>
<td>354</td>
<td>.22</td>
<td>.49</td>
<td>.00</td>
<td></td>
</tr>
<tr>
<td>2. Asbrock (2010)</td>
<td>Undergrad</td>
<td>12</td>
<td>11</td>
<td>4</td>
<td>Germany</td>
<td>Unpub.</td>
<td>42</td>
<td>.39</td>
<td>.09</td>
<td>.56</td>
<td>.08</td>
</tr>
<tr>
<td>3. Asbrock &amp; Fritzsche (2010, Sample 1)</td>
<td>Undergrad</td>
<td>12</td>
<td>11</td>
<td>1</td>
<td>Germany</td>
<td>Unpub.</td>
<td>144</td>
<td>.53</td>
<td>.22</td>
<td>.15</td>
<td>.18</td>
</tr>
<tr>
<td>4. Asbrock &amp; Fritzsche (2010, Sample 2)</td>
<td>Undergrad</td>
<td>11</td>
<td>4</td>
<td>4</td>
<td>Germany</td>
<td>Unpub.</td>
<td>186</td>
<td>.19</td>
<td>.36</td>
<td>.33</td>
<td>.27</td>
</tr>
<tr>
<td>5. Cohrs (2005)</td>
<td>Undergrad</td>
<td>12</td>
<td>11</td>
<td>1</td>
<td>Germany</td>
<td>Pub.</td>
<td>133</td>
<td>.30</td>
<td>.44</td>
<td>.11</td>
<td>.13</td>
</tr>
<tr>
<td>6. Crowson (2009)</td>
<td>Undergrad</td>
<td>16</td>
<td>30</td>
<td>14</td>
<td>USA</td>
<td>Pub.</td>
<td>242</td>
<td>.45</td>
<td>.18</td>
<td>.55</td>
<td>.53</td>
</tr>
<tr>
<td>7. Dallago et al. (2012)</td>
<td>Adult</td>
<td>14</td>
<td>20</td>
<td>16</td>
<td>Italy</td>
<td>Unpub.</td>
<td>280</td>
<td>.16</td>
<td>.74</td>
<td>.42</td>
<td>.21</td>
</tr>
<tr>
<td>8. Derrick &amp; Murray (2006)</td>
<td>Undergrad</td>
<td>14</td>
<td>11</td>
<td>1</td>
<td>USA</td>
<td>Unpub.</td>
<td>88</td>
<td>.57</td>
<td>.08</td>
<td>.07</td>
<td>.09</td>
</tr>
<tr>
<td>9. Dhont &amp; Van Hiel (2009)</td>
<td>Adult</td>
<td>11</td>
<td>13</td>
<td>13</td>
<td>Belgium</td>
<td>Unpub.</td>
<td>90</td>
<td>.47</td>
<td>.47</td>
<td>.32</td>
<td>.23</td>
</tr>
<tr>
<td>10. Duckitt (2000)</td>
<td>Adult</td>
<td>6</td>
<td>8</td>
<td>6</td>
<td>NZ</td>
<td>Unpub.</td>
<td>179</td>
<td>.45</td>
<td>.32</td>
<td>.60</td>
<td>.58</td>
</tr>
<tr>
<td>11. Duckitt (2001, Study 2)</td>
<td>Undergrad</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>NZ</td>
<td>Pub.</td>
<td>497</td>
<td>.37</td>
<td>.45</td>
<td>.45</td>
<td>.15</td>
</tr>
<tr>
<td>12. Duckitt (2001, Study 3)</td>
<td>Undergrad</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>NZ</td>
<td>Pub.</td>
<td>377</td>
<td>.40</td>
<td>.11</td>
<td>.60</td>
<td>.59</td>
</tr>
<tr>
<td>13. Duckitt (2001, Study 4)</td>
<td>Undergrad</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>South Africa</td>
<td>Pub.</td>
<td>215</td>
<td>.21</td>
<td>.19</td>
<td>.58</td>
<td>.56</td>
</tr>
<tr>
<td>15. Duckitt et al. (2002, Study 1)</td>
<td>Undergrad</td>
<td>12</td>
<td>20</td>
<td>10</td>
<td>USA</td>
<td>Pub.</td>
<td>146</td>
<td>.21</td>
<td>.03</td>
<td>.55</td>
<td>.55</td>
</tr>
<tr>
<td>16. Duckitt et al. (2002, Study 2)</td>
<td>Undergrad</td>
<td>10</td>
<td>14</td>
<td>10</td>
<td>South Africa</td>
<td>Pub.</td>
<td>231</td>
<td>.21</td>
<td>.19</td>
<td>.58</td>
<td>.56</td>
</tr>
<tr>
<td>17. Federico et al. (2010, Sample 1)</td>
<td>Undergrad</td>
<td>16</td>
<td>12</td>
<td>13</td>
<td>USA</td>
<td>Unpub.</td>
<td>1065</td>
<td>.29</td>
<td>.23</td>
<td>.63</td>
<td>.62</td>
</tr>
<tr>
<td>18. Federico et al. (2010, Sample 2)</td>
<td>Undergrad</td>
<td>16</td>
<td>12</td>
<td>13</td>
<td>USA</td>
<td>Unpub.</td>
<td>434</td>
<td>.25</td>
<td>.04</td>
<td>.51</td>
<td>.51</td>
</tr>
<tr>
<td>20. Jager &amp; Duckitt (2009, Study 2)</td>
<td>Undergrad</td>
<td>10</td>
<td>6</td>
<td>6</td>
<td>NZ</td>
<td>Pub.</td>
<td>136</td>
<td>.33</td>
<td>.41</td>
<td>.40</td>
<td>.06</td>
</tr>
<tr>
<td>21. Mirisola, Di Stefano et al. (2007)</td>
<td>Adult</td>
<td>8</td>
<td>14</td>
<td>20</td>
<td>Italy</td>
<td>Pub.</td>
<td>177</td>
<td>.34</td>
<td>.11</td>
<td>.36</td>
<td>.36</td>
</tr>
<tr>
<td>22. Perry, Sibley &amp; Duckitt (2013a)</td>
<td>Undergrad</td>
<td>16</td>
<td>30</td>
<td>10</td>
<td>NZ</td>
<td>Unpub.</td>
<td>345</td>
<td>.33</td>
<td>.15</td>
<td>.63</td>
<td>.62</td>
</tr>
<tr>
<td>23. Robertson (2006)</td>
<td>Undergrad</td>
<td>16</td>
<td>10</td>
<td>20</td>
<td>NZ</td>
<td>Unpub.</td>
<td>185</td>
<td>.09</td>
<td>.07</td>
<td>.47</td>
<td>.47</td>
</tr>
<tr>
<td>24. Sibley (2007)</td>
<td>Undergrad</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>NZ</td>
<td>Unpub.</td>
<td>470</td>
<td>.08</td>
<td>.22</td>
<td>.50</td>
<td>.50</td>
</tr>
<tr>
<td>26. Sibley &amp; Duckitt (2006)</td>
<td>Undergrad</td>
<td>10</td>
<td>8</td>
<td>8</td>
<td>NZ</td>
<td>Unpub.</td>
<td>428</td>
<td>.30</td>
<td>.22</td>
<td>.58</td>
<td>.56</td>
</tr>
<tr>
<td>27. Sibley &amp; Duckitt (2012)</td>
<td>Adult</td>
<td>6</td>
<td>6</td>
<td>4</td>
<td>NZ</td>
<td>Unpub.</td>
<td>843</td>
<td>.13</td>
<td>.12</td>
<td>.40</td>
<td>.40</td>
</tr>
<tr>
<td>28. Sibley &amp; Perry (2010)</td>
<td>Adult</td>
<td>8</td>
<td>6</td>
<td>6</td>
<td>NZ</td>
<td>Unpub.</td>
<td>331</td>
<td>.08</td>
<td>.29</td>
<td>.43</td>
<td>.43</td>
</tr>
<tr>
<td>29. Sibley &amp; Duckitt (2009, Sample 1)</td>
<td>Undergrad</td>
<td>8</td>
<td>8</td>
<td>6</td>
<td>NZ</td>
<td>Pub.</td>
<td>666</td>
<td>.17</td>
<td>.29</td>
<td>.56</td>
<td>.54</td>
</tr>
<tr>
<td>30. Sibley &amp; Duckitt (2009, Sample 2)</td>
<td>Undergrad</td>
<td>8</td>
<td>8</td>
<td>6</td>
<td>NZ</td>
<td>Pub.</td>
<td>258</td>
<td>.13</td>
<td>.18</td>
<td>.56</td>
<td>.56</td>
</tr>
</tbody>
</table>
Table 4.1 (continued). Sample details and correlation coefficients for all studies included in the meta-analysis of DPM worldview measures, RWA and SDO.

<table>
<thead>
<tr>
<th>Reference</th>
<th>Sample Details</th>
<th>No. items in scales</th>
<th>Nation</th>
<th>Publication Status</th>
<th>Sample Size</th>
<th>Bivariate (and Partial) Correlations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>SDO</td>
<td>RW A</td>
<td>CW</td>
<td>DW</td>
<td>SDO-RWA</td>
</tr>
<tr>
<td>31. Sibley et al. (2008)</td>
<td>Undergrad</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>NZ</td>
</tr>
<tr>
<td>32. Sibley, Wilson &amp; Duckitt (2007a)</td>
<td>Undergrad</td>
<td>10</td>
<td>10</td>
<td>8</td>
<td>8</td>
<td>NZ</td>
</tr>
<tr>
<td>33. Sibley, Wilson &amp; Duckitt. (2007b)</td>
<td>Undergrad</td>
<td>16</td>
<td>16</td>
<td>8</td>
<td>8</td>
<td>NZ</td>
</tr>
<tr>
<td>34. Sibley, Wilson &amp; Robertson (2007)</td>
<td>Adult</td>
<td>10</td>
<td>10</td>
<td>8</td>
<td>8</td>
<td>NZ</td>
</tr>
<tr>
<td>35. Van Hiel (Unpub. data A)</td>
<td>Adult</td>
<td>14</td>
<td>11</td>
<td>13</td>
<td>11</td>
<td>Belgium</td>
</tr>
<tr>
<td>36. Van Hiel (Unpub. data B)</td>
<td>Adult</td>
<td>14</td>
<td>11</td>
<td>13</td>
<td>11</td>
<td>Belgium</td>
</tr>
<tr>
<td>37. Van Hiel, Cornelis and Roets (2007, Sample 1)</td>
<td>Undergrad</td>
<td>14</td>
<td>24</td>
<td>14</td>
<td>10</td>
<td>Belgium</td>
</tr>
<tr>
<td>38. Van Hiel, Cornelis and Roets (2007, Sample 2)</td>
<td>Adult</td>
<td>14</td>
<td>24</td>
<td>14</td>
<td>10</td>
<td>Belgium</td>
</tr>
<tr>
<td>39. Van Hiel, Cornelis and Roets (2007, Sample 3)</td>
<td>Adult</td>
<td>14</td>
<td>24</td>
<td>14</td>
<td>10</td>
<td>Belgium</td>
</tr>
<tr>
<td>40. Van Hiel, Cornelis and Roets (2006)</td>
<td>Undergrad</td>
<td>14</td>
<td>11</td>
<td>13</td>
<td>11</td>
<td>Belgium</td>
</tr>
<tr>
<td>41. Weber &amp; Federico (2007)</td>
<td>Undergrad</td>
<td>8</td>
<td>12</td>
<td>14</td>
<td>12</td>
<td>USA</td>
</tr>
<tr>
<td>42. Webster et al. (2006, May)</td>
<td>Undergrad</td>
<td>16</td>
<td>26</td>
<td>14</td>
<td>9</td>
<td>USA</td>
</tr>
<tr>
<td>43. Wilson (2006)</td>
<td>Adult</td>
<td>16</td>
<td>30</td>
<td>8</td>
<td>8</td>
<td>NZ</td>
</tr>
<tr>
<td>44. Wilson (2010)</td>
<td>Undergrad</td>
<td>16</td>
<td>30</td>
<td>8</td>
<td>8</td>
<td>NZ</td>
</tr>
<tr>
<td>45. Wilson (Unpub. data A)</td>
<td>Undergrad</td>
<td>16</td>
<td>30</td>
<td>8</td>
<td>8</td>
<td>NZ</td>
</tr>
<tr>
<td>46. Wilson (Unpub. data B)</td>
<td>Undergrad</td>
<td>16</td>
<td>30</td>
<td>8</td>
<td>8</td>
<td>NZ</td>
</tr>
</tbody>
</table>
Figure 4.1. Average meta-analytical bivariate (and partial) effect sizes between worldviews RWA and SDO across 46 studies. * p < .01
Table 4.2. Meta-analytic bivariate (and partial) correlations between DPM worldview measures, RWA and SDO.

<table>
<thead>
<tr>
<th>Bivariate Correlations</th>
<th>95% CI</th>
<th>No. of studies</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( r )</td>
<td>Lower</td>
<td>Upper</td>
</tr>
<tr>
<td>DW with RWA</td>
<td>.412</td>
<td>.377</td>
<td>.464</td>
</tr>
<tr>
<td>DW with SDO</td>
<td>.174</td>
<td>.141</td>
<td>.207</td>
</tr>
<tr>
<td>CW with RWA</td>
<td>.187</td>
<td>.140</td>
<td>.233</td>
</tr>
<tr>
<td>CW with SDO</td>
<td>.552</td>
<td>.521</td>
<td>.582</td>
</tr>
<tr>
<td>DW with CW</td>
<td>.242</td>
<td>.206</td>
<td>.278</td>
</tr>
<tr>
<td>RWA with SDO</td>
<td>.309</td>
<td>.265</td>
<td>.351</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Partial Correlations</th>
<th>95% CI</th>
<th>No. of studies</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( r )</td>
<td>Lower</td>
<td>Upper</td>
</tr>
<tr>
<td>DW with RWA (cntrl. for CW)</td>
<td>.374</td>
<td>.333</td>
<td>.414</td>
</tr>
<tr>
<td>DW with SDO (cntrl. for CW)</td>
<td>.077</td>
<td>.045</td>
<td>.108</td>
</tr>
<tr>
<td>CW with RWA (cntrl. for DW)</td>
<td>.106</td>
<td>.060</td>
<td>.152</td>
</tr>
<tr>
<td>CW with SDO (cntrl. for DW)</td>
<td>.531</td>
<td>.499</td>
<td>.561</td>
</tr>
</tbody>
</table>

Note. A positive correlation represented a stronger association between worldviews, RWA and SDO. \( r \)-values and associated confidence intervals were calculated assuming a random-effects model. \( z \)-tests reflect significance tests of weighted \( r \)-values, also assuming a random-effects model. \( Q_t \) statistics reflect a test of the homogeneity of effect sizes, calculated assuming a fixed-effects model. * \( p < .01 \).

Moderating factors

I used inverse-variance-weighted multiple regression to simultaneously examine the unique effects of a number of moderating factors controlling for shared variation.
attributable to two or more moderating factors. I conducted regression analyses testing the extent to which the cross-study differences that I included moderated the associations between worldview beliefs, RWA and SDO.

For analyses of the bivariate and partial (controlling for the other worldview dimension in each case) associations of dangerous worldview with RWA (see Table 4.3) and competitive worldview with SDO (see Table 4.4), I first entered (and therefore controlled for) the (contrast-coded) effects of publication status (unpublished = −0.50, published = 0.50). I entered (and controlled for) separate mutually exclusive variables representing the number of items measuring dangerous worldview beliefs and competitive worldview beliefs in each study. I also controlled for possible differences between undergraduate student (coded −.50) and adult/community (coded .50) samples. One benefit of using contrast codes (−.50 and .50) rather than dummy codes (0 and 1) in this type of analysis is that the intercept or constant for each regression equation represents an easily interpretable mean effect size, controlling for cross-study differences. Finally, I entered and controlled for levels of income inequality across the seven countries included in the meta-analysis using each country’s average score from 2000-2010 on the GINI index. These five moderating factors were also examined for the association between the two worldview dimensions (see Table 4.5).

As shown in Table 4.3, my regression analysis of the association between dangerous worldview and RWA indicated that studies employing a greater number of RWA items to assess this construct appear to demonstrate a stronger relationship between dangerous worldview and RWA with \( b = .01, z = 3.03, p < .01 \) and without \( b = .01, z = 2.75, p < .01 \) controlling for competitive worldview. In Table 4.4, my regression analysis of the association between competitive worldview and SDO
Table 4.3. Inverse variance mixed-effects weighted regression analyses examining the effects of various study characteristics on the bivariate and partial (controlling for CW) relations between the dangerous worldview dimension and RWA.

<table>
<thead>
<tr>
<th>Study factor</th>
<th>Model of DW-RWA association (bivariate)</th>
<th>Model of DW-RWA association (controlling for CW)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$b$</td>
<td>$se$</td>
</tr>
<tr>
<td>Constant</td>
<td>.398</td>
<td>.136</td>
</tr>
<tr>
<td>Published (-.50 = no; 0.50 = yes)</td>
<td>-.068</td>
<td>.039</td>
</tr>
<tr>
<td>Number of DW items (centered)</td>
<td>.016</td>
<td>.010</td>
</tr>
<tr>
<td>Number of RWA items (centered)</td>
<td>.007</td>
<td>.003</td>
</tr>
<tr>
<td>Sample (-.50 = undergraduates; .50 = community/adult)</td>
<td>.063</td>
<td>.044</td>
</tr>
<tr>
<td>Income Inequality (GINI)</td>
<td>.002</td>
<td>.004</td>
</tr>
</tbody>
</table>

Note. RWA was scored so that a higher value reflected a higher level of each dimension. $b$ refers to the unstandardized regression coefficient in Fisherised ($z_r$) effect size units, $se$ refers to the standard error of $b$. $z$-tests reflect significance tests of $b$. All effects were calculated using an inverse variance weighted regression analysis assuming a mixed-effects model. $p < .01$.

indicates that this effect was marginally stronger in studies that used an undergraduate student sample relative to an adult/community sample only when controlling for dangerous worldview ($b = -.11, z = -2.31, p < .05$). There were no further significant moderating effects demonstrated by the other factors.

I also tested the extent to which cross-study differences moderated the association between the two worldview dimensions. As shown in Table 4.5, my regression analysis of the association between dangerous worldview and competitive worldview indicates that this bivariate effect was modestly, but significantly, stronger in studies that used an adult sample relative to an undergraduate student sample ($b = .09, z = 2.15, p <$
and marginally stronger in studies that used fewer dangerous worldview items to measure this construct ($b = -.02, z = -2.19, p < .05$).

Table 4.4. Inverse variance mixed-effects weighted regression analyses examining the moderating effects of various study characteristics on the bivariate and partial (controlling for DW) relations between the competitive worldview dimension and SDO.

<table>
<thead>
<tr>
<th>Study factor</th>
<th>Model of CW-SDO association (bivariate)</th>
<th>Model of CW-SDO association (controlling for DW)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$b$</td>
<td>$se$</td>
</tr>
<tr>
<td>Constant</td>
<td>.423</td>
<td>.147</td>
</tr>
<tr>
<td>Published</td>
<td>.017</td>
<td>.044</td>
</tr>
<tr>
<td>Number of CW items (centered)</td>
<td>.002</td>
<td>.005</td>
</tr>
<tr>
<td>Number of SDO items (centered)</td>
<td>.007</td>
<td>.007</td>
</tr>
<tr>
<td>Sample</td>
<td>-.086</td>
<td>.048</td>
</tr>
<tr>
<td>Income Inequality (GINI)</td>
<td>.005</td>
<td>.004</td>
</tr>
</tbody>
</table>

*Note.* SDO was scored so that a higher value reflected a higher level of each dimension. $b$ refers to the unstandardized regression coefficient in Fisherised ($z$) effect size units, $se$ refers to the standard error of $b$. $z$-tests reflect significance tests of $b$. All effects were calculated using an inverse variance weighted regression analysis assuming a mixed-effects model. *$p < .05$, **$p < .01$.**

Discussion

Of the components comprising Duckitt’s (2001) DPM, social worldviews have, until recently, garnered the least attention from researchers (but see Federico et al., 2009; Sibley, Wilson & Duckitt, 2007a; Van Hiel, Cornelis & Roets, 2007). Evident from the number of unpublished data gathered in the present meta-analysis, worldview associations with RWA and SDO do not appear to comprise central research hypotheses even when they are included. Social worldviews are, however, a critical facet of the DPM as the cognitive mechanism through which personality and situational factors...
produce the motivational goals indexed by SDO and RWA. In this chapter I conducted a meta-analysis to (a) determine general effect sizes between the worldview and ideological attitude components of the DPM, and (b) assess the extent to which

Table 4.5. Inverse variance mixed-effects weighted regression analyses examining the effects of various study characteristics on the relation between DW and CW.

<table>
<thead>
<tr>
<th>Study factor</th>
<th>$b$</th>
<th>$se$</th>
<th>$z$-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>.514</td>
<td>.130</td>
<td>3.95*</td>
</tr>
<tr>
<td>Published (-.50 = no; 0.50 = yes)</td>
<td>-.018</td>
<td>.039</td>
<td>-.47</td>
</tr>
<tr>
<td>Number of DW items (centered)</td>
<td>-.016</td>
<td>.007</td>
<td>-2.19*</td>
</tr>
<tr>
<td>Number of CW items (centered)</td>
<td>.028</td>
<td>.015</td>
<td>1.93</td>
</tr>
<tr>
<td>Sample (-.50 = undergraduates; .50 = community/adult)</td>
<td>.091</td>
<td>.042</td>
<td>2.15*</td>
</tr>
<tr>
<td>Income Inequality (GINI)</td>
<td>-.007</td>
<td>.004</td>
<td>-1.92</td>
</tr>
</tbody>
</table>

Note. $b$ refers to the unstandardized regression coefficient in Fisherised ($z$) effect size units, $se$ refers to the standard error of $b$. $z$-tests reflect significance tests of $b$. All effects were calculated using an inverse variance weighted regression analysis assuming a mixed-effects model. * $p < .05$, ** $p < .01$

an asymmetry in effect sizes was robust across various sample and societal factors. I was able to determine that an asymmetry in effect sizes (Van Hiel, Cornelis & Roets, 2007) was reliable across samples and probably related to both item content overlap between CW and SDO, and the tripartite structure of RWA.

Meta-analysis of 46 independent samples (21 published, 25 unpublished) found good support for the DPM. Analysis of average partial correlations indicated that dangerous and competitive worldview beliefs were strong predictors of concurrent levels of RWA and SDO respectively. The dual effects were also distinct, as the
opposing (dangerous worldview with SDO and competitive worldview with RWA) associations were small ($rs = .08, .11$). Although the expected pattern of correlations was strong overall, the dual associations were asymmetric; the partial correlation between dangerous worldview and RWA was moderate in size ($r = .37$), whereas the partial correlation between competitive worldview and SDO was stronger in magnitude ($r = .53$). Finally, the two worldview dimensions were also moderately positively correlated with one another, as were RWA and SDO.

These average effects were robust across a number of study characteristics including publication status, undergraduate versus community/adult samples, scale length, and national level of income inequality. However, highly significant heterogeneity in all cases suggested that these relationships were still affected by a variety of factors. The number of scale items used to measure the four constructs mattered in some cases, but was not a factor in others. The type of sample (undergraduates or adults) also mattered, but only to a limited extent. Overall, the robustness of the relationships between worldview beliefs and ideological attitudes argues for the relative stability of the relationships between these DPM components, and therefore that an asymmetry in effect sizes is due to measurement issues – most likely content overlap. The few instances of significant cross-study variability do however indicate factors that subtly affect the relationships between social worldviews and SDO and RWA.

I identified a consistent and substantial asymmetry in the relationships between worldviews and ideological attitudes. In line with Van Hiel, Cornelis and Roets (2007), I found a moderate association of dangerous worldview with RWA, but a stronger association between competitive worldview and SDO. This difference was reliable across samples, suggesting that it is a general and robust effect and not idiosyncratic or
limited to a particular study context. The robustness of the asymmetry effect also suggests it may be at least partially a spurious effect due to measurement design, and I agree with Van Hiel, Cornelis and Roets (2007) that there is a need to purify or re-operationalise the existing DPM worldview construct to eschew this asymmetry.

