

RUNNING HEAD: RWA: boon or bane?

Religion, prejudice and authoritarianism:  
Is RWA a boon or bane to the psychology of religion?

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### Abstract

Right-wing authoritarianism (RWA) has often been studied, alongside variables such as fundamentalism and orthodoxy, in research analysing the links between religiosity and prejudice. The present paper analyses four concerns regarding this research that arise from the relationship of RWA to religiosity variables. These issues include: an overlap within the RWA scale of measures of religiosity and prejudice; inflating relationships by correlating part-whole measures; emphasising covariation in the extremes of the construct and hiding the possible independence of components within RWA; and statistical artefacts arising from the combination of these factors when applied in multiple regression. We elaborate these four issues and then demonstrate how they can lead to different interpretations of some previously published data. The paper concludes with suggestions for the management and resolution of these issues that may allow RWA to continue to be used in religiosity and prejudice research and how it might evolve to become the boon to researchers that they seek.

Key Words: right-wing authoritarianism, fundamentalism, prejudice, religiosity, statistical suppression.

## Religion, prejudice and authoritarianism:

### Is RWA a boon or bane to the psychology of religion?

The possible link between religiosity and prejudice has long been a concern in the scientific study of religion. Most reviews (e.g., Batson, Shoenrade, and Ventis 1993; Donahue 1985; Gorsuch and Aleshire 1974; Gorsuch 1988; Hunsberger 1995) trace this concern back at least as far as Gordon Allport (1950; Allport and Ross 1967). The fundamental paradox of religion and prejudice is that some forms of religion that preach brotherly love are associated with more prejudice rather than less (Hall, Matz, and Wood 2010). Since Allport's distinction between mature and immature religion, many constructs have been suggested to resolve this contradiction. Over that 60-year period, researchers have tried to identify the kind of religious people that give religion a bad name. Whether they be immature, extrinsic, fundamentalist or low in quest orientation, the goal has been to identify forms of religion associated with prejudice and distinguish them from forms of religion which are not (e.g., Herek 1987; Hunsberger 1995; Batson, Shoenrade, and Ventis 1993; Kirkpatrick 1993; McFarland 1989).

In this search, the constructs of fundamentalism (e.g., Herek 1987; Kirkpatrick 1993; McFarland 1989) and authoritarianism (RWA; Altemeyer 1981, 1988, 1996) have emerged as particularly important (Altemeyer and Hunsberger 1992; Rowatt and Franklin 2004; Laythe et al. 2002; Laythe, Finkel, and Kirkpatrick 2001; Wylie and Forest 1992). However the relationships between authoritarianism and various forms of religiosity, and between these constructs and measures of prejudice, are both theoretically and empirically complex.

Gorsuch (1984) argued that issues arising from the measurement of constructs were both a boon and a bane in the psychology of religion. Kirkpatrick and Hood focused these conceptual and measurement concerns on the intrinsic/extrinsic distinction, asking if it

continued to be a boon or had become a bane to researchers (Kirkpatrick and Hood 1990). We extend this tradition of reflecting upon the role of emerging constructs of importance. We argue that a failure to recognise conceptual and measurement complexities with the use of right-wing authoritarianism in research on religiosity and prejudice has led to methodological, and statistical problems. After describing these problems in broad terms, we then provide concrete illustrations based on the data from Laythe and colleagues (2002). We will show how the problems we highlight here change the interpretation of the data in fundamental ways, and then offer an alternative way of approaching the analysis which we believe offers more promise for future research.

To summarize the arguments to follow: (1) Right-wing authoritarianism is a composite construct, with distinct components that are, in themselves, of interest to researchers in the study of religion and prejudice. In using the overall construct of right-wing authoritarianism there is a very real danger of hiding the connections of interest, which are buried within the scale, rather than illuminating them. (2) Correlating measures that represent part-whole relationships is misleading. The correlations between the RWA scale and independent measures of fundamentalism, attitudes to homosexuality, sexual conservatism, or attitudes to women are misleading because these constructs are also measured within the RWA scale, confounding method variance with theoretical causation. (3) RWA is measured as a continuous dimension, but sometimes discussed in terms of types (such as high authoritarians). As a measure of the covariation of three components, RWA is best defined for high-scorers and low-scorers, who are high or low on all components respectively. Those who score more moderately on the scale may have a more complex set of inter-relations among the components in which the inter-relations among the components may qualify the relationship between authoritarianism and prejudice. Such possibilities are over-looked in authoritarianism research that rhetorically focuses on high or low authoritarians..

