What Matters Most to Prejudice: Big Five Personality, Social Dominance Orientation, or Right-Wing Authoritarianism?

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Abstract

Whereas previous research has studied the relation of either (i) personality with prejudice, (ii) personality with social dominance orientation (SDO) and right-wing authoritarianism (RWA), or (iii) SDO and RWA with prejudice, the present research integrates all approaches within the same model. In our study (N = 183), various causal models of the relationships among the Big Five, SDO, RWA, and Generalized Prejudice are proposed and tested. Generalized Prejudice scores were obtained from a factor analysis of the scores on various prejudice instruments (racism, sexism, prejudice toward homosexuals, and mentally disabled people), which yielded a one-factor solution. The best-fitting causal model, which was our suggested hypothetical model, showed that Big Five personality had no direct effect on Generalized Prejudice but an indirect effect transmitted through RWA and SDO, where RWA seems to capture personality aspects to a greater extent than SDO. Specifically, Generalized Prejudice was affected indirectly by Extraversion, Openness to Experience, and Conscientiousness through RWA, and by Agreeableness through SDO, whereas Neuroticism had no effect at all. The results are discussed against the background of previous research and the personality and social psychology approaches to the study of prejudice. Copyright © 2004 John Wiley & Sons, Ltd.

INTRODUCTION

Overview

During more than five decades social and personality psychologists have conducted research to explain why some people are more prejudiced than others. This research has emphasized two major lines of explanation—either stable factors within the individual,

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that is, people's internal attributes or personality characteristics (see e.g. Adorno, Frenkel-Brunswik, Levinson, & Sanford, 1950; Altemeyer, 1998; Duckitt, Wagner, du Plessis, & Birum, 2002; Ekehammar & Akrami, 2003; Heaven & St. Quintin, 2003; McFarland, manuscript submitted for publication; Sidanius & Pratto, 1999), or factors linked to the outside world, that is, people's social identity, social self-categorization, or social position (see e.g. Guimond, 2000; Guimond, Dambrun, Michinov, & Duarte, 2003; Reynolds, Turner, Haslam, & Ryan, 2001; Schmitt, Branscombe, & Kappen, 2003; Sherif, 1967; Tajfel & Turner, 1986; Turner & Reynolds, 2003; Verkuyten & Hagendoorn, 1998). Within the personality approach, which is also the main focus of the present study, two major theoretical frameworks have been put forth to explain prejudice—authoritarian personality theory (Adorno et al., 1950) and the more recent theory of right-wing authoritarianism (RWA; see e.g. Altemeyer, 1981, 1998) on the one hand, and the recent theory of social dominance orientation (SDO; see e.g. Pratto, Sidanius, Stallworth, & Malle, 1994; Sidanius & Pratto, 1999) on the other. Although the issue is important for the personality explanation of prejudice, hardly any attempts have been made to integrate and examine the relation of personality, RWA, SDO, and prejudice (but see McFarland, manuscript submitted for publication; Duckitt et al., 2002). Thus, past research has studied either the relation between personality and prejudice, or the relation of personality with SDO and RWA, or the relation of SDO and RWA with prejudice. In addition, by analysing just one type of prejudice at a time (but see Ekehammar & Akrami, 2003; McFarland, manuscript submitted for publication), the personality approach has missed one central point—the generalized prejudice issue—which means that different types of prejudice have been shown to be substantially correlated (Adorno et al., 1950; Allport, 1954; Bierly, 1985; McFarland, manuscript submitted for publication; Ekehammar & Akrami, 2003). The present study attempts to integrate the research on personality and prejudice by examining Big Five personality, RWA, SDO, and generalized prejudice (based on four types of prejudice) within the same causal model.

Prejudice as a personality trait

Generalized prejudice is a tendency to respond with prejudice toward any outgroup (Allport, 1954; Duckitt, 1992). Five decades ago, Gordon Allport noted that '(o)ne of the facts of which we are most certain is that people who reject one out-group will tend to reject other out-groups. If a person is anti-Jewish, he is likely to be anti-Catholic, anti-Negro, anti any out-group' (Allport, 1954, p. 68). Further, generalized prejudice can be seen as the major motivating factor behind the development of the authoritarian personality theory (Adorno et al., 1950). Given the importance of this issue, surprisingly few recent attempts have been made to examine and employ the generalized prejudice concept. However, in line with the classical works (e.g. Adorno et al., 1950; Allport & Kramer, 1946; Hartley, 1946), Bierly (1985) found that attitudes toward homosexuals, Blacks, women, and elderly people were correlated (see also Altemeyer, 1996). Further, McFarland (manuscript submitted for publication) found that racism, sexism, and antigay attitudes are highly correlated and load on one and the same factor. More recently, Ekehammar and Akrami (2003) reported that four types of prejudice (racism, sexism, prejudice toward homosexuals, and prejudice toward mentally disabled people) are highly correlated and form one single factor. The cross-cultural validity of the relation between various types of prejudice (toward e.g. Jews or women) has been shown by McFarland, Ageyev, and Abalakina (1993). Taken together, the high correlations obtained between

different types of prejudice in past and more recent research lend support to the idea of prejudice as a unit of personality, or, as Allport concluded, 'The evidence we have reviewed constitutes a very strong argument for saying that prejudice is basically a *trait of personality*. When it takes root in life it grows like a unit. The specific object of prejudice is more or less immaterial' (1954, p. 73).

Big Five personality and RWA

RWA is a construct that consists of conventionalism, authoritarian submission, and authoritarian aggression, which means that high-RWA people tend to favour traditional values, are submissive to authority figures, are highly ethnocentric, and can be expected to act aggressively toward outgroups (Altemeyer, 1981, 1998). RWA is argued to be an individual difference or personality variable (see e.g. Altemeyer, 1996, 1998), and there is also accumulating evidence speaking for the heritability of RWA (McCourt, Bouchard, Lykken, Tellegen, & Keyes, 1999). Nevertheless, RWA focuses on intragroup perceptions or social and ideological attitudes (Duckitt et al., 2002) and could conceptually be placed in the interface between personality and social psychology. Thus, RWA is a narrowly defined trait that may conceptually fall under higher-order and general personality dimensions, like the Big Five personality factors. Previous research has shown that RWA is correlated negatively with Openness to Experience (Altemeyer, 1996; Heaven & Bucci, 2001; Lippa & Arad, 1999; Peterson, Smirles, & Wentworth, 1997; Van Hiel & Mervielde, in press), and positively with Conscientiousness (Heaven & Bucci, 2001) and Extraversion (Lippa & Arad, 1999; Trapnell, 1994).