In the following discussion I review in detail the results of my analyses of cross-study moderating effects, and present a refined and shortened DPM worldview measure that omits the competitive worldview items that most appear to overlap with SDO.

**Cross-study moderating effects**

*Publication status.* Although there is a well-known publication bias in which published studies show consistently stronger effects sizes than unpublished studies (Rosenthal, 1979), this did not appear to be the case in studies concerning relationships between DPM social worldviews and ideological attitudes, as publication status did not moderate these associations. In an earlier meta-analysis of associations between Big-Five personality and ideological attitudes (Sibley & Duckitt, 2008), the authors suggested that successful publication of correlational studies (typical of those included in my meta-analysis) may be less contingent upon the detection of specific hypothesised significant differences relative to more experimental study designs. The specific associations between worldviews and RWA and SDO were also not typically the focus of studies included in the present meta-analysis meaning these associations may have been of limited relevance when being considered for publication.

*Sample composition.* In Van Hiel, Cornelis and Roets (2007), dangerous worldview was a more powerful mediator between personality and RWA in an adult sample relative to an undergraduate student sample. There was no such difference between their samples for competitive worldview and SDO. On the contrary, in my meta-analysis of bivariate associations, I did not observe a moderating effect of sample
composition (students or adults) on the relationship between dangerous worldview and RWA, and only marginal effects of this moderator on other associations (discussed below). It therefore appears as if the difference between students and adults observed by Van Hiel, Cornelis and Roets (2007) may be an exception, or situation-dependent; generally the effect of dangerous worldview on RWA is consistent across student and adult samples. It may be simply that there is only a difference between student and adult samples in the mediating effect of dangerous worldview however, and not the direct bivariate effect of this component on RWA.

Furthermore, if I can consider the consistency between student and adult samples proximal to an age-effect, my overall findings support the proposition that schematic worldview beliefs, once formed, tend to be relatively stable over time. However, longitudinal research designs are needed to formally make inferences about stability over time. Beliefs about the social world are subject to situational changes throughout an individual’s life, but are only substantially altered if such changes are sufficiently chronic and powerful. Historiometric evidence, for instance, generally suggests that worldview-related attitudes vary systematically over the years depending upon levels of societal threat rather than eliciting permanent change (Doty et al., 1991; Sales, 1972, 1973), even after major social event such as the 2001 World Trade Centre attack (e.g., Perrin & Smolek, 2009). It seems safe to assume that experiences within versus outside of university would not differ in perceived levels of threat anywhere near the extent that would significantly alter social worldviews and, moreover, this sample characteristic should only moderate the mean levels of dangerous worldview and RWA, not associations between them.

It is becoming more widely acknowledged that in some circumstances, however, the use of undergraduate student samples in psychology (and other fields) may often be
less generalisable than researchers want to assume (Henrich, Heine & Norenzayan, 2010). In my study the associations between competitive worldview and SDO were marginally significantly stronger when undergraduate student samples were used relative to adult/community samples. There is no immediate explanation for this finding however, and I again argue that any sample specific characteristics would most likely lead to differences in mean levels of worldview and ideological attitude scores rather than in the associations between these components.

There was also an indication that adult samples demonstrated a slightly stronger association between the two worldview dimensions compared with undergraduates, a finding consistent with Duckitt (2001) who showed that SDO and RWA are more closely associated in older participants. Though also only marginally significant, this difference may indicate that schematic worldview beliefs become slightly more convergent with age as well. As shown in Table 4.2, there was a moderate correlation between the two dimensions on average across samples. This is further evidence that dangerous and competitive worldview beliefs, once formed, are relatively stable and, therefore, as they stabilise over time their mutual influence should become more consistent as well. Hence, I found a stronger association in adults relative to (typically younger) students as worldview schemas should be less stable in this younger population. Younger persons may be more amenable to change because their circumstances are changing more rapidly and differentially in terms of exposure to socio-structural aspects relating to competition versus danger. Indeed, Newcomb’s Bennington College study beginning in 1935 revealed marked changes in socio-political attitudes amongst conservative, affluent female college students whereas a later 25 year follow up (and again after 50 years) showed remarkable stability of these attitudes from
graduation through adulthood (Newcomb, 1943; Newcomb, Koenig, Flacks & Warwick, 1967).

This is also consistent with Guimond et al. (2003) and other research that showed socialisation of different university majors differentially affects levels of SDO (Dambrun et al., 2002; Dambrun et al., 2009; Sinclair et al., 1998; see also Roberts, Caspi & Moffitt, 2003). In addition to socialisation there is a complimentary process of self- or institutional-selection in which people choose careers, university majors and so on that are normatively consistent with their existing beliefs (e.g., Gatto et al., 2010; Sidanius, Van Laar, Levin & Sinclair, 2004). In a reciprocal pattern, worldviews will therefore increasingly stabilise with age as people self-select environments that are consistent with those they have been formerly socialised by. Roberts et al. (2003) describe this formally in their corresponsive principle showing that certain personality traits predict work experiences over time (measured at ages 18 and 26), and these same personality traits were affected, in turn, by work experiences over that time.

Number of scale items. Both the RWA and SDO scales show high levels of stability over time when assessing test-retest correlations (Altemeyer, 1996; Pratto et al., 1994; Sibley, Wilson & Duckitt, 2007a), even when very short (4-item) versions of the scales are employed (e.g., Cohrs et al., 2005). In the present study, however, the strongest variation in effect size arose from methodological differences in the number of items used to assess RWA. Studies employing a greater number of RWA items reported stronger associations between dangerous worldview and RWA, a greater number of SDO items did not strengthen the association with competitive worldview, however. For the worldview measures, the only significant effect of scale length was that a greater number of dangerous worldview items appeared to decrease the effect size between the two worldview dimensions – this was only marginally significant, however.
The moderating effect of RWA scale-length is consistent with a growing body of evidence that suggests RWA comprises three underlying dimensions (Duckitt, Bizumic, Krauss & Heled, 2010; Duckitt & Fisher, 2003; Funke, 2005; Mavor, Louis & Sibley, 2010; Smith & Winter, 2002; Stellmacher & Petzel, 2005; Van Hiel, Cornelis Roets & De Clerq, 2007). Duckitt et al. (2010; Duckitt & Bizumic, in press) presented a tripartite authoritarianism-conservatism-traditionalism (ACT) scale of RWA, reconceptualising the scale items to overcome an acquiescence-driven dual factor structure. Mavor et al. (2010) also proposed their authoritarianism-conventionalism-submission (ACS) scale applying a novel approach to control for acquiescence bias in the original RWA items. If this factor structure is not taken into account when determining shortened versions of the RWA scale, there is an obvious risk of inflating variation between studies that may inadvertently be tapping distinct sub-dimensions.

Although scale shortening procedures are usually arbitrary, there may still be systematic variation in the DW-RWA association due to shortened RWA scales inadvertently tapping one or another of the RWA subscales. Van Hiel, Cornelis and Roets (2007; see also Onraet, Van Hiel, Roets & Cornelis, 2011; Van Hiel & De Clercq, 2009), for example, used a translated RWA scale that consisted of 10 pro-trait items and one con-trait item. Considering item valences are now known to assess different subscales of RWA (see Mavor et al., 2010), these studies were assessing only part of the tripartite RWA construct.

Unfortunately, I did not obtain the actual worldview and ideological attitude items used in studies; this would have allowed me to examine differences across RWA subscales. A subsequent meta-analysis comparing the content of shortened scales, as well as their reliabilities (i.e., Chronbach’s alphas), would clarify the implications of assessing different subscales on the association between RWA and other variables. The
moderation effect of RWA scale length observed here may account for the observed asymmetry to an extent. This would potentially account for the asymmetry reported in Van Hiel, Cornelis and Roets (2007), for example, considering their shortened RWA did not assess the full tripartite construct.

_Income inequality_. As predicted, there was no significant moderating effect of nation-level income inequality on any of the associations that I reported. The typically negative effect of high levels of income inequality on various social and psychological indicators suggests that this phenomenon should increase the salience of competition in a society. As demonstrated in past meta-analyses (Cohrs & Stelzl, 2010; Fischer et al., 2012) however, this does not tend to be evident in mean levels of SDO. Moreover, I did not expect income inequality to affect the relationship between competitive worldview and SDO (or between dangerous worldview and RWA for that matter). Increasing perceptions of competition through the salience of social inequality should only serve to increase mean levels of competitive worldview, not the ability of this construct to predict SDO. It is unfortunate that I did not obtain mean level data for the purposes of the present meta-analysis. Future investigations using between-nation constructs such as the GINI index would be prudent to consider the effects on competitive worldview in addition to SDO. Worldviews operate as a mechanism through which both personality and social conditions lead to prejudice-related ideology, so the true effect of social inequality may be more accurately reflected at this stage of the cognitive process underlying discrimination.

_Dual path asymmetry_

My meta-analysis indicated that the associations between dual dimensions of worldviews and ideological attitudes are strong and robust across a number of potential moderating variables. However, there was an asymmetry in the strength of these
relationships; the dangerous worldview association with RWA (partial $r = .37$) was moderate whereas the competitive worldview association with SDO was comparably strong (partial $r = .53$). Van Hiel, Cornelis and Roets (2007) suggested that this asymmetry may be spurious. These authors tested the extent to which item content overlap between the worldview and ideological attitude measures artificially inflated associations between these DPM components by removing items that cross-loaded between them (or loaded on the counter-theoretical factor). Discarding the problematic items reduced the correlation between competitive worldview and SDO to a level comparable with that observed between dangerous worldview and RWA. Of note, the latter association was unaffected by the removal of overlapping items. Van Hiel, Cornelis and Roets (2007) concluded that the worldview construct therefore ought to be re-operationalised in order to eschew content overlap with ideological attitude measures.

**Removing spurious asymmetry**

My meta-analysis generally supported Van Hiel, Cornelis and Roets’ (2007) conclusion; the asymmetry was robust across samples and thus seems likely due to content overlap between the competitive worldview and SDO measures, rather than sample- or societal-level factors. Following Van Hiel, Cornelis and Roets (2007), I factor analysed data from the manuscript presented in chapter five containing the full worldview scales to develop a refined worldview measure that should attenuate possible content overlap. I append a refined and balanced DPM social worldviews scale comprising 10-item competitive and dangerous worldview measures (see Appendix 2). A confirmatory factor analysis supported my refined measure; the model demonstrated good fit to the data when modelling competitive worldview as a latent factor predicting SDO ($\chi^2(298) = 843.077; \text{sRMR} = .068$). Bivariate associations in these data were particularly high (for the association between competitive worldview and SDO, $r = .63$),
though when employing the refined ten-item measure of competitive worldview, this association was reduced ($r = .55$) in line with that between dangerous worldview and RWA ($r = .52$).

As originally proposed in the DPM (Duckitt, 2001; Duckitt et al., 2002), social worldviews should assess descriptive beliefs about the social world – as in, what the social world and people in it are generally like. Conversely, ideological attitudes should assess prescriptive beliefs – what the social world should be like, or how we should respond to it. The ‘extra’ variance predicted by the original competitive worldview measure in my meta-analysis thus arguably represents mostly prescriptive ideological item-content that overlaps with SDO, artificially inflating the relationship. I also note that the association between dangerous worldview and RWA in these data was substantially stronger than the meta-analytic average. Since the full RWA measure was used here, this supports my contention that the use of shortened RWA measures across studies may contribute in part to the observed asymmetry. Unlike Van Hiel, Cornelis and Roets (2007), my full RWA was thus presumably not contributing to the asymmetry between pathways here (i.e., by suppressing the relationship between dangerous worldview and RWA). Shortened versions of the SDO scale do not appear to affect associations with competitive worldview in this DPM pathway, although research is beginning to emerge indicating that SDO may also be composed of multiple dimensions (Jost & Thompson, 2000).

**Summary and conclusion**

My meta-analysis offers two main implications about the relationship between worldview beliefs and ideological attitudes in the DPM. First, my analyses confirmed that dangerous and competitive worldviews are strong and independent predictors of RWA and SDO respectively, consistent with a DPM perspective. My analyses generally
indicated that these relationships are consistent across sample and societal characteristics. This is in line with a basic premise of the DPM – that the cognitive processes underlying prejudice attitudes should respond to day-to-day situational changes, but retain a stable baseline of association with one another in the face of all but the most severe and chronic social environmental change (e.g., Perrin & Smolek, 2009; see also Perry & Sibley, 2011a). Second, the spurious asymmetry in the strength of associations between worldviews and ideological attitudes provides an important impetus for re-operationalising the DPM worldview constructs to distinguish the variance explained by this component of the DPM from the subsequent ideological attitude components indexed by RWA and SDO. To this end, I present a refined and balanced 20-item social worldview measure discarding those competitive worldview items found to overlap with SDO (see Appendix 2).

There are almost certainly contextual and dispositional factors other than social worldviews and personality that contribute to variance in RWA and SDO. These may include shortened RWA scales inadvertently tapping one or another of three underlying sub-dimensions (e.g., Duckitt et al., 2010; Mavor et al., 2010). Another candidate emerging in recent literature is that of intelligence (Heaven, Ciarrochi & Leeson, 2011; Hodson & Busseri, 2012; Van Hiel, Onraet, & De Pauw, 2010). Heaven et al. (2011) reported a cross-lagged negative effect of generalised intelligence and verbal ability on RWA. SDO was also predicted by low verbal ability. Hodson & Busseri (2012) showed that childhood levels of general intelligence were significantly related to racism in adulthood and this relationship was mediated by socially conservative ideological beliefs. In a second experimental study, they showed that abstract reasoning (a form of cognitive ability) was negatively related to RWA, which in turn predicted prejudice against homosexuals. These findings suggest that there may be information processing
differences underlying RWA and SDO; those high in RWA, for example, appear to be “cognitive misers” that favor simpler (i.e., stereotype-confirming) attributions (Heaven et al., 2011; Van Hiel, Pandeleare et al., 2004).

In conclusion, this meta-analysis contributed to recent efforts to systematically review research examining different aspects of the DPM (Cohrs & Stelzl, 2010; Fischer et al., 2012; Sibley & Duckitt, 2008). Compiling a total sample of 46 studies with 12,939 participants across seven developed nations, I confirmed that dangerous and competitive worldview beliefs are strong and independent predictors of respective concurrent levels of RWA and SDO (Duckitt et al., 2002). These dual associations were asymmetric – the association of dangerous worldview with RWA was moderate in size ($partial r = .37$), whereas the association of competitive worldview with SDO was stronger in magnitude ($partial r = .53$). Moreover, I confirmed that this asymmetry was spurious, probably resulting from item content overlap between CW and SDO, and possibly also from the multidimensional nature of RWA. These dual patterns were also distinct as the opposing associations of dangerous worldview with SDO and competitive worldview with RWA were small in size ($partial rs = .08, .11$). All effects were robust across published and unpublished, undergraduate and community samples using different scales, and across seven nations varying in income inequality. These results provided good support for the DPM, and indicate that, as expected, RWA and SDO are consistently linked with distinct social schemas that represent society as dangerous and threatening (versus safe and secure), and competitive and cut-throat (versus co-operative and characterised by mutually beneficial exchange).
Bridging comment

Having established that the DPM associations of competitive worldview with SDO and dangerous worldview with RWA were assymetrical on average across all available datasets containing these measures (and that this assmetry was robust across a number of potential moderators), I presented a revised measure of social worldviews that reduced the magnitude of the association between competitive worldview to a level comparable to that between dangerous worldview and RWA by removing competitive worldview items that cross-loaded with SDO in a factor analysis of the full scales.

Another way forward in terms of addressing this issue is to create purified measures of dangerous and competitive social worldviews that do not share excessive content overlap with SDO and RWA. I address this issue by exploring new ideology-free measures of social worldviews in the subsequent chapters of Section 2.

Chapter five

Dangerous and competitive schemas: A new frequency estimation index of the
dual process model’s social worldviews component

Abstract

In this chapter I present an alternative self-report measure of the social worldview component in Duckitt’s (2001) Dual Process Model (DPM) of ideology and prejudice. Theoretically, worldviews represent belief structures (i.e., schemas) about the nature of the social world. The new Frequency Estimation Index of Dual Social Worldviews (FEI-DSW) uses 0-100 percentage response scales to assess social worldviews using indicators of the subjective estimation of the frequency of events. Previously, worldview indicators have been indexed using ideological attitude measures as a proxy.

Exploratory (N = 378; Study 1) and confirmatory (N = 300; Study 2) factor analyses validated the factor structure of the FEI-DSW in undergraduate and New Zealand community samples. The FEI-DSW evidenced good construct validity as its dual factors, dangerous worldview and competitive worldview differentially predicted Right-Wing Authoritarianism and Social Dominance Orientation. The FEI-DSW provides a reliable and valid measure of social worldviews that is closer to a formal definition of worldviews as social schemas.

Note. An earlier version of this chapter has been published in the journal Personality and Individual Differences and is hereafter referenced as follows:

Introduction

“We all know it’s over, this way of life we once had, or thought we could have if we put in a decent day’s work. Now we must fight each other for whatever scraps are left, leaving the rich to enjoy the greatest wealth this country has ever seen.”
(Moore, 1996, p. 6).

The Dual Process Model of ideology and prejudice (DPM; Duckitt, 2001) proposes that Social Dominance Orientation (SDO) and Right-Wing Authoritarianism (RWA) reflect dual aspects of a cognitive-motivational system underlying individual differences in prejudice. Relevant situational cues and enduring personality traits combine to produce distinct competitive and threat-driven motivational goals for group-based dominance and superiority (SDO-based), and social security and control (RWA-based). These goals are fulfilled through expressions of relevant ideological attitudes and, ultimately, prejudice. The majority of DPM studies so far have tended to concentrate on the personality bases of this process (Ekehammar et al., 2004) as well as social context effects (Duckitt & Fisher, 2003) and generalised prejudice outcomes (Duckitt & Sibley, 2007a). However, one other critical contribution of the DPM is in proposing a mechanism through which situational and personality factors produce prejudicial ideological attitudes. This is the social worldview component of the DPM. The triggering of worldview schemas, the DPM proposes, mediates the joint effects of personality and situational factors on SDO and RWA.

In this chapter I present an updated and theoretically derived alternative self-report measure of the DPM worldview component. Previous studies have employed Duckitt’s (2001) original Likert-type statements of agreement to assess worldviews such as, “Every day as society becomes more lawless and bestial, a person’s chances of being
robbed, assaulted, and even murdered go up and up” and, “If it is necessary to be cold
blooded and vengeful to reach one’s goals, then one should do it”. The epigraph with
which I began this chapter provides a resounding real-world example of a social
worldview relating to economic competitiveness in this regard. Michael Moore’s
characterisation not only covers beliefs about the nature of the social world (i.e.,
schematic beliefs) but also information about how the social world should be responded
to (i.e., ideological attitudes).

A number of the Likert items used to assess the social worldview component in
the DPM are subject to a similar critique. The original social worldview items were
derived from Altemeyer’s (1988, 1998) Belief in a Dangerous World; Personal Power,
Meanness, and Dominance (PP-MAD); and Exploitative Manipulative Amoral
Dishonesty (E-MAD) scales. Altemeyer’s scales, though, were intended to determine
what drives or motivates RWA and SDO attitudes, such as Machiavellianism, but were
not focussed theoretically on descriptive or schematic worldview content per se. I revise
the operationalisation of this DPM component by introducing a measure which more
precisely assesses the theoretical constructs of dangerous and competitive social
worldviews as schematic belief structures. To this end I will develop a self-report
measure of the subjective frequency estimation of people in society who would
potentially act in various dangerous or competitive ways.

The present study also addresses a related issue of content overlap between SDO,
RWA and the original DPM worldview measures. Van Hiel, Cornelis and Roets (2007)
noted that associations of social worldviews with RWA and SDO may in part reflect
content overlap and the components may not be truly distinct from one another. A joint
factor analysis indicated that a number of items from both scales cross-loaded (Van
Hiel, Cornelis & Roets, 2007), and although removing the problematic items had a
negligible effect on the relationships between personality and social attitudes, the
probable content overlap observed in their study and confirmed in my meta-analysis in
chapter four nevertheless gives further cause to develop a DPM measure of social
worldviews that eschews overlapping ideological content by reoperationalising this
component of the DPM as schematic beliefs rather than ideological attitudes.

The dual process model

Recent models of the individual differences underlying prejudice have identified
two central dimensions of ideological attitudes. SDO (Pratto et al., 1994) and RWA
(Altemeyer, 1981) both powerfully predict a range of socio-political and intergroup
phenomena such as right-wing political party support, generalised prejudice, and
that SDO and RWA represent two distinct motivational goals: RWA represents a threat-
driven motivation for social cohesion and security, and SDO represents a competition-
driven orientation for dominance and superiority in intergroup relations. Moreover,
Duckitt (2001) argued that the degree to which an individual adopts each of these two
goals depends upon their beliefs about the nature of the social world.

According to Duckitt’s (2001) original model, competitive worldview is thought
to result from the combination of a personality disposition high in tough-mindedness
and exposure to social situations characterised by high levels of inequality and
competition. Perceptions of the world as a competitive jungle are thus characterised by a
“ruthless, amoral struggle for resources and power in which might is right and winning
is everything” (Duckitt, 2001, p. 68). More recently, in Big-Five terms, Sibley and
Duckitt (2008) argued that the personality disposition underlying a competitive jungle
worldview is better represented by low Agreeableness. A dangerous worldview, on the
other hand, is thought to result from a personality disposition high in social conformity
(or low in Openness to Experience and high in Conscientiousness in Big-Five terms) and exposure to social situations highly threatening to ingroup norms and values. Duckitt (2001) proposed that resulting dangerous worldviews are perceptions of the world as a “dangerous and threatening place in which good, decent people’s values and way of life are threatened by bad people” (p. 61).

The DPM defines social worldviews as “a coherent set of beliefs about the nature of the social world, and specifically about what people are like, how they are likely to behave to one, and how they should be responded to and treated” (Duckitt, 2001, p. 61). I argue, however, that the latter, prescriptive portion of this definition corresponds more closely to ideological attitudes than schematic beliefs. As a result, existing DPM worldview measures are not as accurate an index of worldviews as schemas as perhaps they could be.

**Worldviews as schemas**

The cognitive process by which the DPM components predispose one toward prejudice was derived from a construct in psychological anthropology labelled *motivational goal-schemas* (D’Andrade, 1992; Ross, 1993; Strauss, 1992). D’Andrade (1992) and Strauss (1992) suggested that certain schemas are made highly accessible through the process of cultural socialisation and generate stable social worldviews. Ross (1993) described a relationship between societal conflict and distinct childhood socialisation practices characteristic of societies with high levels of conflict. These socialisation practices, Ross (1993) suggested, create dispositions that lead to relatively stable interpretations or beliefs about others and the social world. This perspective is consistent with widely accepted definitions of a schema as “a cognitive structure that represents knowledge about a concept or type of stimulus, including its attributes and the relations among those attributes” (Fiske & Taylor, 1991, p. 98). In Duckitt’s (2001)
DPM these cognitive structures are chronically accessible social worldview beliefs which activate particular motivational goals expressed in ideological attitudes that are indexed by RWA and SDO; a process consistent with that of motivational goal-schemas.

My revised definition of worldviews, then, formally operationalises these worldviews as schemas. My new measure aims to avoid assessing prescriptive ideological attitude worldview content, instead focussing on more descriptive beliefs about the social world. In other words, this definition delineates social worldviews strictly as schematic beliefs about the nature of the social world. That is, individual differences in what people “out there” are seen to be like and how they are likely to behave toward the perceiver and other ingroup members.

*Revising the DPM worldviews measure*

The Frequency Estimation Index of Dual Social Worldviews (FEI-DSW) developed in this chapter seeks to introduce a new theoretically derived measure of social worldviews by asking participants to estimate the frequency of certain social events, thus assessing their view of the social world as it *is* rather than how it ideologically *should* be or how one should respond to the perceived world. Participants are asked to rate the frequency of events on a 0-100 percentage scale. This approach should reliably distinguish worldview beliefs from ideological attitudes by capturing only descriptive knowledge about the world. My frequency estimation items should allay concerns about content overlap between social worldviews and ideological attitudes in the DPM (Van Hiel, Cornelis & Roets, 2007; see chapter four). Ideological attitudes are delineated from worldviews as *responses* to schematic perceptions of the social world.