Furthermore, such a rhetorical focus can lead researchers to pursue an asymmetric focus on one end of the spectrum rather than the other (Martin 2001). (4) These problems are compounded further when statistically controlling for one or more related scales, such as fundamentalism, in multiple regression and structural equation modelling. This may lead to attempts to interpret as meaningful what are actually statistical artefacts. One example of this is where fundamentalism appears to be an inhibitor of prejudice when authoritarianism is statistically controlled. We will consider this problem in some detail below because it highlights the dangers of not adequately dealing with the construct complexity of RWA.

### Illuminating or Hiding Relationships?

As defined by Altemeyer (1996), right-wing authoritarianism represents the covariation of three attitude clusters: authoritarian submission; authoritarian aggression; and conventionalism. It is the inclusion of the conventionalism cluster in the construct definition of authoritarianism that causes the most difficulty for researchers in the social psychology of religion and prejudice. This cluster represents adherence to a variety of social conventions that are themselves of direct interest to researchers in this domain. To quote Altemeyer, "Within each religion, authoritarians tend to be fundamentalists, wishing to maintain the beliefs, teachings, and services in their traditional form and resisting change" (Altemeyer 1996 p 11). The conventionalism cluster also includes attitudes towards sex, nudity and homosexuality, as well as traditional attitudes towards the roles of men and women.

The relationships between authoritarianism, fundamentalism, and attitudes towards sexuality in general, homosexuality, and gender relations, are matters of empirical interest in themselves. Although the existence of the conventionalism attitude cluster, together with authoritarian submission and aggression, is important for conceptual work within the right-wing authoritarianism literature, putting all these elements together hides that which we would like to illuminate in the study of prejudice, and of religion: the conditions when

religiosity, prejudice, and conventional values will co-vary, versus when they may be independent or negatively inter-related. Put simply, the theoretical literature on right-wing authoritarianism and the scale measurement itself both assume underlying positive correlations between fundamentalism, rejection of non-traditional sex norms including homosexuality, and authoritarian aggression and submission. This is in contrast to the literature on religiosity and prejudice, which seeks to identify and understand the conditions under which these links are not significant or even significantly negative.

### Correlating Part-Whole Measures

The complex nature of the authoritarianism scale not only has implications for conceptual understandings of religiosity and prejudice, but has also led to problematic interpretations of statistical analyses involving authoritarianism, fundamentalism, racism and attitudes to homosexuality, in which a composite scale for authoritarianism is used to predict attitudes that are also part of the larger construct. For example, right-wing authoritarianism has been used to predict attitudes towards homosexuality (e.g., Altemeyer and Hunsberger 1992; Laythe, Finkel, and Kirkpatrick 2001; Haslam and Levy 2006; Wylie and Forest 1992; Rowatt et al. 2006; see Whitley and Lee 2000). Since measurement of the conventionalism cluster within RWA includes attitude towards homosexuality (e.g., items such as “Gays and lesbians are just as healthy and moral as anybody else” (R)), it is hardly surprising to see high correlations between RWA and attitudes to homosexuality (Whitley and Lee 2000). Similarly, the correlation between RWA and fundamentalism is distorted by the presence of religiosity items within the RWA scale (e.g., “People should pay less attention to the Bible and the other old traditional forms of religious guidance and instead develop their own personal standards of what is moral and immoral” (R)).

Altemeyer (1996, 2007) has argued that this inclusion in the scale is not sufficient to explain the correlations between authoritarianism and fundamentalism, since many other

types of items in the full scale also demonstrate this relationship. We agree that the constructs of fundamentalism and authoritarianism are likely to be related. We would not expect that the correlation between these measures would be reduced to zero if the overlap in construct measurement was eliminated, but we do argue that the overlap means that the empirical relationship between existing measures is artificially inflated by an unknown amount. It is misleading to compare these correlations of RWA, fundamentalism, and prejudice with those of other measures (e.g., quest orientation) that do not include such items. The overlap conflates theoretical causal relations (in which authoritarianism causes prejudice) with construct definition (in which authoritarianism *is* prejudice). More pragmatically, the overlap inflates zero-order correlations, and distorts partial correlations for other independent variables, which contributes to the problems we will explore below.

#### Independence of the three dimensions?

RWA is described in terms of three correlated attitudinal clusters: aggression, submission, and conventionalism. High scorers on the overall dimension must, by definition, be high on all three clusters. Likewise, low scorers must be low on all three clusters. High and low scorers can therefore be described in a fairly unambiguous way, and researchers interested in the authoritarianism construct can find it useful to examine the attitudes and behaviours of these well-defined types at the extremes. In this context, it seems very reasonable to refer to “high authoritarians” (e.g., Altemeyer 2004; but see Martin 2001).