RWA and prejudice

Recent research indicates that RWA correlates with negative attitudes toward African-Americans (Altemeyer, 1998; Lambert & Chasteen, 1997; McFarland, manuscript submitted for publication; Whitley, 1999), homosexuals (Altemeyer, 1998; Lippa & Arad, 1999; McFarland, manuscript submitted for publication; Whitley, 1999; Whitley & Ægisdottir, 2000; Whitley & Lee, 2000), women (Altemeyer, 1998; McFarland, manuscript submitted for publication), Jews (McFarland et al., 1993), and immigrants in Sweden (Zakrisson, unpublished manuscript). Further, RWA has been shown to be related to biological, symbolic, aversive racism, ethnocentrism, blatant and subtle prejudice (Van Hiel & Mervielde, paper submitted for publication), modern racism (Reynolds et al., 2001), prejudice toward Turkish immigrants in the Netherlands (Verkuyten & Hagendoorn, 1998), antiblack attitudes among white South Africans (Duckitt, 1992), and prejudice toward Asians and Aboriginals in Australia (Heaven & St. Quintin, 2003). Taken together, a large body of research attests that RWA is a powerful predictor of prejudice and negative attitudes toward outgroups in a variety of cultures.

Big Five personality and SDO

Social dominance orientation (SDO), the basic individual difference variable in social dominance theory, can be seen as 'a general attitudinal orientation toward intergroup relations, reflecting whether one generally prefers such relations to be equal, versus hierarchical' (Pratto et al., 1994, p. 742). Thus, high-SDO people tend to promote intergroup hierarchies and to rank social groups in a superior–inferior hierarchy. SDO is assumed to be an individual difference or personality variable with evolutionary roots

(see e.g. Pratto et al., 1994; Sidanius & Pratto, 1999). The concept, however, focuses on intergroup perceptions or social and ideological attitudes and values (Duckitt et al., 2002) and could, like RWA, be placed in the interface between personality and social psychology. Thus, SDO is a trait with a narrow definition that may conceptually fall, like RWA, under some higher-order, general personality dimensions, such as the Big Five personality factors. Despite the theoretical importance of the relation between personality and SDO, there is almost a total lack of empirical studies on this relation. However, two studies have found SDO to be correlated negatively with Agreeableness (Heaven & Bucci, 2001; Lippa & Arad, 1999) and Openness to Experience (Heaven & Bucci, 2001). Also, in the study by Ekehammar and Akrami (2003), where SDO was included but not reported on, they found, like Heaven and Bucci, that SDO was negatively related to Agreeableness ($r(154) = -0.34, p < 0.001$) and Openness to Experience ($r(154) = -0.36$, $p < 0.001$).

SDO and prejudice

The relation between SDO and prejudice has been subjected to far more research than SDO's relation with personality. There is an impressive amount of research attesting SDO's strength in predicting various types of prejudice in many different cultures and settings. Thus, SDO has been found to correlate strongly with measures of, for example, ethnic prejudice (see e.g. Akrami, Ekehammar, & Araya, 2000; Pratto et al., 1994), sexism (Ekehammar, Akrami, & Araya, 2000; Pratto et al., 1994; Sidanius, Pratto, & Bobo, 1994, 1996), negative attitudes toward homosexuals (Altemeyer 1998; Lippa & Arad, 1999; Whitley, 1999; Whitley & Ægisdottir, 2000; Whitley & Lee, 2000), symbolic, classic (Van Hiel & Mervielde, 2002) and biological, aversive racism, ethnocentrism, blatant and subtle prejudice (Van Hiel & Mervielde, manuscript submitted for publication), and generalized prejudice—a composite measure of attitudes toward homosexuals, African Americans, and women (McFarland, manuscript submitted for publication; see also Guimond et al., 2003).

The relation between SDO and RWA

As the research referred to above has shown, SDO and RWA are strong single predictors of prejudice and negative outgroup attitudes. Further, the two scales have low (especially in North America; Altemeyer, 1998; McFarland, manuscript submitted for publication; Sidanius & Pratto, 1999; Whitley, 1999) to moderate (especially in Europe; Duriez & Van Hiel, 2002; Van Hiel & Mervielde, 2002; Zakrisson, unpublished manuscript) correlations and therefore serve as distinct and complementary predictors of prejudice. Thus, combining SDO and RWA in prediction studies of various types of prejudice has given impressive predictive validities (see e.g. Altemeyer, 1998; McFarland, manuscript submitted for publication; Whitley, 1999). As the empirical correlations would imply, there are several conceptual differences between SDO and RWA (see e.g. Altemeyer, 1998; Duriez & Van Hiel, 2002; Heaven & Connors, 2001; Whitley, 1999). First, SDO focuses on the practice of intergroup dominance whereas RWA primarily is to be considered an intragroup phenomenon. Second, SDO people do not submit to others in the way RWA people tend to do. Third, people high on RWA tend to be religious whereas people high on SDO do not. Fourth, those high on RWA tend to need structure, value conformity, and tradition, in contrast to those high on SDO. Fifth, RWA has been found to correlate with security values but not SDO.

More generally, RWA and SDO seem to parallel two broad value dimensions (see Duckitt, 2000) that have often been revealed in cross-cultural studies (e.g. Schwartz, 1994). The first deals with collectivism (conformity) versus individualism (autonomy) and the other with hierarchy versus egalitarianism (or power distance), and these dimensions have been found to describe national as well as individual differences.