*Overview and summary*
In this chapter I present two studies that develop and validate the proposed FEI-DSW. In Study 1 I develop the initial scale through exploratory factor analysis (EFA) of an initial item pool of 200 dangerous and competitive events and assess the relationships between the two hypothesised FEI-DSW factors and their corresponding ideological attitude components – RWA and SDO. In Study 2 I present an additional confirmatory test of the final FEI-DSW dual-factor structure. I hypothesise a two factor structure of the FEI-DSW corresponding to Duckitt’s (2001) original DPM worldview factor structure:

1. Dangerous Worldview Schema (FEI-DW): a belief that the social world is a dangerous and threatening place because of corrupt people or groups that willingly cause harm and disruption to others’ lives and to the ingroup in particular.
2. Competitive Worldview Schema (FEI-CW): a belief that the social world is characterised by ruthless competition for power and resources and by natural hierarchical relationships between both individuals and social groups.

Also consistent with the DPM, FEI-DW should be significantly and positively related to RWA but not SDO, and FEI-CW should be significantly and positively related to SDO but not RWA.

Study 1

Method

Participants and procedure
Participants were 378 New Zealand adults (278 females, 96 males and 4 unspecified) comprised of undergraduate students from a New Zealand university (47%) and members of the public (53%) who were either emailed an invitation to participate electronically or approached in public places. Participants’ mean age was 25.80 years ($SD = 9.64$). Approximately 57% were born in New Zealand. Participants were entered into a prize draw for NZ$200 in grocery vouchers.

**Measures**

Participants were presented with an initial pool of 200 items designed to assess dangerous and competitive worldviews. Most were original and based on my worldview definitions, a number were also adapted from Duckitt’s (2001) original worldview scale. Items included in the final version of the FEI-DSW are presented in Table 5.2. The survey was administered with the following instructions, intended to assess hypothetical and largely content-free perceived event frequencies:

> From the total number of people currently living in New Zealand, we would like you to give your best guess about the percentage that would do each of the following things *provided there were no apparent personal gains or losses as a result of their action*. That is, the percentage of people in New Zealand that would do these things just because they could. Please note this research is designed to measure people’s best *guesses* about the percentage of New Zealanders that would do each of these things in a hypothetical, consequence-free situation. It does not matter if you have no idea of the actual or official number; we are interested in your best guess or estimation. Please try to give your best guess for every item.

SDO and RWA were measured using eight randomly selected and balanced items from Sidanius and Pratto’s (1999) SDO scale, and Altemeyer’s (1998) RWA
scale. All items were rated from 1 (strongly disagree) to 7 (strongly agree). I created scale scores by averaging the items included in each scale. Descriptive statistics, estimates of internal reliability (Cronbach’s alphas) and bivariate correlations between scales are presented in Table 5.1.

Table 5.1. Descriptive statistics and bivariate correlations between gender, age, SDO and RWA, and the FEI-DSW measures of dangerous and competitive worldviews in Study 1.

<table>
<thead>
<tr>
<th></th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
<th>6.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Gender (1 male, -1 female)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Age</td>
<td>-.21*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Competitive Worldview</td>
<td>-.06</td>
<td>-.17*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Dangerous Worldview</td>
<td>.01</td>
<td>-.18*</td>
<td>.60*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. SDO</td>
<td>-.19*</td>
<td>.00</td>
<td>.24*</td>
<td>.18*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. RWA</td>
<td>-.02</td>
<td>-.00</td>
<td>.09</td>
<td>.19*</td>
<td>.32*</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
<th>6.</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>30.47</td>
<td>15.28</td>
<td>2.24</td>
<td>3.12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SD</td>
<td>15.57</td>
<td>11.99</td>
<td>.93</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>α</td>
<td>.90</td>
<td>.93</td>
<td>.77</td>
<td>.75</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

n = 378, *p < .05.

Results

I used EFA with maximum likelihood estimation and an oblique rotation to identify items assessing each of the two hypothesised dimensions of the FEI-DSW. I first extracted two factors from the analysis of all 200 items, each written to assess one of the two worldview dimensions identified in previous measures (Duckitt et al., 2002). This analysis supported the hypothesised dual factors, with most items loading on their expected factor. I then proceeded to systematically remove items (in sequential steps) that exhibited the weakest loadings on their intended factor (as defined by pattern matrix coefficients) or that cross-loaded onto both factors (loadings > .20 on both factors). I
removed items one at a time and recalculated the pattern matrix for the remaining items at each step until I had selected items for each of the two subscales that loaded strongly and solely on their hypothesised factor. In all cases, these items loaded on the factor which they were originally intended to assess. The pattern matrix for the 18-item, two-factor FEI-DSW solution is presented in Table 5.2.

A Kaiser-Meyer-Olkin measure of sampling adequacy indicated that my initial factor matrix showed good sampling adequacy ($KMO = .918$). Despite my relatively low participant to item ratio, this indicates a compact pattern of correlations resulting in distinct and reliable factors.

Interpreting the scree plot supported the proposed two-factor solution which

<table>
<thead>
<tr>
<th>Table 5.2. Item content and pattern matrix coefficients from an Exploratory Factor Analysis for the Frequency Estimation Index of Dual Social Worldviews (FEI-DSW).</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dangerous Worldview (FEI-DW)</strong></td>
</tr>
<tr>
<td>DW01 Rob someone</td>
</tr>
<tr>
<td>DW02 Mug someone</td>
</tr>
<tr>
<td>DW03 Break into someone’s house</td>
</tr>
<tr>
<td>DW04 Commit a violent crime</td>
</tr>
<tr>
<td>DW05 Attack someone for no reason at all</td>
</tr>
<tr>
<td>DW06 Attack someone purely out of meanness</td>
</tr>
<tr>
<td>DW07 Terrorize other people</td>
</tr>
<tr>
<td>DW08 Abuse their children</td>
</tr>
<tr>
<td>DW09 Deal drugs</td>
</tr>
<tr>
<td><strong>Competitive Worldview (FEI-CW)</strong></td>
</tr>
<tr>
<td>CW01 Charm someone to manipulate them</td>
</tr>
<tr>
<td>CW02 Take advantage of people that play by the rules</td>
</tr>
<tr>
<td>CW03 Intimidate someone to get what they want</td>
</tr>
<tr>
<td>CW04 Put money, wealth and luxury before other important concerns</td>
</tr>
<tr>
<td>CW05 Trick their friends out of an important opportunity</td>
</tr>
<tr>
<td>CW06 Intimidate someone with their social position to get what they want</td>
</tr>
<tr>
<td>CW07 Be cruel to another person to impress their friends</td>
</tr>
<tr>
<td>CW08 Deliberately make a mess someone else had to clean up</td>
</tr>
<tr>
<td>CW09 Treat poor people as if they were scum</td>
</tr>
</tbody>
</table>

*Note. Pattern matrix coefficients > .25 are printed in bold. Exploratory Factor Analysis was conducted using Principal Axis Factoring with promax rotation. $N = 378$ undergraduate students from the University of Auckland and adults surveyed in New Zealand.*
explained 52% of the variance. The eigenvalues levelled out after the second factor was extracted, with the third and subsequent factors contributing trivially to the variance explained (eigenvalues: 7.48, 1.95, .95, .86, .76, .69, .66). Parallel analysis indicated that only the first two eigenvalues were greater than the 95th percentile of chance eigenvalues generated from random data with the same number of participants and items (parallel eigenvalues: 1.41, 1.33, 1.26, 1.21, 1.16, 1.12, 1.08). As hypothesised, only the first two factors explained more variance than could be attributed to chance.

Regression analyses indicated that FEI-CW was significantly associated with SDO ($\beta = .21, t = 3.36, p < .05$), whereas FEI-DW was not ($\beta = .05, t = .81, p = .42$). The opposite pattern of results was observed when predicting RWA. In this case, when considered simultaneously, FEI-DW was significantly associated with RWA ($\beta = .22, t = 3.50, p < .05$), whereas FEI-CW was not ($\beta = -.05, t = -.74, p = .46$).

Discussion

As predicted, and consistent with Duckitt’s (2001) original DPM structure, the two subscales of the FEI-DSW appeared to independently index two distinct worldview schemas that differentially predicted RWA and SDO.

Study 2

I extended my analysis of the factor structure of the FEI-DSW in Study 2 in a confirmatory factor analysis (CFA) of data from a large community sample. CFA allows formal tests of how well a model (in this case a model of two distinct but correlated factors representing FEI-DW and FEI-CW) fits the observed data. CFA also allows tests of whether the hypothesised model fits the data significantly better than plausible
alternatives (in this case a single-factor model in which I modelled FEI-DW and FEI-CW as representing a single latent worldview factor).

Method

Participants and procedure

Participants were 300 adults who were approached in public places. Participants (142 men, 151 women, seven unspecified; \(M_{\text{age}} = 25.02\) \(SD_{\text{age}} = 8.93\)) were invited to complete the questionnaire at the time they were approached. Forty-six percent of participants were born in New Zealand. Participants were offered a small candy as thanks.

Measures

The final 18-item version of FEI-DSW was administered as in Study 1. Both FEI-CW \((\alpha = .90)\) and FEI-DW \((\alpha = .93)\) subscales showed good internal reliability.

Results

I conducted a CFA testing the hypothesised dual-factor structure of the FEI-DSW. The nine items assessing each subscale were modelled as loading on two distinct but correlated latent variables representing FEI-CW and FEI-DW. All items were strongly related to their hypothesised latent factor.

When evaluating model fit, Hu and Bentler (1999) suggested that reasonable measurement models should generally have a Standardized Root Mean Square Residual (SRMR) of near or below .08; Non-Normed Fit Index (NNFI), Comparative Fit Index (CFI) and Incremental Fit Index (IFI) values of around or above .95; and a Root Mean Square Error of Approximation (RMSEA) of near or below .06. Fit indices for the
hypothesised model were: $\chi^2 (169) = 496.54$, sRMR = .055, NNFI = .97, CFI = .97, IFI = .97, RMSEA = .08. The hypothesised model performed reasonably well according to most of these indices, indicating reasonable model fit. The RMSEA of .08 was slightly above the accepted threshold of .06. Critically, however, the sRMR was within acceptable bounds (less than .08). The hypothesised dual-factor model also provided a significantly better fit than an alternative single-factor model in which items assessing FEI-CW and FEI-DW loaded on a single latent variable ($\chi^2_{d.f.} (1) = 571.2$, $p < .01$). As observed in Study 1, the two subscales of the FEI-DSW appear to index two distinct worldview schemas.

Discussion

Study 2 validated the FEI-DSW, finding reasonable support for the proposed dual-factor structure.

General discussion

Relatively little attention has been paid to testing and refining the social worldview component of the DPM compared to personality and ideology components (but see Sibley, Wilson & Duckitt, 2007a; Van Hiel, Cornelis & Roets, 2007; Federico et al., 2009 for exceptions). The present study provided an alternative, theoretically-derived worldview scale intended to operationalise worldviews strictly as schematic beliefs composed of frequency-based content rather than ideological attitudes. The FEI-DSW was developed in adherence to a formal definition of worldviews as schematic knowledge structures about the nature of the social world in general. Not only is the FEI-DSW thus a more theoretically precise measure of the schematic content of
people’s worldviews, it should also serve to allay concerns about possible content overlap with the DPM measures of ideological attitudes, SDO and RWA (as discussed in chapter four).

The results of the present studies confirmed the hypothesised dual-factor structure of the FEI-DSW. As expected, the two factors, dangerous worldview schemas (FEI-DW) and competitive worldview schemas (FEI-CW), were consistent with Duckitt’s (2001) original DPM social worldviews dual-factor structure. Also as I had hypothesised, results from Study 1 indicated that the FEI-DW subscale was significantly and positively related to RWA and was not significantly related to SDO. Conversely, the FEI-CW subscale was significantly and positively related to SDO, and not RWA. Thus, the FEI-DSW appears to be a valid measure of the worldview component as described in Duckitt’s (2001) DPM with the two factors assessing social worldviews as schemas that differentially predict RWA and SDO.

The two studies I report in this chapter provide good support for the reliability and construct validity of the FEI-DSW. The two subscales are internally reliable and psychometrically distinct. Study 1 provided preliminary support for the hypothesised factor structure, extracting two worldview dimensions: FEI-DW and FEI-CW. Study 2 indicated that the proposed dual-factor model demonstrated a substantially better fit to the data than an alternative single-factor model. Schemas people have about the social world in general, therefore, seem best represented by two underlying worldview dimensions: that people in general are dangerous and deviant versus safe, and that people in general are competitive versus cooperative.

My measure of social worldviews should reflect perceptions of the descriptive normative occurrence of competitive and dangerous behaviour in society. Cialdini, Reno, and Kallgren (1990) explained that descriptive norms influence behaviour as
people conform to what is typical or “do what everybody else does.” Prescriptive normative influence, on the other hand, operates by specifying what conduct is morally approved or disapproved (Cialdini et al., 1990). I tentatively suggest that descriptive norms, such as the frequency of certain social events, leads to the creation of relevant prescriptive norms, or ideological attitudes through the temporal cognitive process described in the DPM. Consistent with the DPM for example, if a society is perceived as normatively and descriptively dangerous (i.e., a dangerous worldview schema), then prescriptive norms for morally sanctioned social control should emerge in order to preserve the security of ingroup members.

I reasoned that worldview beliefs could be adequately distinguished from ideological attitudes by (a) using a response scale ranging from zero to 100 and (b) framing the worldview items as estimations of the frequency of events in the social world. This latter distinction, I argue, operationalises worldviews specifically as descriptive schematic beliefs about the social world rather than as prescriptive ideological responses to the perceived social world. With the benefit of hindsight, it seems that many of Duckitt’s (2001) worldview scale items may tap aspects of both descriptive schematic beliefs and prescriptive ideological attitudes. For example, “Life is not governed by the ‘survival of the fittest’ [descriptive content]. We should let compassion and moral laws be our goal [prescriptive content]” and, “It’s a dog-eat-dog world [descriptive content] where you have to be ruthless at times [prescriptive content].” My frequency-estimation operationalisation of worldview items offers an alternative to the original DPM social worldview scales that does not contain a prescriptive attitudinal item content. This, I believe, addresses concerns about possible content overlap between worldview and attitude scales (Van Hiel, Cornelis and Roets, 2007; see chapter four).
It is important to emphasise that I do not necessarily expect my FEI-DSW scales to predict more variance in SDO and RWA than the original DPM worldview measures. They may even predict less variance considering my new scales were designed as more narrow-bandwidth constructs that specifically assess only descriptive social worldview beliefs. Thus, we can be more confident that the variance my measures predict occurs because of genuine differences in schematic beliefs rather than because of potentially shared variance due to content overlap.

There is an important alternative theoretical interpretation of my schematic worldview construct. In a multi-discipline review of worldview concepts, Koltko-Rivera (2004) proposed a number of theoretical distinctions between worldviews and schemas. Perhaps the most pressing of these is that schemas are typically considered to be monopolar beliefs (i.e., schematic representations of an object range along a single pole, from absence to presence). Worldviews, however, are often at least bipolar where, for example, dangerous worldview beliefs range between two opposite poles: the world as dangerous and threatening at one end, and the world as safe and secure at the other (Duckitt, 2001). I do not, however, foresee any interpretive problems in operationalising worldviews as schemas in the context of the DPM framework. It is entirely in keeping with my definition of schemas, in fact, that they are capable of representing continuums such as worldviews. I note that whereas Koltko-Rivera (2004) intended to distinguish his concept of worldviews from other conceptualisations of schemas, my intention was to distinguish the worldview component of the DPM from the ideological attitude component. I maintain that my schematic operationalisation of worldviews is a legitimate and effective means of doing so.

I acknowledge that my findings are concurrent and correlational and therefore do not necessarily demonstrate that perceiving the world as more dangerous causally affects...
RWA, or that perceptions of an especially competitive world cause SDO. Thus, a logical next step in developing and testing the FEI-DSW is to employ these measures in longitudinal and experimental research designs. The studies presented in this chapter, though, serve to demonstrate the strength of fostering the reciprocal influence of theory and data. Theory has progressed markedly since the original conception of the DPM’s worldview constructs, drawn from Altemeyer’s (1988, 1998) Belief in a Dangerous World, PP-MAD and E-MAD scales. One perspective, schema theory, has provided a framework for conceptualising the DPM worldview dimensions as primarily concerned with schematic or descriptive perceptions of the social world. Taking full account of these developments, the FEI-DSW should enable more detailed and rigorous tests of the DPM by providing a measure that isolates the schematic content of individual differences in worldviews, and thus will hopefully allow for further extensions of the DPM.
Bridging comment

In chapter five I developed and validated a new ideology-free measure of dangerous and competitive social worldviews in the DPM. The Frequency Estimation Index of Dual Social Worldviews (FEI-DSW) extended the meta-analysis and updated worldview measure presented in chapter four by ensuring that worldview beliefs were measured as schemas: descriptive beliefs about what other people are like in general. This operation is consistent with the original theoretical basis from which the DPM worldview construct was derived. In chapter six I will further validate my new measure by examining whether the variance explained in RWA and SDO is the same as that explained by the original measures. The FEI-DSW assesses a theory-derived schematic worldview component, but it remains to be seen whether this is the same schematic aspect of worldviews that the original measures assess.

Chapter six

A comparison of broad-bandwidth and frequency-specific measures of competitive and dangerous worldviews

Abstract

I compare and contrast existing broad-bandwidth and frequency-specific worldview measures predicting Right-Wing Authoritarianism (RWA) and Social Dominance Orientation (SDO). As expected, broad-bandwidth and frequency-specific measures of dangerous worldview predicted common variance in RWA, and competitive worldview measures predicted common variance in SDO. Only the broad-bandwidth measures retained a unique concurrent association with RWA and SDO ($n = 347$ New Zealand undergraduates). I argue that these alternative worldview measures share a common component reflecting schematic beliefs about the level of danger and threat in the social world (a descriptive belief component). The broad-bandwidth measure should be better suited for assessing a mixture of descriptive and prescriptive beliefs about how the social world ought to be, whereas my newer frequency-specific index is better suited for isolating the descriptive component of social worldview schemas. Directions for research examining heuristic biases that shape descriptive components of social worldview schemas are discussed.

Note. An earlier version of this chapter has been published in the journal Personality and Individual Differences and is hereafter referenced as follows:

Introduction

“It is impossible to found a civilization on fear and hatred and cruelty. It would never endure.”

(Orwell, 1949, p. 296)

The Dual Process Model of ideology and prejudice (DPM; Duckitt, 2001) proposes that Social Dominance Orientation (SDO) and Right-Wing Authoritarianism (RWA) index dual aspects of a cognitive-motivational system underlying individual differences in prejudice. According to the DPM, the motivational bases for RWA and SDO are provided by schematic knowledge structures about the nature of the social world, specifically what other people “out there” are like in general. The susceptibility of these knowledge structures, in turn, to environmental cues and socialisation processes helps to explain why George Orwell’s (1949) protagonist in the above epigraph was so mistaken. Schematic beliefs about the social world as fearsome and cruel can form and be maintained as readily as beliefs that the world is fair and safe. In chapter five I devised and validated a new narrow-bandwidth Frequency Estimation Index of Dual Social Worldviews (FEI-DSW) in adherence to a theory-derived definition of worldviews as schematic knowledge structures. This construct has not yet been validated against the existing ideological-attitude worldview measures however.

A core premise on which the DPM is founded is that competitive worldviews should predict individual differences in SDO and dangerous worldviews should predict differences in RWA. The present study assesses the shared and unique variance in SDO and RWA predicted by the original DPM ideological-attitude worldview measures and my new frequency-estimation measures. The usual method of validating new measures is an evaluation of the incremental variance they predict in an outcome variable. In this
case, such a test would assess whether the FEI-DSW explains novel variance in SDO and RWA that is unexplained by the ideological-attitude worldview measures.

It is important to note at the outset that this is not expected in the present study. Instead, hierarchical regression analyses will test the extent to which the FEI-DSW and the ideological-attitude measures of social worldview predict common variance in SDO and RWA; the FEI-DSW measures should no longer account for any unique variance in SDO and RWA when the ideological-attitude measures are added to the regression model. I argue that both scales are predicting variance in SDO and RWA explained by descriptive schematic content of social worldviews. Furthermore, I expect the ideological-attitude measures to explain additional variance in SDO and RWA beyond that also explained by the frequency specific measure. This should be the case because the ideological attitude measures appear to contain a mixture of both descriptive and more prescriptive perceptions of the social world, and thus overlap more with RWA and SDO which also concern prescriptive attitude content.

The FEI-DSW assesses perceptions about what other people in society are generally like. Ideological attitudes can be differentiated as prescriptive responses to these belief structures about other people at large; in other words, how other people in general should be responded to. Differentiating the components in this attitude-formation process is important for isolating factors affecting attitude-formation at different stages, including of course Big Brother (Orwell, 1949). As I will go on to demonstrate in Section 3, for example, the FEI-DSW enables descriptive worldview beliefs to be experimentally manipulated in order to examine heuristic biases in the formation of schematic worldview beliefs.

*Worldviews in the dual process model*
According to the DPM, SDO and RWA are not personality traits that exist independently of situational influences. Rather, they are ideological attitudes reflecting motivational goals for group-based dominance and superiority (SDO), and social security and control (RWA). The model posits that these motivational goals should in turn depend upon schematic beliefs about the nature of the social world. Worldview schemas are themselves the product of linear combinations of short-term, fast-changing environmental cues and more enduring personality traits and slow-changing sociostructural processes. The worldview component of the DPM provides a useful framework for understanding the systematic variability in SDO and RWA across situations (Sibley & Liu, 2010) and thus helps to integrate competing explanations of the factors underlying prejudice.

According to Duckitt et al. (2002), relatively stable perceptions of the social world as a competitive jungle (CW) characterised by a “ruthless, amoral struggle for resources and power in which might is right and winning is everything” (p. 92) produce the motivational goals indexed by SDO. On the other hand, relatively stable perceptions of the social world as a dangerous place (DW) in which “good, decent people’s values and way of life are threatened by bad people” (p. 92) result in the motivational goals indexed by RWA. Schematised worldviews should reflect the most salient and consistent information about levels of competition and danger that characterise the social world and, specifically, other people in that world. Once formed, social worldview schemas should anchor beliefs about the social world, predisposing individuals to unduly weight new information to be consistent with their existing schemas (Sibley & Duckitt, 2009; Sibley, Wilson & Duckitt, 2007a).

Worldviews as schemas
A revised frequency-estimation measure of social worldviews in the DPM formally operationalising this component as descriptive schematic knowledge structures was devised (see chapter five). The original DPM measures were based on a conceptualisation of social worldviews as “a coherent set of beliefs about the nature of the social world, and specifically what people are like, how they are likely to behave to one, and how they should be responded to and treated” (Duckitt, 2001, p. 61). As I argued in chapter five, this definition appears to comprise both schematic beliefs about the social world (what people are like), as well as ideological or prescriptive attitudes (how they should be responded to). In that chapter I presented a more narrow-bandwidth measure isolating the descriptive component.

The FEI-DSW requires participants to estimate the percentage frequency of certain social events. Participants are asked to estimate the number of people in society they think would potentially, or hypothetically, engage in various dangerous or competitive social actions (see Appendix 1 for construct definitions, items, and participant instructions). The FEI-DSW therefore assesses schematic content about what other people in general are like. In contrast, the original ideological-attitude measures should assess a more broad-bandwidth conceptualisation of worldviews that incorporates both a common descriptive component and, uniquely, a more prescriptive ideological component regarding how people should be responded to (consistent with Duckitt’s, 2001, definition).