In understanding the continuous relationship between authoritarianism and prejudice, a different set of issues apply because most of the variability in studies using the RWA scale is not in the extremes. Since the majority of respondents tend to fall closer to the middle of the scale, there is an inherent ambiguity in interpretation. A moderate score on the scale may represent moderate responses to all items, or high scores on some items and low scores on others, and all patterns in between. While this is true of all scales at the item level, it becomes



more important when a scale is constructed from potentially meaningful sub-components such as aggression, submission, and conventionalism. It becomes meaningful to ask whether a moderate scorer on RWA is moderate across the board, or high on one cluster, and low on another (Duckitt and Fisher 2003; Funke 2005). Although the right-wing authoritarianism scale has been shown to have quite high reliability overall (.85-.88), the average inter-item correlation is around .18 (Altemeyer 1996) leaving plenty of capacity for variation in position on the different attitude clusters. The theoretical implication is that if clusters vary in their relationship to prejudice or other dependent variables of interest as well as to each other, the ability to detect and interpret RWA-prejudice relationships is degraded or distorted.

Thus, there are three related issues with the RWA scale that form the foundation for the more complex statistical problem we will discuss below. RWA is defined in terms of three attitudinal clusters, which are treated as part of a unitary construct, but elements within the construct may be of separate interest to researchers in the psychology of religion and prejudice. Those researchers therefore find themselves relating RWA to these constructs of interest such as fundamentalism and homosexual prejudice, creating the problem of relating part of a scale (e.g., fundamentalism and homosexual prejudice) to the whole scale (the global RWA measure), inflating relationships by an unknown amount. This problem is then compounded by the tendency to speak of high or low authoritarians, overlooking responses in the middle of the scale where relative differences in component scores are highly likely. Taken together, these three issues create a context in which attempts by researchers to include RWA in their investigations lead to statistical problems that become evident when using multiple regression analysis or structural equation modelling.

### Multiple Regression and Statistical Artefact

A serious problem arises in analyses that attempt to partial out right-wing authoritarianism from fundamentalism. As the right-wing authoritarianism scale also includes

fundamentalism items, the same part-whole problem occurs here as it does in predicting attitudes towards homosexuality. However, additional interpretation problems arise when attempting to statistically control for variables from this part-whole relationship. A potential statistical artefact occurs when the dependent variable (such as racism) is primarily related to one component of authoritarianism (such as authoritarian aggression) while the variable being controlled (fundamentalism) is primarily related to another component (conventionalism). These problems remain hidden when interpretation is based on correlations with the full RWA scale, (e.g., Altemeyer and Hunsberger 1992), or when many other predictors are also included in a regression model (e.g., Wylie and Forest 1992). The potentially counter-intuitive nature of the results is invisible within this type of analysis, lost in a more complex picture.

However, Laythe and colleagues (2001) conducted a study in which they focused on RWA and fundamentalism as the predictors of homosexual prejudice and racism. The authors also re-analysed this subset of variables from Wylie and Forest (1992), and Altemeyer and Hunsberger (1992) in the same regression model. This analysis, we argue, provides a clear context in which to demonstrate the impact of model specification and method variance. We will, therefore, discuss these findings in some detail to illustrate the issues we have raised.

Laythe and colleagues (2001) specify a model in which fundamentalism and authoritarianism are predictors of racial prejudice and attitudes to homosexuality. All of these scales were moderately to highly positively correlated in their Study 1. In particular, fundamentalism and right-wing authoritarianism were correlated above .7, and both of these predictors correlated about .5 with attitudes to homosexuality. When entered in a multiple regression, authoritarianism had a beta weight of .37 while fundamentalism had a beta of .21, suggesting that both predict increased prejudice, but that RWA is a more important predictor of homosexual prejudice than fundamentalism. With regard to racial prejudice,

authoritarianism had a positive beta weight of .52 and fundamentalism had a negative beta weight of -.32. The authors were led by this pattern of results to suggest that fundamentalism might inhibit racial prejudice if authoritarianism could be controlled.

Laythe and colleagues (2001) go on to analyse two additional data sets based on previously published studies (Altemeyer and Hunsberger 1992; Wylie and Forest 1992) and find similar patterns, in particular that fundamentalism appeared to have a beta weight implying a reduction in racial prejudice after controlling for RWA. In these latter studies, the zero-order correlations between fundamentalism and racism were positive, .27 and .30 respectively, and the path weights from fundamentalism to racism when RWA was controlled were negative, -.31 and -.11 respectively. Laythe and colleagues were particularly struck by the consistent negative coefficient between fundamentalism and racial prejudice after controlling RWA in all three reported data sets, and argued that the consistency showed that this was a real effect in need of explanation. They subsequently offer an explanation based on the role of orthodoxy as a component of fundamentalism (Laythe et al. 2002).