Big Five personality and prejudice

To our knowledge, only three studies (Ekehammar & Akrami, 2003; McFarland, manuscript submitted for publication; Saucier & Goldberg, 1998) have reported data on the relationship between Big Five personality factors and prejudice, although the two last-mentioned studies did not have the personality–prejudice relationship as their major concern. Ekehammar and Akrami (2003) examined the relation of the Big Five personality factors to generalized prejudice (a composite measure based on scores from four types of prejudice) using a variable-centred (relating personality and prejudice through correlation and multiple regression analyses) as well as a person-centred approach (Big Five personality profiles obtained by cluster analyses related to mean prejudice scores; see Asendorpf, 2002, 2003). The variable-centred approach, which outperformed the person-centred approach in that study, showed that two of the Big Five factors (Openness to Experience and Agreeableness) displayed rather strong ($r = -0.44$ to -0.45) negative zero-order correlations with Generalized Prejudice. Also, McFarland (manuscript submitted for publication) reported that Openness to Experience ($r = -0.38$) and Agreeableness ($r = -0.33$) showed the largest correlations with his generalized prejudice measure. Saucier and Goldberg (1998) used quite another approach to the measurement of prejudice, and they obtained only small correlations with this measure and the Big Five traits. In conclusion, when studying simple correlations, it seems that Agreeableness and Openness to Experience are the single Big Five factors most closely associated with Generalized Prejudice.

When using all Big Five factors for predicting Generalized Prejudice in a linear multiple regression analysis (MRA), Ekehammar and Akrami (2003) arrived at a fairly high predictive power (cross-validated $R = 0.56$) with Agreeableness and Openness to Experience showing, as expected, the largest regression weights. McFarland (manuscript submitted for publication, Study 4), entering the Big Five factors in a first step in the MRA, made a similar analysis and found that only Openness to Experience and Agreeableness gave significant contributions to the regression equation. The predictive power obtained in McFarland's study was very similar ($R = 0.52$, not cross-validated) to that of Ekehammar and Akrami. Adding RWA, SDO, and empathy (the Big Three predictors of prejudice, according to McFarland, manuscript submitted for publication) improved the predictive power substantially.

Aim of the present study

We argue that a fair treatment of personality (such as the Big Five factors) in this context would be to carry out a causal modelling analysis rather than a strict prediction study. It seems clear that in a prediction study RWA and SDO would most probably come out as the single strongest predictors of prejudice with a substantial combined predictive power. However, as shown by Heaven and Bucci (2001), RWA and SDO are associated with the Big Five traits in different ways (see also McCrae, 1996). Thus, in the present study we examine this issue by applying a variable-centred causal modelling approach that includes

RWA and SDO together with the Big Five and prejudice factors. In this way, in addition to the direct effects, the probable *indirect* effects of the Big Five factors on prejudice, transmitted through RWA and SDO, are also to be examined and estimated.

A hypothetical model

Hence, our main model suggests that in a causal order the Big Five factors first affect SDO and RWA as intermediate or transmitting variables, which in turn affect prejudice. Thus, we find it reasonable to assume that the Big Five personality factors are prior to SDO and RWA in a causal chain because of the early expression of at least some of them as temperament variables in human infants (see e.g. Clark & Watson, 1999) and in other animal species as well (Bouchard & Loehlin, 2001), and because of their substantial heritability coefficients (see e.g. Bouchard & Loehlin, 2001; Plomin & Caspi, 1999). Further, we suggest that SDO and RWA are causally prior to prejudice, as we assume that they are positioned at the interface between personality and social psychology. This reasoning fits nicely into the general framework outlined by McCrae and Costa (1996, 1999) for the causal relationships between what they call 'basic tendencies' (Big Five personality), 'characteristic adaptations' (e.g. attitudes such as RWA and SDO), and 'objective biography' (e.g. observable behaviour, such as prejudice manifested in discrimination). Within this framework, 'basic tendencies' are assumed to affect 'characteristic adaptations', which in turn affect 'objective biography'. Finally, we have also included a measure of social desirability in order to test whether the relationship between personality and prejudice disclosed in a previous study (Ekehammar & Akrami, 2003) could have been inflated by social desirability. Social desirability has been found to be correlated with one Big Five factor (Agreeableness) at least (see e.g. Stöber, 2001).

Our hypothetical model is outlined in Figure 1. Based on the previous findings reviewed above, we suggest a causal relationship of the personality factors Conscientiousness, Extraversion and Openness to Experience with RWA, and Openness to Experience and
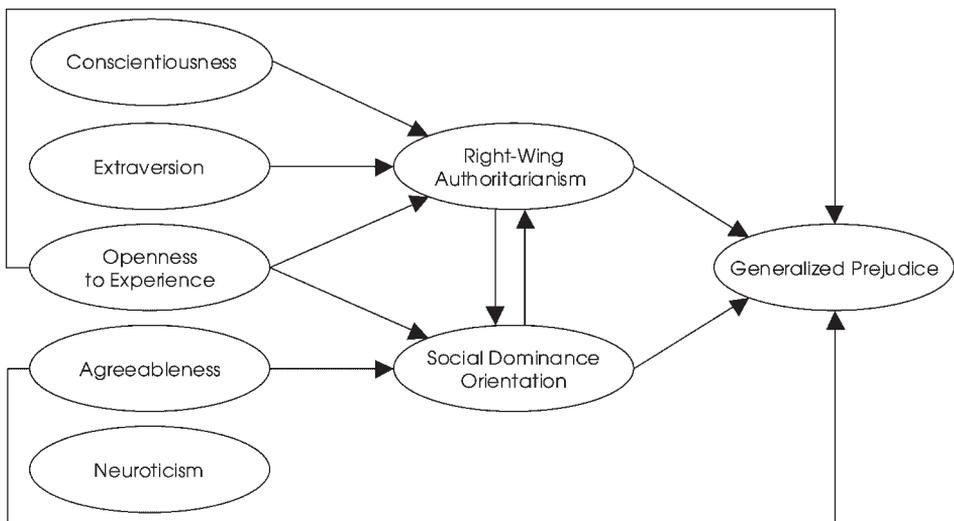

Figure 1. A hypothetical model of the causal relation between Big Five personality, Right-Wing Authoritarianism, Social Dominance Orientation, and Generalized Prejudice.

Agreeableness with SDO. Further, we assume a causal relationship of SDO and RWA with Generalized Prejudice. In addition, and in line with our intention to examine direct effects of personality on prejudice, we suggest causal paths from the personality factors Agreeableness and Openness to Experience to Generalized Prejudice. With no specific theoretical basis for the causal direction between RWA and SDO at hand, we find it reasonable to examine the relation between these variables by one path in each direction. Thus, the causal relation between RWA and SDO is the only exploratory link postulated within the model.