Consistent with the structure of social worldviews proposed in the DPM (Duckitt, 2001; Duckitt et al., 2002) the FEI-DSW is best represented by two factors: competitive worldview schemas (FEI-CW) and dangerous worldview schemas (FEI-DW). Moreover, FEI-CW is significantly and positively related to SDO (but not RWA) and FEI-DW is significantly positively related to RWA (but not SDO) (see chapter five).
What remains to be seen is whether the FEI-DSW worldview measures predict common variance in RWA and SDO with the ideological-attitude worldview measures. This is an important step in validating the FEI-DSW as it is always possible that due to the unique construct design this measure may potentially assess schematic content that, although correlated with SDO and RWA, may not reflect the same schematic content assessed by the ideological-attitude worldview measures.

Overview and summary

Here I extended previous validity tests of the FEI-DSW in chapter five using hierarchical regression analysis to test the extent to which FEI-DW and FEI-CW predict common variance in SDO and RWA with ideological-attitude measures of social worldviews, and thus whether the FEI-DSW is an accurate index of worldviews as originally conceived in the DPM. Typical means of validating new measures expect increased incremental variance. On the contrary, I hypothesise that the FEI-DSW should predict less variance in SDO and RWA than is generally observed using the original DPM measures of worldview. First, I predict that the ability of the FEI-DSW to predict SDO and RWA should be reduced to non-significance when ideological-attitude measures of worldviews are added to a model predicting these ideological outcomes as these measures should share a common component reflecting schematic beliefs about the level of danger and threat in the social world. If unique variance explained by FEI-DW and FEI-CW remains in the full model, these constructs may be assessing schematic content beyond that originally intended in the DPM. Second, the original DPM measures should retain a unique concurrent association with SDO and RWA reflecting the fact that these measures assess a mixture of descriptive and prescriptive worldview content.
Method

Participants and procedure

Participants were 347 undergraduate students from a New Zealand university (245 females, 102 males) with a mean age of 19.68 years ($SD = 6.08$). Participants were invited to complete an online questionnaire during university laboratory sessions. By completing the questionnaire participants were entered into a prize draw for NZ$200 in grocery vouchers.

Measures

*Original worldview measures.* Duckitt et al.’s (2002) original 10 items measuring dangerous worldview and 20 items measuring competitive-jungle worldview were rated on scales ranging from 1 (strongly disagree) to 7 (strongly agree). The majority of these items were originally drawn from Altemeyer’s Belief in a Dangerous World, (1988), PP-MAD and E-MAD (1998) scales. Examples of competitive worldview items include: “Winning is not the first thing; it’s the only thing” (pro-trait) and, “The best way to lead a group under one’s supervision is to show them kindness, consideration, and treat them as fellow workers, not as inferiors” (con-trait). Examples of dangerous items include: “Every day as society become more lawless and bestial, a person’s chances of being robbed, assaulted, and even murdered go up and up” (pro-trait) and, “If a person takes a few sensible precautions, nothing bad is likely to happen to him or her; we do not live in a dangerous world” (con-trait).

*FEI-DSW measures.* The 18-item FEI-DSW was administered with instructions intended to assess a hypothetical and largely content-free perceived event frequency (see Appendix 1). Items were rated on a percentage scale ranging from 0% to 100% which participants indicated by selecting a percentage value from an electronic pull down menu.
Ideological attitude measures. Eight randomly selected and balanced items from Sidanius and Pratto’s (1999) SDO scale and eight from Altemeyer’s (1998) RWA scale were used to assess ideological attitudes. All items were rated from 1 (strongly disagree) to 7 (strongly agree). Reliability (Cronbach’s alphas), means and standard deviations for all measures are reported in Table 6.1.

Results

I first conducted a CFA to confirm the hypothesised dual-factor structure of the FEI-DSW. The nine items assessing each subscale were modelled as loading on two distinct but correlated latent variables representing FEI-CW and FEI-DW. All items were strongly related to their hypothesised latent factor. The hypothesised model performed well (see Hu and Bentler, 1999) with the following fit indices: $\chi^2(134) = 339.75$, sRMR = .051, NNFI = .97, CFI = .98, IFI = .98, RMSEA = .067. The FEI-DSW therefore demonstrates good fit for a dual-factor model of social worldviews, consistent with the DPM.

Worldviews predict SDO and RWA

I conducted a series of regression analyses comparing the shared versus unique variance in concurrent levels of SDO and RWA as predicted by the original (CW and DW) and new (FEI-CW and FEI-DW) measures of social worldviews. CW was significantly and strongly associated with SDO ($\beta = .62, t = 14.69, p < .01$), whereas DW was less so ($\beta = .10, t = 2.41, p < .05$). Conversely, DW was significantly and strongly associated with RWA ($\beta = .50, t = 10.85, p < .01$), whereas CW was more moderately associated ($\beta = .17, t = 3.79, p < .01$). Further regression analyses revealed a similar pattern of relationships using the FEI-DSW scales as independent variables. As with the original DPM social worldview measures, FEI-CW was significantly associated
with SDO ($\beta = .17$, $t = 2.40$, $p < .05$), whereas FEI-DW was not ($\beta = -.07$, $t = -1.02$, $p = .31$). Conversely, FEI-DW was significantly associated with RWA ($\beta = .16$, $t = 2.26$, $p < .05$), whereas FEI-CW was not ($\beta = -.02$, $t = -.35$, $p = .73$). Bivariate associations between all variables are presented in Table 6.1. Consistent with core predictions offered by the DPM, both scales thus differentially predicted SDO and RWA.

Table 6.1. Descriptive statistics and bivariate correlations between broad-bandwidth DPM social worldview measures, the FEI-DSW dimensions, RWA, and SDO.

<table>
<thead>
<tr>
<th></th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
<th>6.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
<th>6.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Competitive Worldview</td>
<td>1.15*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Dangerous Worldview</td>
<td></td>
<td>1.20*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. FEI-CW</td>
<td>1.10</td>
<td>1.22*</td>
<td>1.64*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. FEI-DW</td>
<td>1.05</td>
<td>1.34*</td>
<td>1.08*</td>
<td>1.14*</td>
<td>1.33*</td>
<td></td>
</tr>
<tr>
<td>5. SDO</td>
<td>1.63*</td>
<td>1.19*</td>
<td>1.12*</td>
<td>1.04</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. RWA</td>
<td>1.25*</td>
<td>1.52*</td>
<td>1.08*</td>
<td>1.14*</td>
<td>1.33*</td>
<td></td>
</tr>
</tbody>
</table>

$M$ 2.76 3.80 34.63 18.04 2.79 3.12
$SD$ .84 .92 17.13 12.07 .93 .95
$\alpha$ .90 .81 .89 .90 .90 .93

$n = 347$, * $p < .05$.

Shared variance of worldview measures

Hierarchical regression analyses then investigated how both the original DPM worldview measures and the FEI-DSW scales jointly related to SDO and RWA, the results of which are presented in Table 6.2. In the model predicting SDO, FEI-CW was entered at step one. The second step included the original CW scale to assess whether FEI-CW still predicted unique variance in SDO. As expected, despite predicting a significant amount of variance in SDO at step 1 ($R^2 = .02$, $p < .05$) FEI-CW no longer accounted for unique variance when CW was added to the model. Likewise, FEI-DW
predicted RWA at step one ($R^2 = .02$, $p < .01$) but not when DW was added to the model at step two.

Table 6.2. Multiple regression analyses examining the unique effects of FEI-CW vs. broad-bandwidth CW and FEI-DW vs. broad-bandwidth DW on attitude measures SDO and RWA.

<table>
<thead>
<tr>
<th></th>
<th>SDO</th>
<th>RWA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\beta$</td>
<td>partial</td>
</tr>
<tr>
<td><strong>Step 1: FEI only</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FEI-CW</td>
<td>.12</td>
<td>.12</td>
</tr>
<tr>
<td>FEI-DW</td>
<td>.04</td>
<td>.04</td>
</tr>
<tr>
<td><strong>Step 2: Full model</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FEI-CW</td>
<td>.06</td>
<td>.08</td>
</tr>
<tr>
<td>CW</td>
<td>.63</td>
<td>.63</td>
</tr>
<tr>
<td>FEI-DW</td>
<td>-.01</td>
<td>-.01</td>
</tr>
<tr>
<td>DW</td>
<td>.20</td>
<td>.19</td>
</tr>
</tbody>
</table>

Squared semi-partial correlations indexed the unique variance accounted for by the original and newer FEI-DSW measures in each model. The results reported in Table 6.2 indicate that the FEI-DSW measures failed to significantly predict unique variance above and beyond that of the original CW and DW measures ($sr^2$'s = .00 and -.02). On the other hand, in the full regression model predicting SDO, CW explained a significant amount of unique variance beyond that shared with FEI-CW ($sr^2 = .39$). CW did not explain any unique variance in RWA however ($sr^2 = .06$). DW explained a significant amount of unique variance beyond that shared with FEI-DW in the model predicting RWA ($sr^2 = .25$), as well as in the model predicting SDO ($sr^2 = .19$). I argue that the unique variance predicted by the original worldview measures indicates that these scales
assess additional prescriptive worldview content that is not shared by the more narrow-bandwidth FEI-DSW measures.

Discussion

The present study extended validation of the FEI-DSW social worldview measure in chapter five by indicating that the variance in SDO and RWA predicted by the FEI-DSW is comparable to that explained by existing worldview measures. The FEI-DSW is thus an accurate representation of social worldview schemas as originally intended in the DPM. Consistent with previous findings, competitive worldview schemas (indexed by FEI-CW) were significantly and positively related to SDO but not RWA. Dangerous worldview schemas (indexed by FEI-DW) on the other hand, predicted RWA but not SDO. Likewise for the original DPM worldview measures, CW strongly predicted SDO but less so RWA, and DW strongly predicted RWA and was only moderately associated with SDO.

Moreover, the FEI-DSW indices did not account for any unique variance in SDO and RWA beyond that predicted by the original DPM worldview measures. This suggests that both constructs predict common variance in RWA and SDO which I argue probably represents descriptive schematic beliefs about what other people in the social world are like in general. The FEI-DSW is specifically designed as a more narrow-bandwidth assessment of just this component. The original worldview measures did predict unique concurrent variance in SDO and RWA, suggesting that these measures should be better suited to assessing a mixture of descriptive and prescriptive worldview content. In contrast, the FEI-DSW is more suited for isolating the descriptive content of social worldview beliefs. As I shall discuss, the FEI-DSW can therefore be utilised in
experimental designs priming worldview beliefs and examining heuristic biases in
dangerous and competitive worldview schemas.

Hierarchical versus linear processes

The research presented in Section 2 supports the FEI-DSW as a narrow-
bandwidth measure of schematic social worldviews concerning what other people “out
there” in the social world are like. One possible limitation of the FEI-DSW however,
inherent in its narrow-bandwidth assessment of schematic worldview content, is that the
measure may not be as sensitive to potential components of worldviews other than those
tapped by estimations of event frequency. The DPM worldview constructs, for example,
are a product of both interpersonal as well as societal level contexts (Duckitt & Sibley,
2010a). It is possible therefore that worldviews are not only distinct from ideological
attitudes temporally, but also hierarchically in terms of the level of social processing at
each of these two stages in the DPM.

Alternative theoretical bases for the model’s processes certainly warrant further
investigation and there is likely a role for both scales addressed here in fully
encompassing social worldviews. As a narrow-bandwidth assessment of schematic
content however, one immediate benefit of the FEI-DSW is that it may help to address
concerns about item content overlap between the worldview component of the DPM and
RWA and SDO (see Van Hiel, Cornelis & Roets, 2007).

Conclusion

The measurement of dangerous and competitive social worldviews reflecting a
mixture of descriptive and prescriptive content, as well as the component of worldview
reflecting descriptive content specifically, provide useful avenues for future research.
Both measures considered here, in my view, assess different aspects of the same
construct, and thus provide researchers with the ability to test different predictions
regarding the development and outcomes of the worldview construct. The present study offers more specific evidence that the FEI-DSW does indeed assess those schematic aspects of social worldviews proposed in the DPM and supports arguments that schemas form an important facet of worldviews in the process underlying prejudice. Orwell’s (1949) Nineteen Eighty-Four ends with the protagonist, Winston Smith, undergoing a process of ‘reintegration’ in which he is forced to align his thoughts with that of the dominant ideology. This extreme example of indoctrination emphasises the linear cognitive process through which stable schematic beliefs presumably provide the motivational basis for ideological attitudes. Once Winston adopted the worldview of Big Brother, he was motivated to ideologically turn against his prior values and against the “resistance.”
Bridging comment

This chapter established that my new FEI-DSW measure of DPM social worldviews assesses the same schematic component of dangerous and competitive social worldview beliefs as that of the original measures developed for the model. This chapter thus completes the broad aim of Section 2 to establish whether an asymmetry of effect sizes in the DPM was robust, and to develop a new measure of worldviews that ensured this component reflected schematic belief content, addressed the asymmetry, and was a valid measure of the DPM social worldviews. Crucially, the FEI-DSW can be experimentally manipulated in order to examine predicted interactions between personality traits and relevant environmental or contextual cues to uniquely demonstrate how they jointly influence social worldview beliefs. Section 3 utilises my new measure to examine for the first time a proposed mechanism through which the Big-Five personality trait of Openness to Experience interacts with exposure to information about danger and threat to shape perceptions of the social world as dangerous and threatening. Examining this hypothesized mechanism may not have been possible using existing DPM measures and constitutes a novel empirical demonstration of personality operating as a perceptual bias or motivating cognitive-style that predisposes individuals to expressions of prejudice.
SECTION 3
AN EXPERIMENTAL TEST OF THE DUAL PROCESS MODEL

People low in Openness to Experience should be more sensitive to information confirming their beliefs that other people in the social world are generally dangerous and threatening to their own groups’ values. In this final section of the thesis I propose a novel experimental study design, manipulating environmental cues that the social world is dangerous by anchoring the FEI-DSW dangerous worldview subscale to indicate different levels of social danger. Section 3 represents a culmination of the research presented in the previous sections, utilising the scale developed in Section 2 to extend the novel validation research in Section 1 by testing a hypothesised mechanism through which one personality trait in particular causally produces dangerous worldview schemas. The cognitive mechanisms by which personality traits are thought to operate in the DPM have never before been demonstrated, and Section 3 aims broadly to situate this model within a motivated social-cognition perspective. In other words, personality traits operate in the DPM as a kind of “cognitive style” by predisposing individuals to be more or less likely to form schemas about the social world as dangerous and competitive.

Chapter seven

Seize and freeze: openness to experience shapes judgments of societal threat

Abstract

The Dual Process Model (DPM) of ideology and prejudice proposes specific information-processing mechanisms by which broad-bandwidth personality shapes social worldviews. I adapt a classic anchoring and adjustment paradigm and show that Openness to Experience interacts with exposure to information about safety and threat to shape judgments of societal threat and danger. Those low in Openness to Experience were more sensitive to anchor information about the proportion of dangerous and threatening people in society (Study 1). The moderating effect of Openness to Experience on dangerous worldview estimates was due specifically to an intellect or cognitive component of this personality trait, rather than an aesthetic component (Study 2). These results indicate low Openness increases the tendency to be anchored by threat-relevant cues.

Note. An earlier version of this chapter has been accepted for publication in the Journal of Research in Personality and may be referenced as follows:

Introduction

The broad-bandwidth Big-Five personality trait, Openness to Experience, has drawn attention for its role in the cognitive processes underlying authoritarian attitudes and prejudice (e.g., Kruglanski & Webster, 1996; Van Hiel, Mervielde et al., 2004). Openness to Experience, relative to the other four Big-Five personality dimensions, may operate as a *seize and freeze* mechanism; a tendency to be more amenable to stereotype-consistent information, and then resistant to potentially alternative evidence. According to the Dual Process Model of ideology and prejudice (DPM; Duckitt, 2001), low levels of Openness to Experience may lead to higher authoritarianism indirectly via schematic beliefs that the social world is dangerous and threatening. Building on this reasoning, Duckitt and Sibley have argued in various papers that those low in Openness to Experience develop more authoritarian attitudes because they are more attentive to and therefore more influenced by information signaling danger and threat from outgroups (see Duckitt & Sibley, 2009a, 2010, Sibley & Duckitt, 2008, 2012, 2013). This proposition has not been directly tested, however. Here I take a motivated social cognition perspective, arguing that perceptions of the world as dangerous arise from an inflated sensitivity to normative information signaling social danger or threat.

I draw upon the classic experimental design used to test cognitive *anchoring and adjustment* as a framework for empirically examining Sibley and Duckitt’s (2008, 2012) thesis that Openness to Experience shapes perceptions of societal danger through an increased sensitivity to information signaling threat and danger from outgroup members. The anchoring and adjustment heuristic (Tversky & Kahneman, 1974) describes a universal cognitive bias in which judgments can be unduly influenced by prior information. I manipulate (i.e., anchor) participants’ beliefs about the frequency of dangerous social events by applying a recently developed frequency estimation measure.
developed and validated specifically for this purpose (Perry & Sibley, 2010; Perry, Sibley, & Duckitt, 2013a). Openness to Experience should only determine beliefs that the world is more dangerous when perceptions of the social world as characteristically high (rather than low) in danger are primed.

The dual process model

The DPM (Duckitt, 2001) identifies dual cognitive-motivational processes that determine individual differences in prejudice. According to the DPM, these differences are reliably predicted by motivational goals for group-based dominance and superiority – indexed by Social Dominance Orientation (SDO; Pratto et al., 1994) – and social cohesion and collective security – indexed by Right-Wing Authoritarianism (RWA; Altemeyer, 1981). More recent research has integrated the Big-Five model of personality (Sibley & Duckitt, 2008, 2009) – a model describing five relatively independent and broad-bandwidth dimensions of personality (Goldberg, 1999). The dimensions are labeled: Extraversion, Agreeableness, Neuroticism, Conscientiousness, and Openness to Experience. Openness to Experience (and possibly Conscientiousness) is thought to be the main dimension of personality underlying RWA, the effects of which are partially mediated by perceptions of the social world as dangerous and threatening – a dangerous worldview (Sibley & Duckitt, 2008).

Forming the other major ideological attitude dimension of the DPM, SDO stems from beliefs that the social world is a ruthless competitive jungle in which the strong rightfully prevail over the weak. This competitive worldview makes values for power, dominance and social superiority salient for individuals, reflected in high levels of SDO. The model further holds that those low in Big-Five Agreeableness should be more sensitive to signs of competition and risks for exploitation in their social environment.
Therefore, those low in Agreeableness should increasingly develop a competitive social worldview, which in turn leads to higher levels of SDO. Structural equation modeling has shown good data fit to this causal process model, with all hypothesized pathways clearly significant (Duckitt, 2001; Duckitt et al., 2002; Sibley & Duckitt, 2009; Sibley et al., 2010; Van Hiel, Cornelis & Roets, 2007). Longitudinal research also supports the predicted causal pathways in the model (Asbrock et al., 2010; Perry & Sibley, 2011b; Sibley & Duckitt, 2010b; Sibley & Duckitt, 2013; Sibley, Wilson & Duckitt, 2007a). While cross-sectional and longitudinal data are suggestive of hypothesized causal associations, experimental study designs are still required to adequately support claims of causality. Moreover, experimental research is required to demonstrate causal mechanisms that have been proposed as driving observed personality effects in particular.

Considering associations between all five personality traits and dangerous and competitive worldviews, Sibley and Duckitt (2009) reported that Openness to Experience might be one of several Big-Five dimensions that predict dangerous worldview beliefs and RWA. In their structural model, Extraversion, Agreeableness, and Neuroticism were all significantly associated with dangerous worldview and, although Openness to Experience was most strongly related to RWA, very little of this effect occurred indirectly through dangerous worldview. Nonetheless, it has recently been argued that, in contrast with the other four personality traits, Openness to Experience may influence dangerous worldview (and hence RWA) because this trait describes variation in information processing – particularly a tendency to seize and freeze on readily available information in the social environment (Sibley & Duckitt, 2008, 2012). I detail this reasoning in the following section.

Openness to Experience: A cognitive processing perspective
Conceptually, Openness to Experience seems to be closely related to Weber and Kruglanski’s (1994) epistemic need for cognitive closure, a tendency to seize on to the most cognitively available information and freeze on this information in the face of potentially contradictory information. Flynn (2005), for example, observed that majority group members low in Openness to Experience were less influenced by stereotype-disconfirming evidence and more likely to adhere to their negative stereotypes about minority groups. Those higher in Openness to Experience were more likely to abandon their negative stereotypes in the face of alternative evidence.

Discussing their HEXACO model of personality structure, Ashton and Lee (2007) argued that levels of Openness to Experience reflect variation in a tendency toward pursuing idea-related endeavors – such as learning, imagining and thinking. This functional definition emphasizes the possible evolutionary costs and benefits of Openness to Experience. Ashton and Lee (2007) proposed that Openness to Experience should have been beneficial for our ancestors to the extent that it resulted in material and social gains for the individual and their group, but would also expend energy and time, and increase exposure to social and environmental risks. The costs and benefits of Openness to Experience should be different in different ecological niches. This should contribute to variation at the individual level (Ashton & Lee, 2007).

Sibley and Duckitt (2012) proposed two lines of evidence supporting a cognitive processing perspective of Openness to Experience and social worldview formation. First, as mentioned, Openness to Experience is similar in many regards to Webster and Kruglanski’s (1994) epistemic need for cognitive closure. Studies have demonstrated that a need for closure is strongly and consistently related to different forms of prejudice (e.g., Dhont, Roets & Van Hiel, 2011; Cornelis & Van Hiel, 2006; Roets & Van Hiel, 2006, 2011; Roets, Van Hiel & Dhont, 2011; Van Hiel, Pandelaere et al., 2004). Many
of these studies also demonstrated that the relationship is mediated by RWA. Second, Sibley and Duckitt (2012) highlighted a tendency observed in previous studies for individuals to cluster with others similar in their degree of Openness to Experience at both an interpersonal and intergroup level – this is not the case for the other Big-Five personality dimensions however. On this basis, Sibley and Duckitt (2012, p. 173) argued that Openness to Experience should predict dangerous worldview beliefs (and subsequently RWA) because closed-minded people “identify with the existing social order as it provides a normative referent for existing social values and the way things should be.”

This cognitive bias remains to be demonstrated with an experimental manipulation of normative stereotype information, however. Here, I test the function of Openness to Experience in the formation of dangerous worldviews by examining whether this personality trait reflects a tendency to seize onto information suggesting the social world is dangerous (anchoring) and to make subsequent estimations about danger levels consistent with this information (adjustment). I describe this specific form of cognitive heuristic below.

*The anchoring and adjustment heuristic*

Tversky and Kahneman (1974) defined their anchoring heuristic as a response bias in which “different starting points yield different estimates, which are biased toward the initial values” (p. 1128). The extent of this bias varies across individuals, and a number of individual difference factors affecting anchoring have been identified (see Furnham & Boo, 2011 for a recent review). Demonstrating a classic anchoring effect related to Openness to Experience, McElroy and Dowd (2007), for example, asked some people to estimate whether the length of the Mississippi River was greater than or less than 200 miles and others whether it was greater or less than 20,000 miles. Higher levels
of Openness to Experience led to longer estimates in the high-anchor (20,000 miles) condition and shorter estimates in the low-anchor condition (200 miles) relative to lower levels of this personality trait, presumably as open-minded individuals were more amenable to new information (McElroy & Dowd, 2007).

Another line of reasoning, however, suggests that it is rather the relatively closed-minded that are most susceptible to anchoring (Flynn, 2005; Kruglanski & Webster, 1996). The mechanism by which Openness to Experience operates appears to be the tendency for individuals low in Openness to Experience to seize on the most readily available information (typically normative majority-group values) and then freeze on this information in the face of alternative or disconfirming information (Jost et al., 2003; Kruglanski & Webster, 1996).