Of course, alternative models of causal order that could compete with our hypothetical model are to be tested as well. In light of the recent debate on the causal order of SDO and prejudice (see e.g. Guimond et al., 2003; Schmitt et al., 2003), one reasonable alternative is to modify our hypothetical model by reversing the causal order of RWA and SDO on the one hand and Generalized Prejudice on the other. This alternative model questions the prevailing implicit assumption of the causal relation between, for example, SDO and various types of prejudice—where SDO is assumed to be the causal determinant of prejudice (see e.g. Schmitt et al., 2003; see also Guimond et al., 2003). Furthermore, this model is still consistent with the McCrae–Costa model (1996, 1999), assuming that personality, as a 'basic tendency', is first in the causal chain. Another possible alternative model is to switch the causal order by putting RWA and SDO first in the causal chain, followed by Big Five personality and, finally, Generalized Prejudice. Although we regard this model as not very realistic[1], we think that it could be the next best alternative to our hypothetical model. It is important to note that in the two alternative models the relations between Big Five personality and the other variables remain as in the main hypothetical model.

METHOD

Participants

The participants were 183 nonpsychology university students at Uppsala University, 97 women and 86 men. The mean age for all participants was 22.9 years. The questionnaires were distributed at various study centres and libraries for studies in social sciences, the humanities, and natural sciences. The students represented various academic disciplines, such as social science, behavioural science, medicine, economics, technology, and dentistry. The participants completed the questionnaire individually and were instructed not to talk to each other during completion. All participants were anonymous in the study and received cinema vouchers (3.5 €) for their participation.

Measures

Big Five Inventory (BFI)
The scale is a Swedish translation of the Big Five Inventory constructed by John, Donahue, and Kentle (cf. John & Srivastava, 1999). The BFI consists of 44 items that are distributed among the five personality dimensions Openness to Experience, Conscientiousness, Agreeableness, Extraversion, and Neuroticism. Examples of items are "I consider myself

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[1]This model was actually suggested by a reviewer of a previous version of the present paper.

as someone who: *is talkative* (Extraversion), *is forgiving* (Agreeableness), *has a vivid imagination* (Openness to Experience), *worries a lot* (Neuroticism), *tends to be disorganized*'' (Conscientiousness, reversed). The answers were indicated on a five-step Likert scale ranging from *Is absolutely not true* (1) to *Is absolutely true* (5).

Social Dominance Orientation (SDO)
The Swedish translation of the SDO scale, constructed by Pratto et al. (1994), consists of 16 items and measures the level of social dominance orientation that a person displays. Some item examples: *Some groups of people are just inferior to others* (approving suggests high social dominance); *We would have fewer problems if we treated all groups equally* (approving suggests low social dominance).

Right Wing Authoritarianism (RWA)
A Swedish short version of the RWA scale, originally constructed by Altemeyer (1981), has recently been adapted by Zakrisson (unpublished manuscript) and was used in the present study. The scale contains 15 items. Some examples: *Our country needs a powerful leader to overthrow the radical and immoral values that are present in today's society* (approving suggests high RWA); *It is better to accept bad literature than to censor it* (approving suggests low RWA).

The Modern Racial Prejudice Scale
The scale was constructed by Akrami et al. (2000) for measuring modern (covert, subtle, symbolic) racial/ethnic prejudice in a Scandinavian context following the item contents of McConahay's (1986) Modern Racism Scale and based on Sears' (1988) classification system. Sears characterized modern (symbolic) prejudice by three components: denial of continued discrimination, antagonism toward minority group demands, and resentment about special favours for minority groups. Reliability and validity data for the scale are provided by Akrami et al. (2000). The scale contains nine items (example: *Discrimination against immigrants is no longer a problem in Sweden*).

The Swedish Modern Sexism Scale
The scale was constructed for measuring attitudes toward women in a Scandinavian context by Ekehammar et al. (2000). It was based on Sears' (1988) classification system and the Modern Sexism Scale items constructed by Swim, Aikin, Hall, and Hunter (1995). For reliability and validity information, see the article by Ekehammar et al. (2000). The scale comprises eight items (example: *Discrimination against women is no longer a problem in Sweden*).

The Modern Prejudice toward Mentally Disabled Persons Scale
The scale was developed by Akrami, Ekehammar, Sonnander, and Claesson (manuscript submitted for publication) to measure attitudes and prejudice toward mentally disabled persons, taking into account the distinction between classical and modern prejudice, based on Sears' (1988) classification system. The scale includes 11 items (example: *Mentally disabled persons are getting too demanding in their push for equal rights*).

The Attitude to Homosexuality Scale
The scale, constructed for a Scandinavian context by Ekehammar and Akrami (manuscript in preparation) is intended to measure prejudice toward homosexuals in general. Thus, the total score can be seen as an index of prejudice toward homosexuals and homosexuality. The scale contains 10 items (example: *Homosexuality should be abandoned*).

The Social Desirability Scale

A short form of the Marlowe–Crowne Social Desirability Scale constructed by Rudmin (1999) was used. The scale contains 14 items (example: *I have never deliberately said something that hurt someone's feelings*). The answers were indicated on a five-step Likert scale ranging from *Is absolutely not true* (1) to *Is absolutely true* (5).

Procedure

The order of the scales in the questionnaire was distributed according to the following principle: the Big Five Inventory always came first and the Social Desirability scale always came last. The order of the RWA, the SDO, and the prejudice scales was varied, leading to the following six different versions of scale order in the questionnaire: RWA–SDO–prejudice, RWA–prejudice–SDO, SDO–prejudice–RWA, SDO–RWA–prejudice, prejudice–RWA–SDO, prejudice–SDO–RWA. The item order within the RWA, SDO, and prejudice scales was randomized when constructing the scales but remained fixed across the six different versions.

The answers on the RWA, SDO, and all the prejudice scales were indicated on a five-step scale ranging from *Do not agree at all* (1) *to Agree fully* (5).

Two respondents were excluded from the analyses as they failed to fill out one or more of the questionnaire scales. Twenty-eight respondents, accounting for 15% of all respondents, had failed to fill out one or two items. In this case, the mean for all the other respondents on that item was imputed.

RESULTS

Analyses of prejudice scale scores

Before the main analyses, the participants' scores on the four prejudice scales presented above were analysed by computing pair-wise correlation coefficients (r) and Cronbach alpha coefficients. As shown in Table 1, the alpha reliabilities can be regarded as satisfactory for all scales, varying between 0.80 and 0.91. Further, the magnitude of the scale intercorrelations are moderate to high, and statistically significant ($p < 0.01$). The largest correlation coefficient ($r = 0.59$) was obtained for the relation between racism and sexism, and the smallest ($r = 0.24$) for the relation between prejudice toward homosexuals and mentally disabled people.

To arrive at a smaller number of general prejudice factors, we performed a principal components analysis on the correlation matrix. There was only one factor with an eigenvalue greater than unity (2.28), explaining 57% of the total variance, and a scree plot indicated one factor as well. Following Allport's (1954: see also McFarland, manuscript submitted for publication) terminology, we denoted this factor Generalized Prejudice. The loadings on this factor were found to be high: 0.58 (prejudice toward homosexuals), 0.82 (racism), 0.84 (sexism), and 0.76 (prejudice toward mentally disabled people). Finally, standardized factor scores ($M = 0$, SD $= 1$) for the Generalized Prejudice factor were calculated for each participant, with higher scores indicating higher generalized prejudice. These scores were then used in the main analyses below.

Descriptive statistics and relations among the main variables

Cronbach alpha coefficients for SDO, RWA, Generalized Prejudice (based on the scores of the four prejudice scales), social desirability, and the Big Five factors were computed. The

Table 1. Correlations among the RWA, SDO, GP, Social Desirability, and Big Five personality factors, Cronbach alpha (α) reliabilities, means, and standard deviations ($N = 183$)

Scale	1	2	3	3a	3b	3c	3d	4	M	SD	α
1. RWA	—								2.01	0.62	0.85
2. SDO	0.52***	—							1.83	0.62	0.73[a]
3. Generalized Prejudice	0.55***	0.65***	—						0.00	1.00	0.73[a]
3a. Homosexuals	0.48***	0.39***	0.58***	—					1.75	0.85	0.91
3b. Racism	0.50***	0.62***	0.82***	0.27***	—				1.89	0.71	0.86
3c. Sexism	0.41***	0.52***	0.84***	0.40***	0.59***	—			2.33	0.83	0.85
3d. Mentally disabled	0.31***	0.40***	0.76***	0.24***	0.53***	0.47***	—		1.90	0.51	0.80
4. Social Desirability	0.10	−0.11	−0.09	0.06	−0.11	−0.06	−0.13	—	2.86	0.56	0.70
Big Five Factors											
Neuroticism	−0.18**	−0.12	−0.14*	−0.17*	−0.11	−0.15*	−0.01	−0.14	2.84	0.74	0.79
Extraversion	0.15*	0.03	−0.03	−0.02	−0.02	−0.01	−0.03	0.00	3.40	0.67	0.81
Openness to Experience	−0.28***	−0.07	−0.16*	−0.06	−0.22**	−0.12	−0.06	−0.04	3.59	0.60	0.74
Agreeableness	0.08	−0.25***	−0.20**	−0.11	−0.16*	−0.13	−0.20**	0.51***	3.73	0.53	0.69
Conscientiousness	0.25***	0.10	0.09	0.12	0.16*	−0.02	−0.01	0.14	3.39	0.60	0.73

[a]Based on the scores of the four prejudice scales. All scales range from 1 to 5.
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

scale reliabilities, as shown in Table 1, can in general be regarded as satisfactory. The agreeableness dimension of the Big Five displayed the lowest reliability, with an alpha of 0.69, and SDO displayed the highest reliability with an alpha of 0.87. Pair-wise correlations (r) as well as M and SD values for the scales were calculated and are presented in Table 1.

The relations of the Big Five personality dimensions to SDO, RWA, Generalized Prejudice, and social desirability were also examined. A low but significant negative correlation was displayed between SDO and Agreeableness ($r = -0.25$, $p < 0.001$) whereas the correlations between SDO and the other Big Five dimensions were all nonsignificant. Further, low but statistically significant correlations were found between RWA and four of the Big Five dimensions. Thus, RWA was positively correlated with Conscientiousness ($r = 0.25$, $p < 0.001$) and Extraversion ($r = 0.15$, $p < 0.05$), and negatively correlated with Openness to Experience ($r = -0.28$, $p < 0.001$), and Neuroticism ($r = -0.18$, $p < 0.05$). As shown in Table 1, social desirability had a significant correlation with Agreeableness ($r = 0.51$, $p < 0.001$), but not with any other personality or prejudice scale.

The effect of social desirability was controlled by partialling out its effect through computing partial correlations as well. These analyses led to only minor changes in the magnitude of correlation coefficients and significance levels. Thus, the significant correlation between Agreeableness and SDO was not changed (moving from $r = -0.26$ to $r = -0.27$, $p < 0.001$).

Also when adjusting for the effect of social desirability, statistically significant correlations were obtained between Generalized Prejudice and Agreeableness ($r = -0.20$, $p < 0.01$), Openness to Experience ($r = -0.15$, $p < 0.05$), and Neuroticism ($r = -0.14$, $p < 0.05$) respectively. These results indicate that the more open one is to new experiences and the more agreeable one is, the less prejudiced one tends to be toward various outgroups. This finding is in line with the results of Ekehammar and Akrami (2003), where the same significant correlations were found, although the magnitudes were higher in that study.

Strong correlations were found between Generalized Prejudice and SDO ($r = 0.65$, $p < 0.001$), and RWA ($r = 0.58$, $p < 0.001$), respectively. These strong correlations are in line with previous research and confirm that SDO and RWA are potent predictors of various forms of prejudice (Pratto et al., 1994; Sidanius & Pratto, 1999; Whitley, 1999). Finally, a strong correlation was obtained between SDO and RWA ($r = 0.52$, $p < 0.001$).