McElroy and Dowd’s (2007) second study, this time assessing anchoring effects on estimates of the number of African nations in the United Nations, is arguably a more stereotype-relevant context as the United Nations may be seen as fostering dominant Western cultural values. Therefore, closed-minded individuals should see a greater number of African member nations as threatening to this source of stereotype-affirming hegemony. McElroy and Dowd (2007) do report a significant interaction between anchoring condition (the number of African member nations) and Openness to Experience in this study, but interpret the effect as due to differences in open-minded individuals’ estimates. The reported interaction is, however, not necessarily caused solely by the open-minded being generally more amenable to information – it is at least as likely that the interaction occurred because those low in Openness to Experience seized onto their stereotypes that there are few African nations in the United Nations and
froze on these beliefs in the face of stereotype-disconfirming (and socially threatening) information.⁵

Taken together, these perspectives imply that the open-minded are more amenable to anchoring information that is irrelevant to normative stereotypes about danger and threat (e.g., McElroy & Dowd, 2007). Moreover, in cases where that information is relevant to normative social stereotypes – particularly stereotypes pertaining to prejudice and authoritarian attitudes – those lower in Openness to Experience should be more amenable, and therefore more inclined to adjust their estimates of threat accordingly (e.g., Flynn, 2005).

*Overview of the present studies*

According to the DPM, people low in Openness to Experience have developed schematized perceptions of the social world as dangerous and threatening to their way of life because corroborating information is more salient to them. The following Studies 1a and 1b present an experimental manipulation of the prevalence with which people in society would engage in a series of dangerous behaviors (i.e., how dangerous the social world is perceived to be) to examine the extent of this salience bias in participants low versus high in Openness to Experience. Extending these findings in Study 2, I will examine whether this motivational bias is specific to an *intellect* aspect of Openness to Experience.

---

⁵ On closer inspection of their reported means there was a substantial *decrease* in the estimated number of African member nations for those low in Openness to Experience in the high anchor condition (i.e., more African member nations; *M* = 25.29) relative to the low anchor condition (i.e., less African member nations; *M* = 37.27). Moreover, this was of a slightly greater magnitude than the difference in means for those high in Openness to Experience (*M* = 43.46 in the high anchor condition and *M* = 33.70 in the low anchor condition).
Experience (as opposed to an aesthetic openness aspect; see DeYoung et al., 2007; Sibley & Duckitt, 2012).

Previous measures of social worldviews have relied on ratings of ideological statements, such as “There are many dangerous people in our society who will attack someone out of pure meanness, for no reason at all” (Duckitt et al., 2002); the use of such measures is widespread. Indeed, in a recent meta-analysis, Perry et al. (2013b) compiled results from 46 studies with more than 12,000 participants that had used this ideological-type measure of social worldviews. However, although such ideological measures provide an index of the subjective evaluation of the level of danger in the social world, they do not afford a way to easily anchor perceptions in terms of levels of danger, or measure adjustment estimates based on initial anchor values. To address this, Perry and Sibley (2010) devised the Frequency Estimation Index of Dual Social Worldviews (FEI-DSW). This new scale presents participants with a list of possible actions which others in society might conceivably enact, and asks them to “give your best guess about the percentage that would do each of the following things provided there were no apparent personal gains or losses as a result of their action. That is, the percentage of people in New Zealand that would do these things just because they could” (see Perry & Sibley, 2010 for details). The scale items and construct definitions for the FEI-DSW are presented in Appendix 1. Perry et al. (2013a) showed that the scale reliably overlaps with the original ideological Likert-type worldview measures, and constitutes a valid measure of dangerous and competitive social worldviews.

Using the FEI-DSW I devise a method for (a) manipulating the initial anchor information about the level of danger in society within a validated DPM framework, and then (b) assessing frequency estimates of the adjustment effect from the initial anchor. Following Tversky and Kahneman (1974), I do so by first presenting a version of the
dangerous worldview items in the FEI-DSW and asking participants in one condition whether the proportion of people who would do each of the dangerous world actions listed in Appendix 1 was less than or greater than 5%, whereas participants in the other condition were asked whether the proportion of people who would do each action was less than or greater than 25%. Using the standard FEI-DSW, which was designed for exactly this purpose, I then assessed participants’ estimates of the actual (i.e., un-anchored) proportion of people who would perform each action.

For example, half of the participants were asked if the proportion of people in society who would “mug someone” was greater or less than 5%, whereas the other half were asked if that proportion were greater or less than 25%. When subsequently asked to estimate the true frequency of events, participants with low (versus high) Openness to Experience should be more strongly influenced by high-danger anchors and thus more inclined to adjust their estimates upwards in this condition. Relative to the condition in which participants are primed with low-danger anchors, there should be a greater difference between estimates made by those low versus high Openness to Experience in the high-danger anchor condition. Closed-minded individuals should be more prone to seize onto normative stereotype-relevant information (i.e., that society is dangerous) and then freeze on this information when making subsequent judgments because they will be more sensitive to socially threatening information as a signal of potential social cost.

Study 1a and 1b

If those low in Openness to Experience are more likely to hold general, schematic and stable perceptions of the social world as dangerous, this should be due to their tendency to more readily detect information corroborating these beliefs. Study 1a tested this premise by priming (i.e., anchoring) perceptions of societal danger with
suggestions that the number of people who would potentially be dangerous is either (a) high or (b) low. I predicted that (a) the high-danger anchor would lead to higher estimates of dangerous social-world events than (b) the low-danger anchor, but that this difference would only occur for those low in Openness to Experience.

Study 1b included the second worldview dimension in the DPM measuring perceptions of the social world as competitive and hierarchical (as opposed to dangerous). Study 1b thus tested a boundary condition for our predicted effect: the moderating effect of Openness to Experience on the anchoring of social-world beliefs should be limited to judgements of societal threat.

Method

Participants

In both studies, personality was first assessed using the 60-item HEXACO-PI-R (Ashton & Lee, 2007). The HEXACO assesses six global or broad-bandwidth dimensions of personality: Honesty-Humility, Emotionality, Extraversion, Agreeableness, Conscientiousness, and Openness to Experience. Participants were then randomly allocated to conditions manipulating the anchoring values for dangerous worldview estimates (Study 1a) or competitive worldview estimates (Study 1b). Values for the dangerous (Study 1a) and competitive (Study 1b) anchoring manipulation were based on +/- 1 SD of unanchored base-rate (sample mean) judgements for frequency-of-danger (5%, 25%) and frequency-of-competition (15%, 45%) reported in Perry and Sibley (2010).

In Study 1a, participants were presented with a list of the nine items in the FEI-DSW dangerous-world subscale (e.g., “...break into someone’s house”, “...terrorize other people”, “...mug someone”). In the low anchor condition, participants made a
forced-choice judgment about whether less than or greater than 5% of people in society would engage in each of the nine behaviors if they knew they could get away with it. In the high anchor condition, participants judged whether less than or greater than 25% of people in society would engage in each behavior.

In contrast, participants in Study 1b were presented the nine items in the FEI-DSW competitive-world subscale (e.g., “...charm someone to manipulate them”, “...treat poor people as if they were scum”) and asked to make a similar forced-choice judgement in low (less than or greater than 15% of people) and high (less than or greater than 45% of people) anchoring conditions.

Following the anchoring manipulation, participants completed the original (i.e., un-anchored) FEI-DSW, estimating the frequency of dangerous and competitive actions of people in society on a scale ranging from 1% to 100%. The FEI-DSW indexed participants’ estimates of the exact percentage of people in society who they thought would engage in each of nine dangerous and nine competitive behaviors “if they knew they could get away with it.” The FEI-DSW subscales have been previously validated by Perry and Sibley (2010) and demonstrated high internal reliability in the current studies (Cronbach’s alphas are provided in Table 7.1).

Results

Anchoring effect

Bivariate associations and descriptive statistics for all variables are presented in Table 7.1. In Study 1a, participants in the high-anchor condition estimated a greater frequency of dangerous social world events ($M = 20.67, SD = 12.13$) relative to those in the low-anchor condition ($M = 12.80, SD = 8.80; F(1,144) = 19.84, p < .01, \eta^2 = .12$).
Table 7.1. Bivariate correlations and reliability statistics for anchoring condition, worldview estimates, and HEXACO personality dimensions (Study 1a below diagonal, Study 1b above diagonal).

<table>
<thead>
<tr>
<th></th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
<th>6.</th>
<th>7.</th>
<th>8.</th>
<th>9.</th>
<th>10.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Anchor condition</td>
<td>.355**</td>
<td>.232**</td>
<td>.018</td>
<td>-.074</td>
<td>-.141**</td>
<td>.037</td>
<td>-.020</td>
<td>-.069</td>
<td>-.004</td>
<td></td>
</tr>
<tr>
<td>2. FEI Competitive world</td>
<td>.273**</td>
<td>.683**</td>
<td>-.286**</td>
<td>-.039</td>
<td>-.027</td>
<td>-.061</td>
<td>-.122</td>
<td>-.001</td>
<td>-.105</td>
<td></td>
</tr>
<tr>
<td>3. FEI Dangerous world</td>
<td>.348**</td>
<td>.635**</td>
<td>-.110</td>
<td>-.055</td>
<td>.019</td>
<td>-.001</td>
<td>-.030</td>
<td>-.166</td>
<td>-.190</td>
<td></td>
</tr>
<tr>
<td>4. Honesty/Humility</td>
<td>-.054</td>
<td>-.071</td>
<td>-.017</td>
<td>-.030</td>
<td>.164</td>
<td>.395**</td>
<td>.334**</td>
<td>.082</td>
<td>-.148</td>
<td></td>
</tr>
<tr>
<td>5. Emotionality</td>
<td>-.130</td>
<td>-.036</td>
<td>-.083</td>
<td>.136</td>
<td>-.184**</td>
<td>-.328**</td>
<td>.094</td>
<td>-.072</td>
<td>-.405**</td>
<td></td>
</tr>
<tr>
<td>6. Extraversion</td>
<td>.147</td>
<td>-.093</td>
<td>-.021</td>
<td>-.017</td>
<td>-.158</td>
<td>.227**</td>
<td>.265**</td>
<td>.063</td>
<td>-.001</td>
<td></td>
</tr>
<tr>
<td>7. Agreeableness</td>
<td>.008</td>
<td>-.067</td>
<td>.048</td>
<td>.237**</td>
<td>-.166</td>
<td>.080</td>
<td>.065</td>
<td>.204**</td>
<td>-.008</td>
<td></td>
</tr>
<tr>
<td>8. Conscientiousness</td>
<td>-.070</td>
<td>.071</td>
<td>.016</td>
<td>.157</td>
<td>.178</td>
<td>.012</td>
<td>-.100</td>
<td>.224**</td>
<td>-.134</td>
<td></td>
</tr>
<tr>
<td>9. Openness to Experience</td>
<td>-.142</td>
<td>-.193</td>
<td>-.202</td>
<td>.043</td>
<td>-.056</td>
<td>.299**</td>
<td>.169</td>
<td>.027</td>
<td>-.019</td>
<td></td>
</tr>
<tr>
<td>10. Sex (female = 1, male = 2)</td>
<td>-.022</td>
<td>-.150</td>
<td>-.264**</td>
<td>-.191</td>
<td>-.445**</td>
<td>.038</td>
<td>-.078</td>
<td>-.094</td>
<td>.075</td>
<td></td>
</tr>
</tbody>
</table>

Study 1a

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
<th>Cronbach’s alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>33.63</td>
<td>16.90</td>
<td>.90</td>
</tr>
<tr>
<td></td>
<td>4.55</td>
<td>4.57</td>
<td>.89</td>
</tr>
<tr>
<td></td>
<td>4.47</td>
<td>4.23</td>
<td>.77</td>
</tr>
<tr>
<td></td>
<td>4.61</td>
<td>4.99</td>
<td>.77</td>
</tr>
<tr>
<td></td>
<td>1.21</td>
<td>1.19</td>
<td>.78</td>
</tr>
</tbody>
</table>

Study 1b

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
<th>Cronbach’s alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>27.44</td>
<td>14.07</td>
<td>.90</td>
</tr>
<tr>
<td></td>
<td>4.42</td>
<td>4.70</td>
<td>.92</td>
</tr>
<tr>
<td></td>
<td>4.70</td>
<td>4.56</td>
<td>.79</td>
</tr>
<tr>
<td></td>
<td>4.13</td>
<td>4.73</td>
<td>.78</td>
</tr>
<tr>
<td></td>
<td>4.97</td>
<td>4.97</td>
<td>.82</td>
</tr>
</tbody>
</table>

**p < .01

Note. Descriptive statistics are based on the full sample without deletion of outliers.
Table 7.2. Regression models of anchoring manipulation, HEXACO personality dimensions, and their interaction terms predicting frequency estimations in Study 1a and 1b.

<table>
<thead>
<tr>
<th></th>
<th>Model Predicting Frequency-of-Danger Estimations (Study 1a)</th>
<th>Model Predicting Frequency-of-Competition Estimations (Study 1b)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$b$</td>
<td>$se$</td>
</tr>
<tr>
<td><strong>Step 1 Model</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>20.95</td>
<td>2.86</td>
</tr>
<tr>
<td>Sex (female = 1, male = 2)</td>
<td>-6.76</td>
<td>2.11</td>
</tr>
<tr>
<td>Anchor Manipulation</td>
<td>7.71</td>
<td>1.74</td>
</tr>
<tr>
<td>Openness</td>
<td>-6.7</td>
<td>1.85</td>
</tr>
<tr>
<td>Anchor x Openness</td>
<td>-4.16</td>
<td>2.29</td>
</tr>
<tr>
<td><strong>Step 2 Model</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>24.57</td>
<td>3.26</td>
</tr>
<tr>
<td>Sex</td>
<td>-9.33</td>
<td>2.40</td>
</tr>
<tr>
<td>Anchor Manipulation</td>
<td>6.95</td>
<td>1.77</td>
</tr>
<tr>
<td>Openness</td>
<td>0.69</td>
<td>1.95</td>
</tr>
<tr>
<td>Anchor x Openness</td>
<td>-5.35</td>
<td>2.46</td>
</tr>
<tr>
<td>Honesty-Humility</td>
<td>-1.51</td>
<td>1.26</td>
</tr>
<tr>
<td>Emotionality</td>
<td>-2.82</td>
<td>1.39</td>
</tr>
<tr>
<td>Extraversion</td>
<td>-1.09</td>
<td>1.50</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>-0.32</td>
<td>1.32</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>-0.42</td>
<td>1.41</td>
</tr>
<tr>
<td>Anchor x Honesty-Humility</td>
<td>3.46</td>
<td>1.81</td>
</tr>
<tr>
<td>Anchor x Emotionalty</td>
<td>1.11</td>
<td>1.82</td>
</tr>
<tr>
<td>Anchor x Extraversion</td>
<td>1.45</td>
<td>1.99</td>
</tr>
<tr>
<td>Anchor x Agreeableness</td>
<td>2.05</td>
<td>1.86</td>
</tr>
<tr>
<td>Anchor x Conscientiousness</td>
<td>1.10</td>
<td>1.86</td>
</tr>
</tbody>
</table>

Study 1a $n = 146$, Study 1b $n = 180$
In Study 1b, where social competition was manipulated, participants in the high-anchor condition estimated a greater frequency of competitive social world events ($M = 33.45$, $SD = 14.50$) relative to those in the low-anchor condition ($M = 21.95$, $SD = 15.87$; $F(1,178) = 25.62$, $p < .01$, $\eta_p^2 = .13$).

**Openness to Experience and the anchoring effect**

Having documented the classic anchoring effect for both dangerous and competitive worldview estimates, I tested whether this main effect was driven primarily by those low in Openness to Experience. To do so, I conducted a series of multiple regression models including the interaction term for our anchoring manipulation and (centered) Openness to Experience. I conducted the model in two steps, first testing a baseline model, and then extending the model to include the other five dimensions of personality (and the interaction of each of these dimensions with our anchoring manipulation) as covariates.

---

6 Outliers greater or less than 3.29 SD were removed in each study. In Study 1a I removed two cases ($zs = 4.45$ and $3.34$), in Study 1b I removed one case ($z = 3.34$), and in Study 2 I removed two cases ($zs = 3.50$ and $3.40$). In each study the predicted interaction held up when outliers were retained. With regard to differences when the residuals were included, in Study 1a (see Table 7.2) the interaction between Openness to Experience and anchor condition was significant in the baseline model ($b = -5.36$, $se = 2.59$, $\beta = -.27$, $p = .04$); and Emotionality in the full model was no longer a significant predictor of dangerous worldview ($b = -2.23$, $se = 1.58$, $\beta = -.17$, $p = .16$). When outliers were retained in Study 1b, the main effect of sex ($b = -5.89$, $se = 3.27$, $\beta = -.14$, $p = .07$), the main effect ($b = -3.35$, $se = 1.83$, $\beta = -.19$, $p = .07$) of Conscientiousness, and the interaction between Conscientiousness and anchor condition ($b = 4.96$, $se = 2.77$, $\beta = .18$, $p = .08$) in the full model were no longer significant. There were no substantial differences when outliers were retained in Study 2. The method sections summarize the sample with these outliers removed. When outliers were retained in Study 1b, the main effect of sex ($b = -5.89$, $se = 3.27$, $\beta = -.14$, $p = .07$), the main effect ($b = -3.35$, $se = 1.83$, $\beta = -.19$, $p = .07$) of
Table 7.3. Bivariate correlations and reliability statistics for anchoring condition, worldview estimates, and Openness to Experience aspects (Study 2).

<table>
<thead>
<tr>
<th></th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Anchor condition</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. FEI Dangerous world</td>
<td>.390**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Intellect</td>
<td>.030</td>
<td>- .072</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Openness</td>
<td>- .050</td>
<td>.027</td>
<td>.350**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Sex (female = 1, male = 2)</td>
<td>- .062</td>
<td>-.145</td>
<td>.146</td>
<td>.100</td>
<td></td>
</tr>
</tbody>
</table>

M: 16.13  5.06  5.38  1.14  
SD: 10.36  .78  .81  .35  
Cronbach’s alpha: .90  .79  .76  

**p < .01  
Note. Descriptive statistics are based on the full sample without deletion of outliers.

Study 1a: Dangerous worldview. As reported in Table 7.2, the hypothesized anchoring condition x Openness to Experience interaction was significant in the full model (β = -.30). However, in a conservative test with outliers deleted, this interaction was non-significant in the baseline model (p = .07, as reported in Table 7.2). I graphed the predicted values for dangerous world estimation against Openness to Experience scores moderated by the anchoring manipulation using the parameters from the full model. As shown in Figure 7.1, people low versus high in Openness to Experience estimated a greater frequency of dangerous world events when exposed to a high dangerous world anchor (simple slope = -4.66, se = 1.51, t = -3.08, p < .01). There was no significant difference between those low and high in Openness to Experience when exposed to a low dangerous world anchor however (simple slope

Conscientiousness, and the interaction between Conscientiousness and anchor condition (b = 4.96, se = 2.77, β = .18, p = .08) in the full model were no longer significant. There were no substantial differences when outliers were retained in Study 2. The method sections summarize the sample with these outliers removed.
These results indicate that Openness to Experience represents a mechanism that determines individual susceptibility to information confirming that the social world is dangerous – the classic anchoring effect only occurred when the anchor signaled high levels of danger, and closed-minded participants drove this effect. As shown in the lower section of Table 7.2, these effects held when adjusting for the other HEXACO dimensions of personality and their interactions with anchoring condition. Emotionality was also associated with lower estimates of danger ($\beta = -.25$) and men estimated lower levels of danger than women ($\beta = -.33$).

**Study 1b: Competitive worldview.** Using the same procedure, this study tested for interactions between personality and frequency-of-competition estimates. As can be seen on the right-hand side of Table 7.2, the competitive-world anchor condition uniquely predicted higher estimates of competition in the social world ($\beta = .37$), indicating a significant anchoring effect here also. Of the HEXACO personality traits, Conscientiousness uniquely predicted estimates of less competition in the social world ($\beta = -.20$). Conscientiousness also interacted with anchoring condition to predict competitive worldview ($\beta = .22$). The interaction between anchoring and Conscientiousness was not predicted, and simple slope estimates indicated only marginal significance for the effect. The interaction occurred because Conscientiousness was a marginally significantly associated with competitive world estimates in the low anchor condition ($simple slope = -3.43, se = 1.77, t = -1.94, p = .054$), but positively signed but not significantly associated with competitive world estimates in the high anchor condition ($simple slope = 2.38, se = 2.01, t = 1.18, p = .24$). This ancillary finding indicates that Conscientious individuals may be less inclined to believe the social world is competitive, but this resistance is reduced when
competition is perceived to be particularly high. There were no further main or interaction effects for any other personality traits here. This is expected given I hypothesized that low Openness to Experience should drive the anchoring effect for dangerous worldview estimates but not necessarily competitive worldview estimates.

![Figure 7.1. Interaction of Openness to Experience and dangerous-world anchor predicting frequency-of-danger estimations (Study 1a).](image)

**Discussion**

Consistent with Tversky and Kahnemann’s (1974) anchoring and adjustment heuristic, the high-danger and high-competition anchoring information led to estimates of higher frequencies of social danger and competition respectively. Critically however, when estimating perceptions of danger and threat (relative to competition), this difference only occurred for those low in Openness to Experience. Our findings support the prediction derived from Duckitt’s (2001) DPM that those low in Openness to Experience should show a *seize and freeze* bias, being prone to
more readily detect information suggesting that the social world is dangerous and threatening. Consequently, they are more likely to hold general, schematic and stable perceptions of the social world as such. That there were no further moderating effects for the other personality variables suggests that the hypothesised sensitivity to information corroborating normative societal-danger schemas is specific to Openness to Experience.

Moreover, Study 1b indicated that the bias shown by those low in Openness to Experience is uniquely related to perceptions of danger, as opposed to competition. Even though there was an overall anchoring effect from information suggesting social competition, there was no significant interaction effect in which Openness to Experience shaped societal-competition beliefs. As I noted earlier, those low in Openness to Experience are more amenable to information in cases where that information is threat-relevant – when that information is seen as confirming normative stereotypes about other people at large in society being dangerous and threatening.

To sum up thus far, Study 1 adapted a classic anchoring and adjustment manipulation and showed that Openness to Experience interacts with exposure to information about danger and threat to shape social worldview schemas. Extending Sibley and Duckitt (2012), results from Study 1 indicated that those low in Openness to Experience were more sensitive to normative information confirming negative stereotypes about other people. The question remains, however: what in particular makes closed-minded people more susceptible to threat-relevant information? The tendency to seize and freeze may imply lower confidence in one's own estimates and cognitive ability, and a greater need to rely on external sources of information. DeYoung et al.’s (2007) intellect aspect of Openness to Experience seems to capture
this proposed underlying cognitive style by which Openness to Experience is thought to operate (see Sibley & Duckitt, 2012). I examine this possibility in Study 2.

**Study 2**

Study 1 indicated that those low in Openness to Experience are more influenced by normative information that confirms schematic beliefs that the social world is characterized by high levels of danger and is thus threatening to ingroup members and their values. Consistent with the DPM, low Openness to Experience creates and maintains a schematized view of the social world as dangerous and threatening. Study 2 extends these findings by examining which specific aspect of Openness to Experience—*intellect or openness* (see DeYoung et al., 2007)—may be driving the tendency to seize and freeze on danger information.

DeYoung et al. (2007) argued that each Big-Five personality dimension can be divided into two distinct but correlated aspects, which are consistent with distinct biological substrates of personality reported in recent genetic research (Jang, Livesley, Angleitner, Riemann & Vernon, 2002). DeYoung et al. (2007; see also Onraet et al., 2011) differentiated Openness to Experience into aspects that they labeled *intellect* and *openness*. *Intellect* reflects traits such as cognitive quickness, ingenuity and ideas. This aspect seems to reflect variation in abstract or reasoning-based information processing. *Openness*, in contrast, is more indicative of individual differences in aesthetics, fantasy and imagination as well as more perceptual information processing. Supporting a motivated cognition perspective, Onraet et al. (2011) differentiated a cognitive facet of both Openness to Experience and *need for closure* items from an experiential facet, the former of which was most closely linked to right-wing attitudes.
Sibley and Duckitt (2012) noted the lack of research examining how different aspects of Openness to Experience relate to RWA (and dangerous worldview). It is unclear as to whether low Openness to Experience biases individuals toward schematic perceptions of the social world as dangerous because of (a) cognitive inflexibility, a general dislike of uncertainty and novelty, and a preference for what is already known (elements relating to intellect), or (b) an intolerance of and resistance to departures from normative standards in aesthetics and principles of beauty, and low imagination (elements relating to openness), or a combination of the two (Sibley & Duckitt, 2012). A DPM perspective is most consistent with a model in which the intellect aspect is primarily responsible for shaping attention to information confirming stereotypes about the social world as dangerous, and therefore also shaping dangerous social worldviews. The DPM emphasizes a cognitive-processing model in which Openness to Experience reflects concern for ingroup normative values and sensitivity to corresponding social information. This would seem to suggest that differences in sensitivity toward practical or structural information (intellect), rather than aesthetic information (openness), are more determining of schematized perceptions of other social group members as dangerous and threatening.

Sibley and Duckitt (2012) reported that across eight independent studies using different personality measures, aspects of the Openness to Experience personality construct relating specifically to intellect primarily accounted for the association between Openness to Experience and RWA. In support of an argument for the intellect aspect as the primary personality trait underlying dangerous worldview and RWA, Sibley and Duckitt (2012) then replicated these meta-analytic findings in two large community samples. In their words, RWA is predicted at the personality level by “individual differences in cognitive flexibility, quickness, ingenuity, and a general
interest in novel ideas” as opposed to the openness aspect, which “seems to reflect an epistemic need for aesthetics, novel forms of beauty, and a general appreciation and interest in culture and arts” (p. 187).

Although correlational, this previous research indicates that the intellect aspect of Openness to Experience should drive the difference between high and low dangerous worldview anchoring observed in Study 1. Study 2 tests this prediction experimentally by replicating Study 1 and assessing the simultaneous effects of the intellect and openness aspects of Openness to Experience on susceptibility to dangerous worldview anchoring. Stated formally, I hypothesized that the intellect aspect, but not the openness aspect, would drive the effect of initial high-danger (versus low-danger) anchors on subsequent dangerous worldview estimates.

Method

Participants

Participants were 175 undergraduate students (62 women and 12 men in the low anchor condition; 89 women and 12 men in the high anchor condition). The mean age was 20.68 years (SD = 6.44). Consistent with Study 1, emails from an independent undergraduate class email list were randomly assigned to one of two groups, and invited to complete an online questionnaire for the low or high anchoring condition. Participants were entered into a draw to win $200 in grocery vouchers.

Procedure and measures

Two aspects of Openness to Experience were assessed using the Big-Five Aspect Scale (DeYoung et al., 2007). Participants were instructed to rate how accurately 20 trait descriptions described them on a scale from 1 (very inaccurate) to 5 (very accurate). The scale includes items such as “Am quick to understand things”
(intellect pro-trait), “Avoid philosophical discussions (intellect con-trait), “Enjoy the beauty of nature” (openness pro-trait), and “Seldom daydream” (openness con-trait). The scales have been previously validated by DeYoung et al. (2007), and demonstrated good internal reliability in the current study (Cronbach’s alphas are provided in Table 7.3).

In an identical procedure as that in Study 1a, the dangerous worldview anchoring manipulation was then presented, and frequency-of-danger estimates were assessed.

Results

Anchoring effect

Bivariate associations and descriptive statistics for all variables are presented in Table 7.3. Participants in the high-anchor condition estimated a greater frequency of dangerous social world events ($M = 19.58$, $SD = 10.56$) relative to those in the low-anchor condition ($M = 11.43$, $SD = 8.00$; $F(1, 173) = 30.95, p < .01, \eta_p^2 = .15$). Consistent with classic anchoring effects, and with Study 1a, an initial anchor suggesting the world was highly dangerous led participants to estimate that a higher number of people would engage in actions dangerous to others.

Openness to Experience and the anchoring effect

As reported in Table 5, I conducted hierarchical regression analyses to examine the predicted interaction between the intellect aspect of Openness to Experience and the anchoring manipulation.
Table 7.4. Regression models of anchoring condition, Openness to Experience intellect and openness facets, and their interaction terms predicting frequency estimations in Study 2.

<table>
<thead>
<tr>
<th>Step 1 Model</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Model Predicting Frequency-of-Danger Estimations (Study 2)</td>
<td>b</td>
<td>se</td>
<td>β</td>
<td>t</td>
</tr>
<tr>
<td>Constant</td>
<td>14.26</td>
<td>2.67</td>
<td>5.34</td>
<td>.00</td>
</tr>
<tr>
<td>Sex (female = 1, male = 2)</td>
<td>-2.38</td>
<td>2.10</td>
<td>-08</td>
<td>-1.13</td>
</tr>
<tr>
<td>Anchor Manipulation</td>
<td>8.04</td>
<td>1.43</td>
<td>.38</td>
<td>5.62</td>
</tr>
<tr>
<td>Intellect Facet</td>
<td>2.42</td>
<td>1.47</td>
<td>.18</td>
<td>1.65</td>
</tr>
<tr>
<td>Anchor x Intellect Facet</td>
<td>-5.50</td>
<td>1.90</td>
<td>-.32</td>
<td>-2.90</td>
</tr>
<tr>
<td>Step 2 Model</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>14.09</td>
<td>2.66</td>
<td>5.31</td>
<td>.00</td>
</tr>
<tr>
<td>Sex (female = 1, male = 2)</td>
<td>-2.35</td>
<td>2.09</td>
<td>-08</td>
<td>-1.13</td>
</tr>
<tr>
<td>Anchor Manipulation</td>
<td>8.22</td>
<td>1.42</td>
<td>.39</td>
<td>5.78</td>
</tr>
<tr>
<td>Intellect Facet</td>
<td>2.09</td>
<td>1.47</td>
<td>.16</td>
<td>1.42</td>
</tr>
<tr>
<td>Openness Facet</td>
<td>2.73</td>
<td>1.42</td>
<td>.21</td>
<td>1.92</td>
</tr>
<tr>
<td>Anchor x Intellect Facet</td>
<td>-5.71</td>
<td>2.00</td>
<td>-.34</td>
<td>-2.86</td>
</tr>
<tr>
<td>Anchor x Openness Facet</td>
<td>-1.70</td>
<td>1.90</td>
<td>-.11</td>
<td>-0.90</td>
</tr>
</tbody>
</table>

Comparatively, I did not expect to observe a significant interaction for the aesthetic openness aspect. I graphed the predicted values for dangerous world estimation against intellect aspect scale scores, moderated by the anchoring manipulation using parameters from the full model.

As shown in Figure 7.2, people low versus high in the intellect aspect of Openness to Experience estimated a greater frequency of dangerous events when exposed to a high dangerous world anchor (*simple slope* = -3.62, *se* = 1.35, *t* = -2.69, *p* < .01). There was no significant difference between those low and high in the intellect aspect when exposed to a low dangerous world anchor however (*simple slope* = 2.09, *se* = 1.47, *t* = 1.42, *p* = .16). As reported in Table 7.4, the moderating effect was specific to intellect and held when controlling for openness (which did not itself interact with the anchoring manipulation). The moderating effect of Openness to
Experience in Study 1a seems to be driven specifically by the *intellect* aspect of this personality trait.

**Discussion**

Research examining the information processing mechanisms through which personality relates to subsequent beliefs is scarce. I provide experimental evidence that the link between Openness to Experience and dangerous worldview results predominantly from aspects of this personality construct relating specifically to *intellect*. This aspect reflects individual differences in cognitive flexibility, quickness, ingenuity, and a general interest in novel ideas. This is in contrast to the *openness* aspect, which reflects an epistemic need for aesthetics, novel forms of beauty, and a general appreciation and interest in culture and arts (DeYoung et al., 2007; Sibley & Duckitt, 2012). Individual differences in this aspect appear to be responsible for shaping the extent to which people are swayed (i.e., anchored) by prior information suggesting the level of danger and threat in the social world. Openness to Experience thus probably operates in the DPM as an information processing bias, characterized by cognitive inflexibility and a preference for what is already known rather than a lack of creativity and reflection.

**General discussion**

Ashton and Lee (2007, see their Table 3) argued that Openness to Experience reflects individual variation in “engagement in idea-related endeavors” providing “material and social gain (resulting from discovery).” Extending their proposition, I contend
that human variation in Openness to Experience occurs because at different points in our evolutionary history it was beneficial to be either (a) sensitive to societal threats in order to defend against these or (b) open to counter-normative information and outsiders to benefit from new information and social connections. This premise is consistent with evolutionary models of personality trait variation suggesting that low and high levels of Openness to Experience should both be adaptive in different ecological niches (Nettle, 2006; Penke, Denissen & Miller, 2007). Taking a DPM perspective, Sibley and Duckitt (2012) argued that authoritarian prejudices including group-centrism are determined by individual differences in certain epistemic needs – closely related to Kruglanski and Webster’s (1996) *need for closure* (see also Jost et al., 2003; Onraet et al., 2011; Roets & Van Hiel, 2011). They argued that people low in the *intellect* aspect of Openness to Experience are particularly prone to adopt clear, unambiguous moral prescripts about how the world operates in order to fulfill such needs. Closed-minded individuals should therefore be more acquiescent to the

**Figure 7.2.** Interaction of Openness to Experience *intellect* facet and dangerous-world anchor predicting frequency-of-danger estimations (Study 2).
existing social order as a normative referent that legitimizes the status quo. In other words, the process by which perceptions of the social world as dangerous become chronic schemas – a key premise of the DPM.

In two studies, I examined the link between Openness to Experience and dangerous worldview by manipulating perceived levels of societal danger, utilizing a novel measure of social worldviews in a unique experimental study design. Previous worldview measures assess subjective ideological evaluations of danger in the social world, but do not afford easy manipulation of the level of such perceptions (see Perry et al., 2013b, for a discussion). A new frequency estimation index of worldviews (the FEI-DSW; Perry & Sibley, 2010) was designed specifically for this purpose, and hence I was able demonstrate for the first time the specific causal mechanism by which Openness to Experience operates in concert with the social environment to shape dangerous worldview as originally stipulated in the DPM (Duckitt, 2001; Duckitt et al., 2002). Moreover, this is the first study of which I am aware to apply the classic experimental design used to test the cognitive anchoring and adjustment heuristic (Tversky & Kahnemann, 1974) to examine an interaction between personality and social context in the DPM. This interaction forms the basis of an ideological motivational goal process that should underlie generalized (i.e., all forms of) prejudice (Duckitt & Sibley, 2007; Roets & Van Hiel, 2011). It should be noted, however, that I did not examine RWA or other potentially relevant outcomes and there is evidence to suggest that there may be additional means by which Openness to Experience relates more directly to RWA (e.g., Sibley & Duckitt, 2009).

In Study 1a I observed the classic anchoring and adjustment effect (Tversky & Kahnemann, 1974), where participants primed with information suggesting society is characterized by a high level of social danger and threat subsequently estimated a
greater frequency of dangerous events occurring, compared with participants primed with lower levels of danger. A similar pattern of results was found when anchoring perceptions of social-world competition in Study 1b. As predicted, however, the anchoring and adjustment of dangerous worldview beliefs in Study 1a occurred only for those low in the personality trait Openness to Experience.

The interaction effect of Openness to Experience in Study 1a may seem at first blush to be somewhat inconsistent with previous research in which high levels of this personality trait were associated with greater adjusted estimates, presumably because open-minded individuals are more amenable to new information in general (McElroy & Dowd, 2007). Our findings rather support a motivated social cognition perspective in which needs arise to manage uncertainty and threat (Jost et al, 2003; Roets & Van Hiel, 2011; Van Hiel, Pandelaere et al., 2004). In their recent review of the construct, Roets and Van Hiel (2011) argued that need for closure comprises a motivated cognitive style that should underlie all forms of prejudice and I agree with these researchers (e.g., Onraet et al., 2011) that Openness to Experience rather represents a genetic and socialized disposition determining individual differences in this cognitive style. Consistent with Sibley and Duckitt (2008, 2012), I suggest that perceptions of threat and danger produce a motivating context in which closed-minded individuals are more amenable to existing stereotype-consistent information due to their elevated need to manage perceived threats.

Van Hiel and his colleagues (e.g., Dhont et al. 2011; Roets & Van Hiel, 2011) have noted striking parallels between Webster and Kruglanski’s (1994) need for closure as motivated social cognition and the individual differences in cognitive style originally purported to underlie prejudice (Allport, 1954). The link between need for closure and prejudice, they argued, is that people resort to authoritarian ideologies
and stereotyping to meet their desire for immediate, simple and stable explanations of the world around them (Roets & Van Hiel, 2011). As well as shaping social perceptions and immediate cognitive processes, however, these motivating needs also determine more long-term ideological beliefs, particularly authoritarianism, that are adopted as a general cognitive and perceptual framework that satisfies deep existential closure needs (Jost et al., 2003; Roets & Van Hiel, 2011). The Openness to Experience mechanism I have demonstrated here is most appropriately understood from this cognitive motivational perspective: as a disposition toward closure that biases individuals to be more or less susceptible to available stereotype-confirming information.

In Study 2, I extended our findings to show that the susceptibility of closed-minded people to information suggesting the social world is dangerous and threatening is primarily due to one aspect of Openness to Experience – intellect as opposed to openness (DeYoung et al., 2007; Sibley & Duckitt, 2012). What is it specifically about intellect that drives the interaction of Openness to Experience with the social context to determine dangerous worldview? The DPM emphasizes a cognitive-processing model in which Openness to Experience reflects motivated concern for ingroup normative values and cognitive rigidity. From this perspective, the intellect aspect is primarily responsible for shaping attention to information confirming stereotypes about the social world because this aspect reflects individual differences in cognitive flexibility, quickness and an interest in novel, counter-normative ideas.

Along similar lines, DeYoung, Grazioplene and Peterson (2012) recently proposed that intellect might be closely associated with more general intelligence; this helps explain why the intellect aspect is responsible for the anchoring bias observed
here. People high in *intellect* are likely better able to make accurate factual judgments about the world and to ignore distracting or superfluous information when doing so. On the other hand, aesthetic *openness* might be associated positively with anchoring bias because of its association with implicit pattern detection; people high in *openness* are more likely to automatically integrate information into their representations, which can lead to overreliance on correlational information and false detection of patterns (DeYoung et al., 2012). Taking these perspectives together, our findings suggest that accurately judging the frequency of threatening social events is determined by a motivation, and ability, to seek out factual information.

**Concluding comments**

The DPM states that associations between the components underlying prejudice should reflect an underlying causal process in which individual differences in personality traits produce relative stable schematic perceptions of the social world. In the present studies, I have demonstrated that this is the case for at least one of the proposed processes; low Openness to Experience interacts with perceived levels of societal danger to shape individuals’ dangerous worldview perceptions. Our experimental studies contribute to recent work using longitudinal cross-lagged panel designs to support a causal process in which Openness to Experience predicts dangerous worldview and RWA (Perry & Sibley, 2011b; Sibley & Duckitt, 2010b; Sibley & Duckitt, 2012).

Sibley and Duckitt (2013) discussed the difficulty of assessing causal effects of personality traits, as the predicted mechanisms by which these operate should be relatively stable once formed and slow-changing over a lifetime. Personality is thus not easily manipulated in cross-sectional experimental settings. The studies presented here take a different angle to modeling the mechanisms through which personality
operates within the DPM (at least with regards to the link between Openness to Experience and dangerous worldview) by manipulating the perceived social context with which personality traits are thought to interact.

The DPM integrates situational and individual difference determinants of RWA (and SDO) within a unified framework. A central tenet of this model is that personality and situational factors jointly determine prejudice through a causal sequence, mediated by RWA and SDO. I have demonstrated for the first time that the RWA-mediated process is one in which individuals low in the intellect aspect of Openness to Experience tend to develop abstract and schematized perceptions of the social world as dangerous and threatening in combination with perceived socio-structural levels of danger and threat to ingroup or mainstream societal values. Our findings have numerous real world implications for understanding the effect of signals of danger and threat from various sources, ranging from the media to political elites, on public opinion about the nature of the social world and the threat from others at large in that world. Such effects are not homogenous across the population, and the ability of source information to shape public perceptions of danger depends upon trait differences in information processing that are encapsulated in levels of Openness to Experience.
Chapter eight

Grand discussion

There have been a number of different definitions of the construct “worldview” across social psychology and related fields. Koltko-Rivera (2004) provided a comprehensive historical review of many of these sometimes competing perspectives, noting that the construct has lacked a comprehensive model or formal theory. A recent model does, however, formally operationalise worldviews as independent components in a dual cognitive-motivational process underlying prejudice and related attitude domains including right-wing political beliefs and ethnocentrism. John Duckitt’s (2001) Dual Process Model (DPM) of ideology and prejudice defines worldviews as descriptive schematic beliefs about the nature of the social world and other people in that social world at large, and distinguishes these beliefs from prescriptive ideological attitudes that succeed worldviews in the hypothesised cognitive process.

This thesis contributed to ongoing efforts to validate and refine the DPM, addressing contemporary issues around not only definition and measurement of the social worldview dimensions, but also causality and mechanisms of operation of personality traits, and predicting specific attitude domains such as support for political policies. The studies reported here were presented in three major sections, which addressed each of these distinct but interrelated issues with the DPM.

Taken together, the findings presented across these sections supported two core premises of this thesis that are central to the ongoing validation of the causative associations and mechanisms in the model as originally proposed by Duckitt (2001), and to the refinement of the DPM worldview measures consistent with recent concerns about construct validity of the social worldview measures (Van Hiel,
Cornelis & Roets, 2007). First, the studies presented here demonstrated that the dual pathways of association between personality traits and ideological attitudes in the DPM are causative and generally unidirectional. This research demonstrated a key hypothesised causal mechanism via which one of these personality traits, Openness to Experience, operates to shape social worldview perceptions. Second, the studies in this thesis demonstrated that the social worldview component of the DPM comprises schematic and descriptive (as opposed to ideological and prescriptive) beliefs about what other people at large in the social world are like. This is consistent with theory-derived definitions, and Section 2, in particular, presents an updated measure of dangerous and competitive worldviews operationalising this component of the model in this way.

Overview and summary of findings

The various studies presented in this thesis each provided insights into more specific research questions that are central to current issues around validation of the hypothesised causal associations and mechanisms in the DPM, and issues around construct definitions and measurement of the worldview dimensions in particular. Here I will summarise these findings and discuss both their theoretical and empirical implications for the DPM.

Section 1: The dual process model

Section 1 was composed of research aimed at validating the DPM in general, and examined the prediction of specific attitudinal domains and causative personality effects. To this end, chapter two examined the specific role of social worldviews in a novel application of the DPM, predicting dual dimensions of political policies. Here I examined a structural equation model of the full DPM that differentially predicted
support for economic versus social political policies in a very large and representative New Zealand sample. This was the first study to test the DPM in a large representative probability sample, presenting an initial validation of the full model, which in turn provided a basis for testing more specific hypotheses in the subsequent sections of this thesis. This study made an additional major contribution to validation of the DPM as the first to experimentally examine novel hypotheses about the differential prediction of policy support (but c.f. a recent study by Crawford, Jussim, Cain & Cohen, 2013 showing that RWA and SDO differentially predict evaluations of political information about either socially threatening or subordinate groups).

The structural equation model presented in chapter two assessed the ability of the DPM to predict support for actual political policies, an attitude domain in which the DPM’s motivational-goal process should be highly relevant given that policies can be seen as institutionalised expressions of schematic beliefs about the nature of the social world, and of ideologies. By modelling support for political policies as variables endogenous to the motivational-goal process stipulated in the DPM, I examined two hypotheses, each reflecting a major theoretical assumption of the model. First, the findings in chapter two supported a differential prediction hypothesis, demonstrating that RWA and SDO were uniquely and independently associated with social (in the case of RWA) and economic (in the case of SDO) political policies. Consistent with recent work, my findings suggest that individual political beliefs are more complex than a single liberal-conservative dimension accounts for (Feldman & Johnston, 2009). In showing that support for economic and social policy is differentially predicted by SDO and RWA, these findings supported a second differential mediation hypothesis; support for political policy is organised along two orthogonal dimensions produced by distinct sets of underlying motivational
goals. This implies that attitudes applied to specific real-world domains are consistent with attitudes toward more general prejudice or intergroup attitude domains. As Duckitt (2001) originally argued, a model in which two motivational-goal schema dimensions are expressed in ideological belief dimensions, RWA and SDO, implies (a) that there are two qualitatively different types of ingroup prejudice and (b) that these ideological belief dimensions “underlie support for or belief in particular political ideologies” (p. 84).

Including a greater variety of policy issues to ensure that RWA and SDO were truly predicting the hypothesised latent constructs of social and economic policy domains would have been ideal. Undertaking an examination of whether there are additional domains of policy support, or perhaps subdimensions of social and economic policy content, is also important for future considerations. Indeed, Feldman and Johnston (2009) maintained that there should be at least two dimensions of policy support and these authors determined six combinations of “liberal” and “conservative” issue preferences using latent class analysis. Research detailing dimensions of policy support is scarce, and there is still a need for preliminary factor analytical research exploring possible dimensions across a wide range of specific policy issues. As noted in chapter two, this study was necessarily limited by the dataset from which it was drawn. I would add, however, that the benefit of this broadly focused study was that it was (a) large enough to simultaneously model all the individual difference components of the DPM, and (b) allowed wide generalisation of the this system of cognitive associations being based on a representative New Zealand sample. These were important and unique areas of validation for the model more generally.
Demonstrating causative mechanisms in the DPM has important implications for understanding how prejudice and right-wing conservative political attitudes form. A recent study, for example, reported a relevant information processing bias in conservative, compared with liberal, participants (Carrao, Castelli & Macchiella, 2011). In a novel application of the Stroop effect, conservative participants demonstrated longer response times when guessing the colour of a negatively valenced word relative to positive words and relative to the response times of liberal participants over all. In subsequent studies, conservative participants were also more attentive toward negative images (e.g., a hurricane or a shark), which increased their response latencies on a Dot-Probe task (relative to positive images or the responses of liberals). Taken together with the final series of studies presented in this thesis (chapter seven), it seems likely that the negative stimuli in Carrao et al. (2011) were perceived as generally threatening, eliciting an existentially motivated response from conservative respondents. Understanding the motives behind political affiliation is an important application of research from a DPM perspective, including the manuscripts presented in this thesis.

Chapter three examined associations between personality and ideological attitudes longitudinally, addressing a gap in the literature; no prior studies had examined a full cross-lagged model of Big-Five personality predicting RWA and SDO. In this chapter, I replicated and extended previous longitudinal research (Sibley & Duckitt, 2010b) by testing a full cross-lagged model of the effects of the Big-Five personality dimensions, Agreeableness and Openness to Experience, on SDO and RWA over a 9-month period. Consistent with Sibley and Duckitt (2010b), Agreeableness predicted SDO and Openness to Experience predicted RWA over time. This is also consistent with hypothesised DPM patterns of association, and with
structural models of these components (such as that presented in chapter one). However, the model also implies that ideological attitudes generally should not reciprocally predict personality over time (Altemeyer, 1998; Duckitt, 2001) and this additional theoretically derived effect was demonstrated for the first time in the longitudinal study presented in chapter two.

The aim of Section 1 was to not only validate a hypothesised causative process as stipulated in the DPM, but also to show that these causative associations between personality and ideological attitudes were unidirectional. Supporting this broad aim, the research presented across Section 1 provided a strong empirical basis for addressing more specific issues with the DPM in the subsequent sections of my thesis.

Section 2: Social worldviews

Much research has been dedicated to validating and extending John Duckitt’s (2001) DPM over more than a decade since its inception. Over this time, however, probably the least attention has been paid to the worldview component of this model. Social worldviews are a critical component of the model, serving as schematic perceptions of the social world that provide a motivational basis for RWA and SDO. A major contribution of the DPM was to define RWA and SDO as dynamic and responsive motivational goals rather than as more stable personality traits (Duckitt, 2001; Duckitt et al., 2002). Inherent in the model however, is that these goals require motivating schemas about the social world. In other words, RWA and SDO are ideological expressions of a motivated response to how one sees the world and, particularly, other people “out there” in that world.

Having established a firm basis of support for the hypothesised DPM in Section 1, I then went on to address issues around one component of the model in particular in Section 2: that of social worldview beliefs. As I have argued, worldviews
have probably garnered the least attention of the DPM components in the literature and a thorough review of the field was lacking. The research presented in Section 2 addressed not only this lacuna, but also related issues with construct validity and effect-size asymmetry in the DPM.