Causal modelling

A causal model including the Big Five factors, linked by SDO and RWA to Generalized Prejudice, portrays our main hypotheses as depicted in Figure 1 (see also Table 2). To allow a proper examination of our hypothetical model, however, two alternative models were proposed and examined. In Model II, we varied the causal order between RWA and SDO on the one hand and Generalized Prejudice on the other. In Model III, we reversed the causal order between RWA and SDO on the one hand and the Big Five personality factors on the other (see Table 2).

The models were examined using LISREL 8.30 (Jöreskog & Sörbom, 1993) on the covariance matrix and employing maximum likelihood estimation. Within each measurement model, one manifest variable (the participants' mean scale scores on the Big Five factors, RWA, SDO, and GP, respectively) was assigned to one latent variable. As

Table 2. Model specifications and fit indices for causal models examining Big Five personality, RWA, SDO, and prejudice

Model	Relations	Model fit index							
		χ^2	df	p	χ^2/df	SRMR	RMSEA	GFI	CFI
I	Theoretical model (Big Five personality → RWA & SDO → prejudice)								
Step 1	O, E, C, SDO → RWA; A, O, RWA → SDO; A, O, RWA, SDO → GP	2.45	4	0.65	0.61	0.014	0.000	1.00	1.00
Step 2	O, E, C → RWA; A, RWA → SDO; RWA, SDO → GP	8.02	8	0.43	1.00	0.027	0.004	0.99	1.00
II	Alternative model (Big Five personality → prejudice → RWA & SDO)								
Step 1	O, E, C, SDO, GP → RWA; A, O, RWA, GP → SDO; A, O → GP	3.55	4	0.47	0.89	0.028	0.000	0.99	1.00
Step 2	E, C, GP → RWA; A, O, RWA, → SDO; A, O → GP	41.99	7	0.00	6.00	0.058	0.170	0.94	0.86
Step 3	E, C, GP → RWA; A, RWA, → SDO; A, O → GP	43.87	8	0.00	5.48	0.057	0.160	0.94	0.86
III	Alternative model (RWA & SDO → Big Five personality → prejudice)								
Step 1	RWA → C, E, O, GP; SDO → A, O, GP; A, O → GP	16.78	5	0.01	3.36	0.050	0.114	0.97	0.95
Step 2	RWA → C, O, GP; SDO → A, GP	19.99	6	0.00	3.33	0.058	0.113	0.96	0.93

GFI = goodness of fit index, RMSEA = root mean square error of approximation, SRMR = standardized root mean square residual, CFI = Bentler's comparative fit index, O = openness to experience, E = extraversion, C = conscientiousness, A = agreeableness, RWA = right-wing authoritarianism, SDO = social dominance orientation, GP = generalized prejudice, Step 2 and Step 3 = model fit after removing nonsignificant paths.
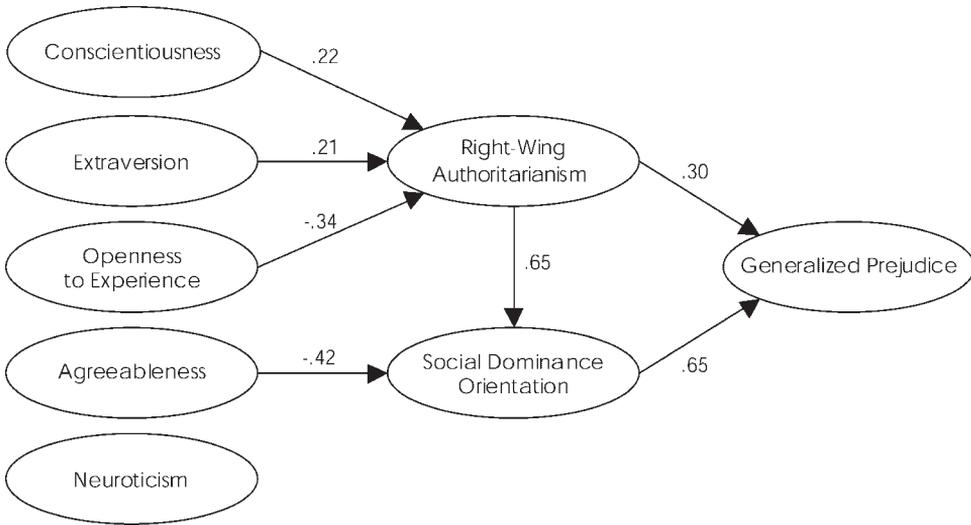
Figure 2. Causal model of personality and prejudice going from the Big Five personality factors through Social Dominance Orientation and Right-Wing Authoritarianism to generalized prejudice. All path (partial regression) coefficients are statistically significant at $p < 0.05$ at least.

the reliability estimates of the manifest variables affect the parameters in the model, the error variances of the manifest variables were fixed (Jöreskog & Sörbom, 1993). Error variance was calculated using the reliability estimates (Cronbach alpha) presented in Table 1 (see Jöreskog & Sörbom, 1993, pp. 37–38). This procedure allows an analysis of the linear structural relations among the latent rather than the manifest variables. To simplify the picture, the manifest variables are not depicted in Figure 2. Further, in all the tested models the Big Five factors were allowed to correlate as they were correlated in our sample. These correlations are, for the sake of simplicity, not depicted in Figure 1 and Figure 2.

Model fit was determined by using χ^2 tests in the first place, but as sample size affects the χ^2 value, and in line with recent advice (Hu & Bentler, 1999; McDonald & Ho, 2002), multiple indices were used to evaluate the fit of the models. Specifically, we examined the standardized root mean square residual (SRMR ≤ 0.08 indicating good fit), the root mean square error of approximation (RMSEA ≤ 0.06 indicating good fit), the goodness-of-fit index (GFI ≥ 0.90 indicating good fit), and the comparative fit index (CFI ≥ 0.95 indicating good fit). We also computed the χ^2/df ratio (≤ 2 indicating good fit) to simplify comparison between models with different degrees of freedom (Shumacker & Lomax, 1996).

Every model was first tested with the hypothesized paths in the first step. Nonsignificant paths in the first step were removed and the model was run in a second step, and if there was any nonsignificant path in the second step the model was run in a third step after removing the nonsignificant path(s). This happened only in Model II. Fit indices for all steps are presented in Table 2. However, it is the indices for the last step for every model that are to be compared.

To begin with, we examined our hypothetical model and found the paths from Openness to Experience and Agreeableness to Generalized Prejudice nonsignificant. Also the path from Openness to Experience to SDO and that from SDO to RWA were not significant.

Removing the nonsignificant paths we arrived at the final model depicted in Figure 2. According to Table 2, this model (Model I, Step 2) was found to have a very good fit to the data $(\chi^2(8) = 8.02, \quad p = 0.43, \quad SRMR = 0.027, \quad RMSEA = 0.004, \quad GFI = 0.99,$ $CFI = 1.00)$.

Examining the possible impact of social desirability, the final model was also run after regressing the effect of social desirability on all scales. The fit indices for the regressed model were found to be slightly worse $(\chi^2(8) = 8.59, \quad p = 0.38, \quad SRMR = 0.033,$ $RMSEA = 0.020, GFI = 0.99, CFI = 1.00)$ as compared with the final model.

As mentioned earlier, the final hypothetical model is to be compared with the suggested alternative models (for details of the paths, see Table 2). As can be seen in Table 2 the final hypothetical model showed a much better fit to the data as compared with each of the two alternative models.

In addition to the examination of the hypothetical and the alternative model, we examined the final model for each prejudice type—replacing Generalized Prejudice with racism, sexism, prejudice toward homosexuals, and prejudice toward mentally disabled people. The results showed a very good fit between model and data and all paths were significant in the models using racism $(\chi^2(8) = 8.51, \quad p = 0.39, \quad SRMR = 0.028,$ $RMSEA = 0.019, \quad GFI = 0.99, \quad CFI = 1.00)$ and prejudice toward homosexuals $(\chi^2(8) = 9.12, \quad p = 0.33, \quad SRMR = 0.033, \quad RMSEA = 0.028, \quad GFI = 0.99, \quad CFI = 0.99)$ as the outcome variables. Although there was also a good fit for the models employing sexism $(\chi^2(9) = 10.02, \quad p = 0.35, \quad SRMR = 0.029, \quad RMSEA = 0.025, \quad GFI = 0.98, \quad CFI = 0.99)$ and prejudice toward mentally disabled people $(\chi^2(9) = 8.00, \quad p = 0.53, \quad SRMR = 0.028,$ $RMSEA = 0.000, GFI = 0.99, CFI = 1.00)$ as the outcome variables, the path from RWA to sexism and prejudice toward mentally disabled people was found to be nonsignificant.

Table 3 presents an overview of the direct, indirect, and total effects of the Big Five factors, SDO, and RWA on Generalized Prejudice for the final model. As shown in the table, RWA displayed the largest total effect on prejudice through a direct path and a substantial indirect path via SDO. The direct (and total) effect of SDO was thus somewhat smaller than the total effect of RWA. None of the Big Five factors showed a direct effect on prejudice, and the largest indirect effects were disclosed for Openness to Experience (through RWA) and Agreeableness (through SDO). The magnitude of the effects of the Big Five personality factors was markedly smaller than that of RWA and SDO.

Table 3. Direct, indirect, and total effects (partial regression coefficients) of Big Five personality factors, SDO, and RWA on Generalized Prejudice

Scale	Effects on Generalized Prejudice		
	Direct	Indirect	Total
Right-Wing Authoritarianism	0.30	0.42	0.72
Social Dominance Orientation	0.65	0.00	0.65
Big Five factors			
Neuroticism	—	—	—
Extraversion	—	0.16	0.16
Openness to Experience	0.00	−0.28	−0.28
Agreeableness	0.00	−0.27	−0.27
Conscientiousness	—	0.17	0.17

— = effect not examined.

DISCUSSION

The analyses of the various prejudice scales disclosed that these were strongly correlated, and through factor analysis it was shown that they formed one factor only. In accord with Allport (1954; see also Altemeyer, 1998; McFarland, manuscript submitted for publication) we labelled this factor Generalized Prejudice. Thus, in spite of the fact that our prejudice scales covered four types of prejudice (racial prejudice, sexism, prejudice toward homosexuals, and prejudice toward mentally disabled people) they could all be reduced to one and the same general factor. This outcome is quite in line with that of a previous study by Ekehammar and Akrami (2003) and with those of some classical and more recent studies reviewed in our 'Introduction' section as well.

As to the simple correlations among the variables in our model, the relations between Big Five personality and prejudice support the findings from a previous study (Ekehammar & Akrami, 2003). Thus, Openness to Experience and Agreeableness showed significant negative relationships with Generalized Prejudice but the magnitude of these correlation coefficients was lower here than in the previous study. We suspect that this has to do with a change of Big Five instrument from NEO-PI in the previous study to BFI in the present one. As BFI is a short scale it could not be expected to have the same level of reliability and construct validity as the NEO-PI. In addition to the cross-study congruence outlined above, we found in the present study that Neuroticism displayed a small but statistically significant relationship with Generalized Prejudice. Finally, social desirability, which was not included in the study by Ekehammar and Akrami (2003), was shown here to be correlated with Agreeableness only. Partialling out the effect of social desirability from all correlations had only negligible effects on the magnitude of the correlation coefficients.

In conclusion, and based on the congruent outcome in the present study and that of Ekehammar and Akrami (2003), it seems that Agreeableness and Openness to Experience are those single Big Five factors most closely associated with generalized prejudice. This is not unexpected as Openness to Experience includes components that have to do with nonconformity and unconventionality (cf. John & Srivastava, 1999), and has been shown to be inversely related to authoritarianism (McCrae & Costa, 1997; Peterson et al., 1997; Trapnell, 1994), and positively related to liberal and social political values (McCrae, 1996; Van Hiel, Kossowska, & Mervielde, 2000). All these characteristics of openness to experience would imply a negative relation to prejudice. In the same way, agreeableness, as the opposite of antagonism, includes components such as tendermindedness and altruism (cf. John & Srivastava, 1999) as well as nonhostility, empathy, and prosocial behaviour (cf. Graziano & Eisenberg, 1997), which could be expected to relate negatively to prejudice as well.