First, complimenting and formalising the literature review presented in the introductory chapter of this thesis, chapter four comprised a meta-analysis study of all available published and unpublished studies that had included measures of DPM social worldviews and at least one measure of RWA or SDO. The findings confirmed that dangerous and competitive worldviews are strong and independent predictors of RWA and SDO respectively, indicating that these relationships are consistent across a number of sample and societal characteristics. The robustness of these DPM relationships is consistent with the model, which implies that RWA and SDO and their motivational-goal processes should be reasonably universal human phenomena (Duckitt, 2001; Schwartz, 1996). This was also the first meta-analysis of these particular associations in the DPM, joining other meta-analytical work concerned with personality (Sibley & Duckitt, 2008) and the effects of RWA and SDO on prejudice outcomes (Sibley, Wilson & Duckitt, 2007a) to provide a more complete picture of the DPM research field.

Second, the meta-analysis confirmed that an asymmetry in effect sizes observed in two Belgian samples (Van Hiel, Cornelis & Roets, 2007) was reliable across all available studies and across seven countries. Although the expected pattern of correlations was robust, the dual associations were also asymmetric – the relationships between dangerous worldview and RWA were moderate in size, whereas the associations between competitive worldview and SDO were generally stronger in magnitude. In chapter four I argued that the robustness of this asymmetry
across studies and across a number of potential study- and country-level moderators suggests that this is likely due to issues of construct measurement. A constant factor across the studies was that they all used the same indices of dangerous and competitive worldviews.

This allegedly spurious effect-size asymmetry in the DPM therefore provided a rationale for developing refined worldview measures aimed at distinguishing this component of the DPM from the successive and theoretically independent ideological attitude component indexed by RWA and SDO. Chapter four thus presented a refined and balanced 20-item social worldview measure, removing items from the original competitive worldview measure that cross-loaded with SDO in a factor analysis performed using data from the manuscript presented in chapter six. This purified measure of DPM social worldviews was a straightforward but important advancement of the model. It ensured that any observed differences in the magnitude of associations between worldviews and ideological attitudes is due to genuine factors rather than spurious overlapping variance. For example, recent work is beginning to demonstrate the importance of the broad social environment, such as times of economic recession, on associations in the DPM (Sibley & Duckitt, 2013). Social worldviews are almost certainly a product of interactions between individual differences and this social context as demonstrated in chapter seven.

Another way forward in terms of addressing possible item content overlap between worldview and ideological attitude components of the DPM was to create novel measures of dangerous and competitive social worldviews that explicitly assess perceptions of the world as schemas and do not explicitly share content with SDO and RWA. Thus, in chapters five and six I thus developed and validated new ideology-free measures of social worldviews. This completed Section 2 as a body of research aimed
at operationalising worldviews as schemas and addressing potential content overlap issues.

Chapter five presented a series of studies developing a Frequency Estimation Index of Dual Social Worldviews (FEI-DSW). In the studies presented in this chapter, I identified two dimensions of worldviews that reflected perceptions of danger or competition, consistent with a DPM perspective but, importantly, measuring these dimensions as descriptive schematic beliefs. A final 18-item measure was derived from an initial item pool of 200 dangerous or competitive behaviours that other people could potentially carry out. Building on these scale development studies, chapter six presented research assessing a direct comparison of the new FEI-DSW measure of worldviews and the original worldview measures developed for the DPM (Duckitt, 2001; Duckitt et al., 2002).

The FEI-DSW worldview measures did not account for unique variance in SDO and RWA beyond that predicted by the original DPM worldview measures, suggesting that both constructs predict common variance in RWA and SDO and, therefore, that the FEI-DSW was an accurate measure of social worldviews as defined in the DPM. Theoretically, this variance represents descriptive beliefs about what other people “out there” in the social world are like – schematic content that both the original measures and the FEI-DSW measures both account for. The original measures explained additional variance in RWA and SDO, which arguably indicates that these are more broad-bandwidth constructs capturing additional prescriptive item content (such as beliefs about how to respond to these other people “out there”).

Taken together, the findings presented in Section 2 suggest that there is likely overlapping item content between measures of social worldviews and measures of ideological attitudes presented in the DPM that contributes to an asymmetry in effect
sizes between the two pathways. Although assessing less variance in RWA and SDO overall, the new measure presented in this thesis ensures independence between worldview and ideological attitude model components. This is important from a theoretical perspective as the DPM implies that worldviews and ideological attitudes are independent components in a linear causative process. The findings presented here also have important empirical implications for research, indicating that worldviews mediate the effects of social context manipulations on RWA but not SDO (e.g., Duckitt & Fisher, 2003; Jugert & Duckitt, 2009). If content overlap is particularly problematic regarding the competitive worldview and SDO measures, then their interdependence could be obscuring a comparable mediation relationship in these studies. Replications employing the FEI-DSW should resolve this issue.

The FEI-DSW assesses perceptions of the normative occurrence of competitive and dangerous behaviour in society: descriptive beliefs about the nature of the social world and what other people are generally like. Research concerned with how social norms influence behaviour lends a theoretical perspective distinguishing between two types of norms; descriptive norms influence behaviour as people are inclined to ‘do what everybody else does’ whereas prescriptive norms specify social standards or what is morally approved of (Cialdini et al., 1990; Reno, Cialdini & Kallgren, 1993). Like worldviews, social norms are schemas (or “scripts”) that guide behaviour and our expectations of others’ behaviour in potentially ambiguous situations.

Examining stereotype content from a DPM perspective, for example, Asbrock, Nieuwoudt, Duckitt and Sibley (2011) used this framework to distinguish between how groups are treated (descriptive norms about intergroup behaviours) and how permissible people feel such behaviour is (prescriptive norms about how groups
should be treated) depending upon stereotypes people have about these target groups. They reported an interesting inconsistency in that descriptive norms concerning passive harm behaviours (ignoring or patronising senior citizens) can exist in apparent conflict with prescriptive moral beliefs (that we should respect our elders).

In another example, and also consistent with a DPM perspective, manipulating descriptive norms about the frequency of cooperative behaviour influenced behavioural intentions to cooperate, whereas prescriptive beliefs about how cooperative people ought to be did not (Biel, Borgstede & Dahlstrand, 1999). Conversely however, in a study assessing only subjective perceptions of how deviant uncivil behaviours were (prescriptive normativity), and of how frequent these behaviours were (descriptive normativity), prescriptive beliefs were the primary determinant of attitude responses – in this case, expressions of a need for social control. It seems plausible that prescriptive ideological beliefs immediately drive attitudes and behaviours as expressions of an underlying baseline level of motivational goals to respond with prejudice (Duckitt, 2001; Perry & Sibley, 2011a). However, descriptive beliefs, or worldviews in DPM terminology, should comprise the cognitive component most responsive to contextual influence – or manipulation effects in experimental settings. The FEI-DSW is useful in distinguishing these levels of belief utilising a DPM perspective and may help to resolve such questions.

To summarise, there is good evidence for a meaningful distinction between descriptive attitude content and prescriptive content, and these different types of normative perceptions can have quite distinct effects on expressions of attitudes in different contexts, including the stereotypes we hold toward certain groups (Asbrock, Nieuwoudt et al., 2011). The DPM is important in that it provides an integrative framework for these beliefs, formally stipulating a linear process in which they
operate to influence expressions of prejudice and related attitudes. The research presented in Section 2 provides a link between these perspectives – normative influence research on the one hand, and the DPM on the other.

A strength of the research presented in this thesis is the provision of a theoretically derived, empirically validated, and operationally distinct construct assessing dual social worldviews in the DPM. As discussed, however, other theorists see worldviews as a more broad-bandwidth construct (e.g., Koltko-Rivera, 2004) and, indeed, a number of alternative conceptualisations of DPM social worldviews have been posed. It could be argued that as well as operationalising worldviews as descriptive schemas, the new FEI-DSW measure presented in the thesis assesses worldviews explicitly as *interpersonal* beliefs, as opposed to other levels of perceptual processes.

The DPM implies a linear hierarchy of cognitive components operating at different levels of perception. This perspective of the DPM is akin to Doise’s (1986) epistemological continuum in which he situated social psychological theories at four different levels of analysis – the intrapersonal, the interpersonal, the intergroup, and the ideological level (see Brauer & Bourhis, 2006 for a recent discussion of the continuum). Theories situated at the intrapersonal level address cognitive and affective processes that are typically abstracted from the individual’s social context. At the interpersonal level, theories are most concerned with cognitive processes that regulate interpersonal relationships in the immediate social surroundings, or face-to-face interactions. Theories at the intergroup level of analysis address psychological processes concerned with social categorization and group identification, as well as intergroup social structures. Finally, theories at the ideological level concern legitimising belief systems that evaluate and respond to those social structures.
Though DPM research does not typically apply Doise’s (1986) continuum levels to differentiate the model’s components, Jugert, Cohrs and Duckitt (2009) did identify both inter- and intra-personal forms of personality processes underlying authoritarianism. In this instance, however, the researchers recognised intrapersonal processes as personality traits relating to differences in cognitive style (e.g., a preference for structure) and interpersonal processes as personality traits related to interacting with other people (e.g., social conformity). Taken together, this work perhaps suggests that the DPM could be revised to include additional component stages. The FEI-DSW arguably situates worldviews at Doise’s (1986) interpersonal level of cognitive processes. However, Jugert et al.’s (2009) findings seem to suggest that personality could also be situated within this domain. This perspective could lend valuable insights for future updates to the DPM, and there is certainly more research to be conducted in order to fully realise the implications of these revisions.

For example, situating worldviews as interpersonal processes may help to explain the inability of society-level factors to moderate the associations of worldviews with SDO and RWA in the meta-analysis presented in chapter four. I argued that a dichotomous relationship between opposing system-justifying effects may best explain the inability of income inequality to moderate associations between worldview and ideological attitudes in this and in other analyses (Fischer et al., 2012; Cohrs & Stelzl, 2010). If we assume that dangerous and competitive worldviews are primarily concerned with interpersonal-level information, the effects of moderators operating at a broader societal level, such as income inequality, may have little apparent impact.

The DPM is primarily concerned with distinguishing the temporal order of cognitive events underlying prejudice in which each component is distinguished from
the next primarily by the order in which it occurs in a linear formation process. This process may, however, also be differentiated hierarchically between levels of social interaction where, for example, the personality component reflects intra-individual processes, worldviews reflect inter-individual or inter-group processes, and RWA and SDO reflect ideological processes.

Section 3: Personality mechanism

The FEI-DSW scale developed and validated in Section 2 enabled the examination of one particular interaction between personality and social context recently proposed by Sibley and Duckitt (2012) – that those low in Openness to Experience should be predisposed to develop schemas about the social world as dangerous and threatening because they are more sensitive to information confirming their beliefs that other people in the social world are generally dangerous. Section 3 represented a culmination of the research presented in the previous two sections to test this theorised causal mechanism in the DPM using a novel experimental study design that was not previously possible with existing worldview measures and traditional cross-sectional or longitudinal study designs.

The FEI-DSW scale developed and validated in Section 2 enabled the examination of one particular interaction between personality and social context recently proposed by Sibley and Duckitt (2012) – that those low in Openness to Experience should be predisposed to develop schemas about the social world as dangerous and threatening because they are more sensitive to information confirming their beliefs that other people in the social world are generally dangerous. Section 3 represented a culmination of the research presented in the previous two sections to test this theorised causal mechanism in the DPM using a novel experimental study design that
was not previously possible with existing worldview measures and traditional cross-sectional or longitudinal study designs.

Sibley and Duckitt (2010b; see also Sibley & Duckitt, 2012) in their earlier longitudinal study, noted the need for research that examined possible interactions between personality traits and situational changes that would support and extend findings from cross-lagged panel designs. Though longitudinal research can provide evidence about causal associations between personality and subsequent social attitudes, the DPM ultimately implies a more complex pattern of causative associations. Extending findings that concern only cognitive components of the model in the literature and throughout the prior chapters of this thesis, chapter seven examined a hypothesised interaction between personality (Big-Five Openness to Experience) and the social context (perceptions of levels of danger and threat) in determining schematic social worldview beliefs.

The final series of studies in my thesis employed Tversky and Kahneman’s (1974) anchoring and adjustment heuristic to test the hypothesised mechanism by which Openness to Experience operates on subsequent beliefs about the social world. First, an experimental manipulation of the prevalence with which people in society would engage in a series of dangerous behaviors (i.e., how dangerous the social world is perceived to be) indicated that those low versus high in Openness to Experience were more inclined to attend to this information and therefore adjusted their subsequent estimations of these same frequencies. Extending these findings, a second study showed that this motivational bias is specific to an intellect aspect of Openness to Experience (as opposed to an aesthetic openness aspect; see DeYoung et al., 2007; Sibley & Duckitt, 2012). From this perspective, the intellect aspect is primarily responsible for shaping attention to information confirming stereotypes about the
social world because this facet reflects individual differences in cognitive flexibility, quickness and an interest in novel, counter-normative ideas (Sibley & Duckitt, 2012).

Perhaps one of the most important contributions of this thesis is in successfully demonstrating that relationships between relatively stable individual difference components of the DPM are causal. The novel manipulation of perceived social context, with which personality traits interact to produce stable schematic perceptions of the social world, overcame a major difficulty in assessing causal personality effects – that personality variables should not be easily manipulated as these are thought to be very slow-changing in response to long term socialisation experiences and systemic or society-wide ideological change (Sibley & Duckitt, 2012). As Sibley and Duckitt (2012) argued, experimental research in this area has generally succeeded in manipulating the salience of social worldviews to impact SDO, RWA and related social categorisations (e.g., Cohrs & Asbrock, 2009; Cohrs, Asbrock & Sibley, 2012; Duckitt & Fisher, 2003; Duckitt & Sibley, 2010c), but only in the short-term. Manipulating personality traits, however, has been beyond the reach of previous experimental designs.

As discussed in chapter one, research demonstrating the causal mechanisms by which the components of the DPM are thought to operate to produce the motivational goals underlying prejudice is fundamental to the continued validation and refinement of the model. RWA and SDO are highly stable over time (see Kteily et al., 2011; Sibley & Liu, 2010), likely a consequence of the central role of stable personality dispositions in determining these attitude clusters (Sibley & Duckitt, 2013; see the meta-analysis of these associations in Sibley & Duckitt, 2008). The research presented in Section 3 of this thesis is the first of which I am aware to begin addressing this need to examine how the causal effects of personality are transmitted
to RWA and SDO. In doing so, this thesis confirms that the DPM is consistent with recent work arguing for a motivated social cognition basis of intergroup attitudes and group processes (Jost et al., 2003; Van Hiel et al., 2004).

In a concise summary of this perspective as applied to worldview beliefs, Golek De Zavala and Van Bergh (2007) proposed that people high in need for closure are not attracted to conservative beliefs because they are accessible or simple, stable, and predictable, but because conservatism is grounded in certain worldviews relevant to the motivations of those high in need for closure. These worldviews should entail that values are absolute rather than relative and that truths are definite rather than approximate. What these values and norms are should be of little importance so long as they satisfy the tendency of those high in need for closure to “seize and freeze” (Golek De Zavala & Van Bergh, 2007).

Over three interrelated sections of research, this thesis has provided converging lines of evidence for two core premises that I initially set out to address. First, research presented here supported a dual structure of cognitive processes underlying prejudice as stipulated in the DPM though a full structural model of these associations and, moreover, demonstrated that the associations between personality and ideological attitudes are causative, unidirectional and consistent with a motivated social cognition perspective that suggests people are highly motivated to restore their sense of certainty and control when threatened and, as a result, will resort to cognitive strategies amounting to “closed-mindedness” (Kruglanski, 2004). Second, the work presented in this thesis contributed a refined measure of dangerous and competitive social worldviews that operationalised these constructs as descriptive schematic beliefs. This framing is consistent with the original theoretical bases from which these constructs were devised (D’Andrade, 1992; Duckitt, 2001; Strauss, 1992) and,
importantly, allays recent concerns about construct validity and interdependence between indexes of worldview and ideological attitudes in the DPM. In the next section, I will summarise other recent work that also contributes to current conceptions of the model.

Comments on the present-day dual process model

Duckitt’s (2001) Dual Process Model of Ideology and Prejudice has enjoyed a great deal of support in more than a decade of research showing that two relatively stable individual difference dimensions, RWA and SDO, together explain the majority of variance in generalised prejudice and ethnocentrism (Altemeyer, 1998; McFarland & Adelson, 1996) and, in turn, mediate the indirect effects of personality dispositions and social worldview beliefs on prejudice and related attitudes. Despite consistent support for the standard model, research (including that presented in this thesis) continues to refine and revise the DPM, for example suggesting multiple dimensions of RWA (Mavor, Louis & Sibley, 2010; Duckitt, Bizumic, Krauss & Heled, 2010), SDO (Kugler, Cooper & Nosek, 2010) and the Big-Five personality dimensions (DeYoung et al., 2007), as well as revealing reciprocal effects of ideological attitudes on personality (Sidanius et al., 2013) and, increasingly, the role of broad societal context effects (Sibley & Duckitt, 2013). In this section I briefly discuss promising contemporary developments, and discuss the implications of these developments for the research presented in this thesis.

First, recent evidence is beginning to suggest additional pathways operating within the DPM, at least under certain conditions. SDO, for example, may exert reciprocal effects on personality-level traits and competitive social worldviews.
(Sibley & Duckitt, 2013; Sidanius et al., 2013), which may suggest that SDO operates as a personality trait to the extent that personality traits influence one another over time (Sidanius et al., 2013). An alternative explanation is that SDO may interact with the broader personality-socialising environment under some circumstances and gradually impact Agreeableness over time, consistent with the early-life socialisation processes thought to initially produce personality dispositions (Altemeyer, 1998; Duckitt, 2001). The longitudinal study presented here in chapter three did not detect a reciprocal cross-lagged effect of SDO on Agreeableness whereas, on the other hand, Sibley and Duckitt (2013) did recently report reciprocal cross-lagged effects of SDO on Agreeableness and competitive worldview in a longitudinal study with time points before and during the global economic recession of 2008. They suggested that, “the reciprocal effects of SDO on Agreeableness might be partially context dependent and be more likely to occur in situations of increased competitiveness and economic turmoil, such as those that occurred during the intervening period in our longitudinal study” (Sibley & Duckitt, 2013, p. 19). It seems, therefore, that dramatic differences in social context may explain the disparities between these findings.

The longitudinal data analysed in the manuscript from chapter three was collected in 2011, which was arguably a more stable economic period in New Zealand, relative to the period from 2008 to 2009 in which Sibley and Duckitt (2013) conducted their study. In saying that however, it is important to note that 2011 was probably not a particularly prosperous time in this country and around the world as effects from the global recession were still being felt in terms of job shortages and wage stagnation for example (Statistics New Zealand, 2012). Given the benefit of hindsight, the importance of considering broad socio-political climates in longitudinal research such as that I presented in chapter three is paramount. Moreover, there is an
implication here that broad cultural change may be of more importance cognitively than high levels of competition or danger per se.

A general concern with longitudinal study designs, including the one presented in this thesis, is that research spanning longer time frames may be more sensitive to subtle and highly context-dependent effects such as the reciprocal effects of ideology on personality. As well as capturing a particularly tumultuous economic period, Sibley and Duckitt (2013) also assessed their panel across a 12-month period, compared with my 9-month timeframe. Simply allowing for more cultural change to occur overall may seem a comparatively trivial criticism of my longitudinal study, but this speaks to an important concern for longitudinal research investigating stable individual differences such as personality generally. Such dispositional cognitive traits are notoriously difficult to manipulate (Sibley & Duckitt, 2012), and tend not to change in any permanent or fundamental sense, except possibly in the face of dramatic and long-term socio-political shifts. Adequate demonstration of these associations in the DPM, then, probably necessitates very long-term or even lifetime cohorts. Moreover, a stronger test of causality ultimately requires growth curve modeling of three or more time points that allow, among other possibilities, assessment of changes in rates of growth over time, and systemic interindividual differences in these changes (see Preacher, Wichman, MacCallum & Briggs, 2008 and Cole & Maxwell, 2003 for excellent discussions of the implications of growth curve modeling compared with two-point longitudinal designs). Although, as I have presented in chapter seven, and will discuss at length in this chapter, there are alternative experimental means by which these associations can also be demonstrated.

In support of their argument, Sibley and Duckitt (2013) also reported that SDO predicted residualised change in RWA that was not reciprocated, which was
generally not the case in previous cross-lagged models of these associations (e.g., Duckitt & Sibley, 2010b; Asbrock et al., 2010; and see the study reported in chapter four). Again, the context of economic uncertainty and heightened competition appears to position SDO as a key driver of cognitively widespread change (Sibley & Duckitt, 2013). Sibley and Duckitt (2013) noted that this should also be the case for RWA during times of great social threat such as terrorist attacks or perhaps dramatic changes in migration patterns. More work is certainly needed to examine whether SDO reciprocally influences Agreeableness through additional pathways and components like emotional empathy (Sidanius et al., 2013), or whether such effects are largely context dependent. There is also a need to demonstrate the precise mechanisms through which ideological beliefs may be operating in this way.

In addition to established cognitive components underlying Duckitt’s (2001) proposed motivational-goal system, including personality and social worldviews, evidence is emerging for an additional component reflecting more emotive dispositions (Leone & Chirumbolo, 2008; McFaland, 2010; Sidanius et al., 2013; Weber & Federico, 2007). Leone & Chirumbolo (2008), for example, found that both RWA and SDO were closely related to emotional avoidance rather than emotional approach, and Weber and Federico (2007) presented findings that suggest RWA may result from anxious attachment in childhood whereas SDO relates more closely to avoidant attachment. McFarland (2010) showed that empathy reliably explained a substantial amount of variance beyond RWA and SDO across five independent samples of students and adults, a finding which has been demonstrated elsewhere (Bäckström and Björklund, 2007). In terms of anxiety, Van Hiel et al. (2007; see also Duckitt & Sibley, 2009) argued that social anxiety increases the salience of societal threat (at least for those high
in Neuroticism), which bolsters chronic perceptions of the world as dangerous –
perceptions understood to lead to higher levels of RWA (Duckitt, 2001). It is
plausible, then, to see low levels of Empathy as somewhat of an avoidant
emotional response, and therefore as a potential driver of SDO. Anxiety, on the
other hand, is clearly associated with anxious attachment and therefore may be
an emotional driver of RWA, though these associations are not yet clearly
understood. In sum, the disparity in findings that remains regarding potentially
reciprocal effects of RWA and SDO emphasises the importance of taking into account
broad context effects in longitudinal research. Future research should build on these
shortcomings by attempting to include “third-factor” social context effects and other
possible cognitive components such as emotional dispositions in comprehensive
models of the cognitive processes underlying ideology and prejudice.

Regarding a second area of developments, recent research suggests that both
the RWA and SDO scales are multidimensional and that these dimensions have
somewhat different predictive implications (e.g., Duckitt, et al., 2010; Jost &
Thompson, 2000; Kugler et al., 2010; Mavor et al., 2010). The question remains as to
whether the RWA and SDO scales are the best possible measures of these
dimensions. Duckitt et al. (2010) and Mavor et al. (2010) developed comparable
tripartite RWA scales based on three underlying components of this construct:
authoritarian aggression, authoritarian submission and conventionalism. Although
SDO is generally considered to be a unidimensional construct, Jost and Thompson
(2000; see also Kugler et al., 2010) argued that SDO comprises two related but
distinct components: opposition to equality (OEQ) and support for group-based
dominance (GBD). GBD captures a preference for one’s own group and only
corns inequalities that have implications for this ingroup, whereas OEQ is
concerned with inequality in general (Kugler et al., 2010). According to Jost and Thompson (2000), this distinction has important implications for low status group members that are high in SDO who would necessarily experience a degree of cognitive dissonance in simultaneously promoting their ingroup (GBD) and endorsing the social order that disadvantages their group (OEQ). This proposition is supported by group differences in levels of OEQ and GBD (Jost & Thompson, 2000) and associations with implicit racial attitude (Ashburn-Nardo, Knowles & Monteith, 2003).

As I argued in chapter four, the tripartite structure of RWA goes some way toward explaining the asymmetry in DPM effect sizes demonstrated in my meta-analysis. Van Hiel et al. (2007) used a measure of RWA that only captured aggression and, to an extent, submission dimensions, which leaves the possibility that the third dimension, conventionalism, might explain additional variance in dangerous worldview to bring the total association between these constructs in line with that between SDO and competitive worldview. There is growing support for multidimensional conceptualisations of RWA and SDO and it is important that the model is updated to accurately reflect these with improved measures accounting for subdimensions and demonstrations of their unique associative pathways in the model.

To more accurately account for these potentially unique effects across subdimensions of RWA and SDO, subsequent meta-analyses should extend my chapter four research to differentiate between studies employing different versions of these scales that conform approximately to the hypothesised dimensions. Such studies could meta-analytically assess subdimensions of RWA and SDO if information about the specific items used in each study was made available. In the context of my meta-analysis in chapter four, this more detailed item-level analysis may also provide
information about where item content overlap is most likely to occur by examining whether associations between worldviews and ideological attitudes appear to be inflated in studies using certain versions of RWA and SDO, or if the same items appear in scale versions where overlap seems to occur. As one reviewer pointed out when this manuscript was being considered for publication, this technique would be more accurate than simply inferring content overlap from the size of the overall correlations.

As discussed in chapter seven, research is also emerging that identifies valid and reliable dual facets of each of the Big-Five personality dimensions that make up the personality component of the DPM (DeYoung et al., 2007). DeYoung et al. (2007) argued that each dimension could be differentiated into two distinct but correlated facets (see Table 4 in their study). As DeYoung et al. (2007) argued, measures of these Big-Five dimensions tend to more reliably assess certain aspects over others and this has important implications for previous observations of DPM associations in studies employing these measures. For example, as I demonstrated in chapter seven (see also Sibley & Duckitt, 2012), it appears that the intellect aspect of Openness to Experience is primarily driving the association of this personality trait with dangerous worldview beliefs and, presumably, RWA.

New data presented by Sibley and Duckitt (2012) suggests that the intellect dimension of Openness to Experience may not be the only personality-level factor underlying RWA, however. Assessing associations of all 10 personality facets with RWA and SDO, Sibley and Duckitt (2012) reported for the first time (but see Sibley & Duckitt, 2008) equal and opposite effects of the two Agreeableness dimensions – compassion and politeness – on RWA. This has important implications for previous reports of these associations, as measuring Agreeableness at a broad-bandwidth level
probably masks these independent effects, which would sum to zero (Sibley & Duckitt, 2012). Thus, these findings suggest a substantial revision of the DPM to include pathways between Agreeableness and RWA, not just SDO. As Sibley and Duckitt (2012) concluded, people high in RWA seem to be extremely polite (i.e., beholden to social mores) but not very compassionate, whereas those high in SDO are similarly callous but also have little concern for politeness and conventions. Compassion therefore may be an important determinant of prejudice across the board.

As I have argued, there is also good evidence for a sixth factor of personality defined as Honesty-Humility (Ashton & Lee, 2001), and although their six-factor HEXACO model of personality was not considered by DeYoung et al. (2007), there are parallels that can be drawn between these perspectives. Sibley and Duckitt (2012) argued that Honesty-Humility might operate similarly to the Agreeableness facet *politeness*, emphasising values of sincerity, honesty and loyalty in addition to motivated needs for closure and sensitivity toward threat-confirming information (see chapter seven). This is probably because Honesty-Humility overlaps with Big-Five Agreeableness; in the HEXACO both Honesty-Humility and Agreeableness are concerned with interpersonal attributes that seem to reflect each of DeYoung et al.’s (2007) Big-Five Agreeableness facets. Honesty-Humility captures attributes including sincerity, fairness, greed-avoidance and modesty which reflect a *politeness* facet of Agreeableness, whereas HEXACO Agreeableness captures forgiveness, gentleness, flexibility and patience which arguably reflect a *compassion* facet.

It certainly would have been desirable to examine these hypothesised mechanisms of Agreeableness in this thesis, although doing so would likely require additional novel study designs and possibly measures that are unfortunately beyond the scope of the series of studies presented here. To this end, I suggest some possible
directions for future research intending to extend my thesis research to incorporate this other major personality trait and the means by which it, in turn, contributes to schematic perceptions of the social world as competitive. This is not to undersell the important contributions to validating and revising the DPM that were accomplished in this thesis. This series of research represents a concerted effort to (a) create the unique research conditions necessary to (b) demonstrate the hypothesised mechanism through which Openness to Experience interacts with the social environment to contribute to stable schematised perceptions of the social world as dangerous and threatening. I anticipate that adequate demonstrations of the respective means-of-operation of Agreeableness (and other relevant personality traits) would require a comparatively dedicated body of work.

These new and more detailed perspectives on both the ideology and personality components of the DPM are important considerations for the continued development of Duckitt’s (2001) model. Clearly the major associations as originally proposed are more nuanced, and also can be contingent on various social context effects. This thesis presented novel means of examining the validity of different incantations of the DPM by (a) developing new theory-derived measures and (b) demonstrating proposed mechanisms of interaction between cognitive dispositions and the social context. There is certainly much more research needed to adequately determine the structure of associations between personality, social worldviews, and ideological attitudes however, including how each of these components of the DPM might influence and be influenced by a range of environmental factors. In the following section I propose some possible future directions.
Suggestions for future research

Following the program of research presented in this thesis, there is a clear impetus for studies examining possible mechanisms underlying facets of Big-Five Agreeableness representing the means by which this personality trait contributes to competitive worldview beliefs and SDO (as well as perhaps RWA according to recent findings by Sibley & Duckitt, 2012). As I have discussed, the facets of Agreeableness (or Agreeableness and Honesty-Humility in HEXACO terms) are both negatively related to SDO (Sibley & Duckitt, 2012) and, whereas Openness to Experience intellect increased sensitivity to threat-confirming information in the research presented in this thesis, both facets of Agreeableness would be likely to operate by causing an individual to be less sensitive to the apparent needs of other people, and less concerned with social mores around empathy and compassion. Failing to attend to these aspects of communalism and cooperation in society would lead to schematic belief structures that the social world is characterised by ruthless competition and that people generally possess a dog-eat-dog mentality: in other words, a competitive worldview.

Sidanius et al. (2013) has provided some initial support for this, demonstrating that SDO is reciprocally related to trait empathy. Extending these findings, and my research in chapter seven, I suggest that this mechanism could be formally examined using distractor-task study designs. Specifically, I suggest that those low in Agreeableness will be less distracted by pleas for compassion during a resources allocation task. Their competitive worldview beliefs should be temporarily heightened by this task, as resource scarcity and zero-sum competition would be made salient. Conversely, the competitive worldview schemas of those high in Agreeableness
should be tempered by information emphasising the needs of others. Extending an earlier suggestion to replicate threat- and competition-manipulation research (Duckitt & Fisher, 2003; Jugert & Duckitt, 2009), it would be pertinent to including Agreeableness as a potential moderator of the competition-manipulation as preliminary evidence that this personality trait does in fact operate by biasing attention to information suggesting competition versus fairness in the social world.

One apparent shortcoming of the studies presented in chapter seven was the necessarily limited ability to simultaneously model additional components of the DPM – particularly associations between Agreeableness and competitive worldview as I have mentioned.

On a related note, Sibley and Duckitt (2012) argued that research is also needed to examine the function of the second Openness to Experience facet: aesthetic openness. Despite the central role of the intellect facet in determining dangerous worldviews as demonstrated here in chapter seven, their data suggested openness may also predict a unique, albeit small, portion of variance in RWA beyond intellect, probably involving subtly different aspects of normative threat in the social environment (Sibley & Duckitt, 2012). One possibility is that openness, being concerned with aesthetics and visual information, may increase the salience of physical signs of social decline and urban decay. For example, future research might assess whether those low in openness are more likely to notice graffiti, indications of homelessness, or littered streets in visual scenes. This aspect of threat in the environment may lead to a greater increase in subsequent dangerous worldview schemas for these individuals in particular.

Again, it would have been ideal to simultaneously assess this proposed perceptual bias in those with lower levels of the openness aspect of Openness to
Experience in the research presented in chapter seven if circumstances had allowed. Introducing more study conditions would have been beneficial in strengthening my argument that intellect really does operate via an anchoring and adjustment heuristic when regarding information that suggests societal dangers. I stress that this causative mechanism of Openness to Experience intellect is largely implied in chapter seven through differences in observable self-reported outcomes across study conditions (low versus high in intellect, intellect compared with openness, and dangerous worldview compared with competitive worldview as dependent variables). Introducing more conditions in which, for example, (a) only Agreeableness relative to Openness to Experience should operate on subsequent worldviews, and (b) only the openness aspect relative to the intellect aspect of Openness to Experience should operate, would further support my arguments that the observed anchoring and adjustment effect in chapter seven was unique to Openness to Experience intellect. Each demonstrably unique effect would improve the ability to claim that the hypothesised underlying cognitive mechanisms are accurate representations of how personality traits actually operate.

Another question that remains regarding the mechanism of Openness to Experience is what actually constitutes sufficiently threatening information that those low in Openness to Experience are more likely to attend to. In the studies presented in chapter seven, my manipulations concerned threatening information that was social in nature – the frequency with which other people “out there” behaved in threatening or dangerous ways. This assumption was consistent with a motivational need for closure perspective that seems to imply closed-mindedness chiefly biases responses to information about other people and groups because of the link between this cognitive style and intergroup prejudice (see Roets & Van Hiel, 2011). Perhaps somewhat
inconsistent with this assumption however, is that the socially-irrelevant threatening stimuli (e.g., sharks) employed by Carrao et al. (2011) still elicited an attention bias in conservative relative to liberal participants; political conservatism is closely related to existential needs to manage uncertainty and threat (Jost et al., 2003; Federico & Goren, 2009). Thus, the existential threat eliciting an anchoring and adjustment bias as reported in chapter seven might pertain to physically threatening information as well as social threats. Extensions to the studies presented in that chapter to include non-social threats would be a means to examine this possibility.

There was an inherent difficulty in implementing these suggestions in chapter seven, however, given that the manipulations of perceived danger and competition were only possible given the specialised worldview measures developed in Section 2 of this thesis. These measures were specifically designed to manipulate competitive and dangerous social worldview beliefs as defined in the DPM, and therefore this study design cannot be easily extended to assess alternative non-social dangers for example, nor could this research have easily incorporated manipulations of graphic indications of social decline or have compared pleas for compassion versus competition-inducing tasks. I reiterate that this thesis constituted a diverse but specialised body of work that together achieved a long-term aim to demonstrate a hypothesised interaction between personality and the social context that contributes to the development and maintenance of particular social worldviews – a crucial contribution to the validation of such causal cognitive pathways that the DPM suggests underlie ideology and prejudice. Nevertheless, I look forward to future research extending my thesis to incorporate additional complex pathways that might be expected in the DPM.
A more general concern for future research is the lack of consideration of genetic contributions to the processes described in the DPM. Another general concern is a need for demonstrations of more implicit associations extending studies to date that tended to examine more explicit self-reported beliefs. As mentioned briefly in chapter seven, there has been recent emphasis on the importance of merging personality-based explanations from both evolutionary and cognitive-psychological perspectives (Michalski & Shackelford, 2010; Nettle & Penke, 2010; Penke, Denissen & Miller, 2007). Exploring the costs and benefits of increasing each of the Big-Five personality traits, Nettle (2006, see also Ashton & Lee, 2007) described traits as reflecting broad biological mechanisms thought to have evolved as motivated human needs in response to differing environmental demands. Heritable variation is ubiquitous across species and should occur wherever there are balanced selection processes favoring different levels of a given trait. Penke (2010, p. 30) argued that, “whether genetic variants [including personality] remain adaptive and eventually become fixed … depends on the stability of the relevant environmental circumstances.” Variation may become operative when environmental change determines different levels of the trait are more adaptive at different times.

This inherited-variation perspective certainly guided the research and informed the theoretical predictions that I presented in this thesis. Although the demonstration of Openness to Experience interacting with perceptions of danger and threat is consistent with such a perspective – supporting a link between cognitive dispositions and the social environment – it was probably beyond the scope of my findings to make broader claims about evolutionary processes. This is an important direction for the DPM field, however a proper consideration of biological components in this attitude formation process was beyond the scope of the present research. Cross-
cultural comparisons of these personality mechanisms would probably be an appropriate means to begin addressing these broader evolutionary processes. For example, we might expect the seize and freeze heuristic to be more pronounced (as in, a greater difference in this bias between low and high Openness to Experience individuals) in parts of the world where levels of social threat were greatest – perhaps comparing countries with high and low levels of immigration. Changes in these mechanisms over time, or even between generations, would also provide more support for an evolved personality-variation argument. A wonderful example of this relationship between evolutionary environments and the favourability of different dispositions, in fact, comes to us from primatology research. It has been reported that male savanna baboons, normally very hierarchical and antagonistic toward one another, became generally more peaceful after many of the most aggressive individuals were wiped out by a tuberculosis epidemic – a shift that persisted for over 20 years and into subsequent generations (Sapolsky, 2006). It is beyond the scope of this report to discuss non-human behavioural research in more depth, but inter-species comparisons of interactions between cognitive dispositions and the social environment powerfully argues for an evolutionary basis to these processes.

There is also a line of evidence in behaviour genetics that indicates both personality traits and social attitude measures (including RWA and SDO) are powerfully determined by genetic effects (accounting for 40-60% of phenotypic variance). The Minnesota and Jena twin studies both showed strong correlations in political ideology between monozygotic twins reared apart, which are also much higher than for dizygotic twins reared apart (McCourt, Bouchard, Lykken, Tellegeen, & Keyes, 1999; Stößell, Kämpfe, & Riemann, 2006). These studies implicate genetic factors as an important genesis of political conservatism and
related ideology, while showing that non-shared environmental factors also play a substantial role. Determining the extent to which genetic factors interact with the environment to predict personality and thus distally SDO and RWA, versus the extent to which such factors have a more proximate effect on SDO and RWA independent of personality is an important avenue for future research. Again, however, access to specialist populations and the ability to assess independent genetic effects in the DPM attitude formation process was beyond the scope of this thesis. I certainly look forward to developments in this exciting field and welcome the increasing convergence between social psychological disciplines and evolutionary perspectives.

Van Hiel et al. (2007) provided the impetus for the research presented in Section 2 of this thesis, originally suggesting that the worldview measures in the DPM ought to be revised to include “different and more specific” items to address alleged content overlap. Van Hiel et al. (2007) also cautioned, however, that people may be able to access and accurately report their personality and ideological attitudes in explicit measures, but that social worldviews seem to comprise more implicit processes operating outside of consciousness. Indeed this is probably the case, though I would add that where the cognitive mechanisms by which social worldviews (and for that matter, personality and ideology as well) operate are likely implicit, the existing self-report measures still provide an accurate, albeit proximate, account of these mechanisms, implying their existence through theoretically derived, explicit self-report outcomes.

Implicit measurement techniques such as response latencies (as Van Hiel et al., 2007 suggested) and implicit association tasks (see Greenwald, McGhee & Schwartz, 1998) are probably a useful avenue for research intending to investigate
hypothesised mechanisms by which the DPM components operate on one another and produce prejudice. In one interesting application, Son Hing, Chung-Yan, Hamilton and Zanna (2008) created four profiles of racism: aversive racism (low explicit, high implicit prejudice attitudes), principled conservatives (high explicit and low implicit prejudice), truly low prejudice individuals who were low in both forms, and modern racists who were high in both. The authors reported distinct patterns of discrimination toward an Asian target, suggesting that effects of ideological attitude constructs such as RWA and SDO may also operate differently in determining prejudice depending on whether they are assessed implicitly or explicitly.

Devos and Banaji (2005) also reported a strong divergence between explicit and implicit attitudes regarding representative ethnic categories in the USA. Sibley and Liu (2007), however, reported that this was only the case for some ethnic categories (Asian) and not others (Pakeha and Maori) in New Zealand, demonstrating the importance of existing social structures or intergroup relationships in a particular cultural context. It also seems that SDO is itself a determinant of divergent implicit and explicit attitudes, where higher levels of SDO are associated with greater consistency between implicit and explicit attitudes about ethnic equality in New Zealand (Harding & Sibley, 2011). As Sibley and Liu (2007) argued, distinct effects of implicit and explicit ideologies may be context dependent and research integrating manipulations of context with measurements of implicit and explicit RWA and SDO is required to conclusively determine the importance of distinguishing these levels of perception.

The inclusion of implicit attitude measures is probably an important extension to the research presented in chapter seven and other work aimed at examining specific cognitive mechanisms through which personality traits are thought to operate. As I
have mentioned, it is these very aspects of cognition that probably operate automatically or outside of consciousness, and antecedent to more explicit attitude expressions. Assessment techniques such as Greenwald et al.’s (1998) Implicit Association Task would provide a novel alternative means of examining attentional biases such as the anchoring and adjustment heuristic that I argued was demonstrated in chapter seven. I would hope that the assessment of implicit attitudes is a promising platform from which to compare the various additional personality mechanisms that I have proposed throughout this discussion chapter. Though still a contentious area (see discussions by Banse & Greenwald, 2007 and Spence & Townsend, 2007), I argue that such analysis techniques are an important direction for the DPM research field and implicit findings should be presented alongside more explicit self-reports.

Taken together, the recent findings discussed throughout this chapter suggest an overall need for more integrated models of personality, worldview, ideological attitudes and social context to examine tentative new pathways such as reciprocal effects of SDO and RWA, subdimensions of the model components and possibly additional components representing biological influences and implicit pathways. These are perhaps tall orders for the field ahead, given the aforementioned difficulties of, for example, manipulating stable personality dispositions and ensuring environmental change of a sufficient magnitude. As recent innovative examples indicate however, demonstrating the integration of more diverse potential elements in the DPM is not necessarily out of reach, and I look forward to future research employing new and varied designs that validate and expand upon these pathways.

Concluding statement
Duckitt’s (2001; Duckitt et al., 2002) research has provided this field with a broad theoretical model that elaborates on the antecedents and consequences of two major ideological attitude dimensions. The standard model has enjoyed consistent support across a wide range of research since it was first posed, and researchers around the world are currently working to update the model and validate its assumptions across different contexts and using a variety of study designs. Important areas of the DPM requiring attention that I have begun to address in this thesis include: refinement of the measurement tools used to assess the various components of the model, novel demonstrations of causality and mechanisms of operation, prediction of specific real-world attitude domains such as support for political policies, and the importance of accounting for unique pathways of association of subdimensions of the model components. It is clear that much more work remains to build on the research in this field to date, and I hope to have provided a strong empirical basis from which at least some of the research I have discussed here will develop.

Taken together, the series of studies presented in this thesis aim to clarify our understanding of causal associations, construct definitions, and underlying cognitive mechanisms of the components that comprise John Duckitt’s (2001) Dual Process Model of Ideology and Prejudice. In closing, I offer a quote from the key proponents of this model that speaks to its importance for contemporary conceptualisations of the processes that determine prejudice and maintain inequalities (Duckitt & Sibley, 2009b, p. 309):

… two motivational goals result in dual ideologies that justify existing and desired social arrangements by emphasizing quite different characteristics of outgroups and that stratify and position groups based on qualitatively different evaluations. To understand the process by which
ideologies legitimate social systems, then, it is necessary to understand the motivational bases of these two different ideological dimensions, the conditions under which they will cause the individual to espouse different legitimizing myths, and importantly, the conditions under which these different domains of legitimizing myths may combine to form an integrated ideological system that maintains the existing social order through multiple ideological mechanisms.

This statement neatly summarises the central role of the DPM in elaborating the complex cognitive processes that shape attitudes and behaviours that are, in turn, essential determinants of equality and intergroup harmony, or otherwise. I hope that the work presented in this thesis constitutes a novel contribution to the continued advancement and utility of the DPM, and to understandings of the cognitive processes that support and maintain prejudice.
References

*Denotes articles included in the meta-analysis (chapter four).


Duckitt, J. (2006). Differential effects of right wing authoritarianism and social dominance orientation on outgroup attitudes and their mediation by threat


243


Jost, J. T., & Thompson, E. P. (2000). Group-based dominance and opposition to equality as independent predictors of self-esteem, ethnocentrism, and social


Appendix 1

Construct Definitions and Items of the FEI-DSW Worldview Dimensions

_Dangerous social worldview schema (FEI-DW):_  
A belief that the social world is a dangerous and threatening place because of corrupt people or groups that willingly cause harm and disruption to others’ lives and to the ingroup in particular.

[Estimate the percentage of people who would...]
1. Rob someone
2. Mug someone
3. Break into someone’s house
4. Commit a violent crime
5. Attack someone for no reason at all
6. Attack someone purely out of meanness
7. Terrorise other people
8. Abuse their children
9. Deal drugs

_Competitive social worldview schema (FEI-CW):_  
A belief that the social world is characterized by ruthless competition for power and resources and by natural hierarchical relationships between both individuals and social groups.

[Estimate the percentage of people who would...]
1. Charm someone to manipulate them
2. Take advantage of people who play by the rules
3. Intimidate someone to get what they want
4. Put money, wealth and luxury before other important concerns
5. Trick their friends out of an important opportunity
6. Intimidate someone with their social position to get what they want
7. Be cruel to another person to impress their friends
8. Deliberately make a mess someone else had to clean up
9. Treat poor people as if they were scum
Appendix 2

Construct Definitions and Items of the Two Social Worldview Scales – Refined (SWS-R).

Competitive Worldview
Belief that the social world is a competitive jungle characterized by a ruthless, amoral struggle for resources and power in which might is right and winning is everything versus belief that the social world is a place of cooperative harmony in which people care for, help, and share with one another.
1. It’s a dog-eat-dog world where you have to be ruthless at times.
2. There is really no such thing as “right” and “wrong.” It all boils down to what you can get away with.
3. One of the most useful skills a person should develop is how to look someone straight in the eye and lie convincingly.
4. My knowledge and experience tells me that the social world we live in is basically a competitive “jungle” in which the fittest survive and succeed, in which power, wealth, and winning are everything, and might is right.
5. Basically people are objects to be quietly and coolly manipulated for one’s own benefit.
6. Life is not governed by the “survival of the fittest.” We should let compassion and moral laws be our guide.
7. It is better to be loved than to be feared.
8. Do unto others as you would have them do unto you, and never do anything unfair to someone else.
9. Honesty is the best policy in all cases.
10. One should give others the benefit of the doubt. Most people are trustworthy if you have faith in them.

Dangerous Worldview
Belief that the social world is a dangerous and threatening place in which good, decent people’s values and way of life are threatened by bad people versus belief that the social world is a safe, secure and stable place in which almost all people are fundamentally good.
1. My knowledge and experience tells me that the social world we live in is basically a safe, stable and secure place in which most people are fundamentally good.
2. It seems that every year there are fewer and fewer truly respectable people, and more and more persons with no morals at all who threaten everyone else.
3. Although it may appear that things are constantly getting more dangerous and chaotic, it really isn’t so. Every era has its problems, and a person’s chances of living a safe, untroubled life are better today than ever before.
4. Any day now chaos and anarchy could erupt around us. All the signs are pointing to it.
5. There are many dangerous people in our society who will attack someone out of pure meanness, for no reason at all.
6. The “end” is not near. People who think that earthquakes, wars, and famines mean God might be about to destroy the world are being foolish.
7. My knowledge and experience tells me that the social world we live in is basically a dangerous and unpredictable place, in which good, decent and moral people’s values and way of life are threatened and disrupted by bad people.
8. Despite what one hears about “crime in the street,” there probably isn’t any more now than there ever has been.
9. If a person takes a few sensible precautions, nothing bad is likely to happen to him or her; we do not live in a dangerous world.
10. Every day as society become more lawless and bestial, a person’s chances of being robbed, assaulted, and even murdered go up and up.

Note. Items refined from the scale originally developed by Duckitt et al. (2002). Construct definitions are from Duckitt et al. (2002).