Extending previous research (but see Duckitt et al., 2002), we used a causal modelling rather than a prediction approach to examine the relations among personality, RWA, SDO, and prejudice. Using Generalized Prejudice as our basic outcome variable, we employed structural equation modelling (using LISREL) to clarify the causal relationships based on a hypothetical model derived from previous empirical research. In this model, Big Five personality factors were expected to cause RWA and SDO, which in turn were thought to causally effect generalized and specific prejudice(s). Some direct effects of Big Five personality on prejudice were included in the model as well. Our model displayed a better fit to the empirical data than the alternative models where RWA and SDO changed position with prejudice (Model II) and personality (Model III) in the causal chain. Model II, where prejudice is assumed to cause SDO and RWA rather than the reverse, has been advocated

by some social psychologists in the social identity and self-categorization traditions (e.g. Schmitt et al., 2003; Turner & Reynolds, 2003). It must be emphasized that the degree of fit between our hypothetical model and the empirical data was very high—the χ^2 values were statistically nonsignificant, which is not often the case in causal modelling studies, the RMSEA index was close to zero, and the GFI and CFI indices were 1.00 or close to unity. It is important to note, however, that structural equation modelling can test the fit of hypothesized causal models to empirical data but cannot demonstrate causality in the same way that experimental and longitudinal studies can. In any case, whereas some social psychological approaches have found SDO to transmit the effect of *social position* on prejudice (Guimond et al., 2003), our study found that SDO transmits the effect of *personality* (Agreeableness) on prejudice. Unless Big Five personality is linked to social position, these two views appear to be incompatible.

Our causal analyses thus showed that one Big Five personality factor (Agreeableness) affected prejudice through SDO whereas three of the other personality factors (Extraversion, Conscientiousness, Openness to Experience) affected prejudice through RWA. Thus, RWA appears to be more closely associated with the Big Five personality sphere than SDO. This conclusion is further sustained by the fact that RWA was shown to cause SDO rather than the reverse, and this unidirectional causation was the same when using Generalized Prejudice or the four specific prejudices as outcome variables. Thus, SDO appears to be closer to the prejudice sphere than RWA. As emphasized by Duckitt et al. (2002), the relation (as to magnitude and direction) between SDO and RWA might look different in different cultures or societies, although the basis for this difference is not well understood. In the present case, for example, the relation between RWA and SDO as expressed through a zero-order correlation (and through a path coefficient as well) was rather substantial and stronger than those estimates obtained in previous North American studies. However, they were of the same magnitude as or even higher than those figures reported from previous studies in Europe (see the 'Introduction' section). In any case, the different links between Big Five personality factors on the one hand and RWA and SDO on the other give further support to the view that these constructs are quite different. Finally, by including a measure of social desirability in our analyses, we were able to show that the relations and conclusions outlined above were not affected by the social desirability factor.

Gleaning the literature on personality–prejudice research we have been able to find only one empirical examination that is in some respects similar to ours. Thus, Duckitt et al. (2002) also employed a causal modelling approach to disclose the causal relations between several antecedent factors and prejudice. Their outcome variable was only confined to ethnic prejudice, however, and their personality factors, toughmindedness and social conformity, are not higher-order or broad bandwidth variables as is the case for the personality factors in the present study. In addition to SDO and RWA, they also included some other variables. As to the personality factors in the study, Duckitt et al. noted that toughmindedness, as the opposite of tendermindedness, covers a large part of the Agreeableness factor in the Big Five through its subdimensions tenderness, empathy, and sympathy. In the same way, the authors commented that social conformity seems to subsume some highly specific trait dimensions within the Big Five factors Conscientiousness and Openness to Experience. Moreover, one can add that Big Five Factor V (Openness to Experience) in some European studies has been labelled nonconformity (e.g. De Raad, Perugini, Hrebickova, & Szarota, 1998) or autonomy (Hendriks, 1997) instead. As compared with our study, one can thus conclude that the tender–toughmindedness

factor of Duckitt et al. fairly well corresponds to our Agreeableness factor, and that their social conformity factor covers important elements in our Conscientiousness and Openness to Experience (nonconformity) factors. The major difference is that we were interested in the higher-order and general (broad-bandwidth) personality factors, whereas Duckitt et al. selected the factors in line with their theoretical framework.

As regards the causal picture, there are also some obvious similarities between the two studies. Thus, when we found that Agreeableness had a causal effect on SDO, Duckitt et al. reported in a similar way that toughmindedness (our Agreeableness reversed) had a causal effect on SDO (through 'Belief in a competitive jungle-world'). Further, when we found that Conscientiousness and Openness to Experience affected RWA but not SDO, Duckitt et al. found in a similar way that social conformity caused RWA but not SDO. The results taken together confirm the view that SDO and RWA are linked to different personality factors or syndromes. A final important similarity is that both studies disclosed significant paths from both SDO and RWA to prejudice.

Needless to say, our results are based on a limited number of participants and a replication is necessary to arrive at a firm conclusion. This caution is especially motivated when causal modelling with many variables is employed. Although our results have shown that Big Five personality, RWA, and SDO are causally related, in that order, we must point out that the direct and indirect causal effects of the personality factors on RWA, SDO, and prejudice, though statistically significant, were rather weak as compared with the direct and indirect causal effects of RWA and SDO on prejudice. Thus, the causal picture leaves room for other influencing factors, such as the more genuine social-psychological factors based on, for example, social identity (see e.g. Tajfel & Turner, 1986), social self-categorization (see e.g. Turner, Hogg, Oakes, Reicher, & Wetherell, 1987), and social position (see e.g. Guimond, 2000). Although some efforts have been made to examine this issue (see e.g. Guimond et al., 2003; Reynolds et al., 2001; Schmitt et al, 2003; Verkuyten & Hagendoorn, 1998), this research has failed to integrate the personality and social psychology approaches in a common model. Consequently, in addition to those factors examined in the present research, future research should try to include the social–psychological and the personality-based constructs in one and the same model. In this way, it would be possible to estimate the magnitude and direction of the various components that relate to prejudice. This would make possible more solid conclusions about the relative importance of personality and social–psychological factors as antecedents of prejudice. In that context, it would also be valuable to incorporate constructs based on implicit (automatic, unconscious, fast) processes (e.g. implicit prejudice, implicit group identity) in addition to the constructs based on explicit (controlled, conscious, slow) processes as employed in the present and most previous research. To achieve this, the theory and methodology presented by Greenwald et al. (2002) seem to offer promise.

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