However, Mavor, Macleod, Boal and Louis (2009) offer an alternative explanation of these findings consistent with the statistical concerns described in the present paper. The authors note that statistical negative suppression can arise in any regression analysis when the overlapping variance between two predictors is larger than the variance shared with the outcome measure (see Maassen and Bakker 2001). Suppression can occur for many valid reasons, but what makes it likely to be an artefact in this case is the cause of the overlap between the predictors:

“...although fundamentalism has relevant information in common with racial prejudice, this is smaller than the shared information between RWA and fundamentalism that is irrelevant to the prediction of racial prejudice. We argue that the shared information between RWA and fundamentalism that is irrelevant

to the prediction of racial prejudice is due to the overlap between fundamentalism and the conventionalism component of RWA. If this is the case, then the negative suppression effect is a statistical artefact ...” (Mavor et al. 2009 p. 593-594).

Using a shorter form of the RWA scale that has been divided into subscales (Smith and Winter 2002), Mavor and colleagues (2009) report several findings from an independent data set linking fundamentalism, RWA and prejudice that are consistent with our arguments here. In their analyses, the conventionalism scale correlated more highly with fundamentalism than with the other components of RWA, and this pattern occurs at the item level as well. In terms of construct validity, then, it is more plausible to argue that conventionalism is part of fundamentalism than to argue that conventionalism is part of RWA. Second, using an RWA scale representing the three components alongside fundamentalism in a regression analysis to predict racial and homosexual prejudice, there was a negative path from fundamentalism to racial prejudice, and stronger prediction of homosexual prejudice by RWA. But using only the RWA aggression sub-scale alongside fundamentalism, the same level of variance in the outcome measures was predicted (there was no drop in predictive power), and the beta weight from fundamentalism to racial prejudice became positive (more consistent with the zero-order correlation). In addition, the correlation between the predictors dropped substantially, as the reanalysis using the aggression component alone eliminated the overlapping method variance of full RWA and fundamentalism that was unrelated to the outcome variable. Extrapolating from their new data set, Mavor and colleagues argue that the original findings by Laythe and colleagues (2001) may be a result of statistical artefact arising from the overlap between RWA and measures of fundamentalism.

We illustrate another way of understanding this problem in Figure 1 that focuses our attention on the complexity of the RWA construct as the source of the artefact. We will focus

on the regression path from fundamentalism to racism, controlling for RWA, labelled by roman numerals (i - v). The regression path represents the effect on racism of changes in the fundamentalism measure, *while holding the RWA score constant*. We stress that RWA is held constant because this is inherent in the mathematical structure of multiple regression analysis: the beta weight for one independent variable represents the change in standardised score of the dependent variable associated with a rise of one standard deviation in the value of the independent variable while holding the other predictors in the model constant. Thus, if prejudice is regressed onto fundamentalism and RWA, the coefficient for fundamentalism represents the impact of changes in that variable on prejudice if the total RWA score stays the same.

---- Insert Figure 1 about here ----

At step (i) we note that the fundamentalism variable rises by one standard deviation. Since there is also a fundamentalism measure in the conventionalism component of RWA, we expect that, on average, conventionalism will rise, though by a smaller amount due to measurement error (ii). We assume that other elements of the conventionalism cluster will be relatively closely related to the fundamentalism element, and will therefore also rise, so the measure of homosexual prejudice and other attitude measures within the conventionalism section of the scale are expected to rise also, again by a smaller amount (iii). If the conventionalism component of RWA is increasing, but the overall RWA score is held constant in the regression, then *the other components of RWA (authoritarian submission and authoritarian aggression) must, on average, decrease* (iv). Altemeyer (1996) has argued that the authoritarian aggression component of RWA is particularly associated with racial prejudice. For this reason, we argue that if the aggression component of RWA decreases (to control statistically for ‘constant’ RWA while measuring increasing conventionalism) it would be expected that racial prejudice would also fall (v). In short, whatever the underlying

relationship is between fundamentalism and racial prejudice, this will be artificially reduced and even possibly made negative when holding RWA constant, purely as an artefact of the presence of fundamentalism as a component of RWA. We argue that these problems impact upon any interpretation of a statistical relationship in which RWA is partialled out of a fundamentalism-prejudice relationship (e.g., Laythe, Finkel, and Kirkpatrick 2001; Laythe et al. 2002; Rowatt and Franklin 2004; Rowatt et al. 2006; Wylie and Forest 1992).

One solution to the problems we raise above would be to decompose RWA into its three subscales and directly address alternative models for how these constructs relate to each other, to religiosity, and to prejudice. However, the historical construction of the RWA scale with multi-component items, and wording direction issues, has made this difficult in the past.

### Measuring Components of RWA

There has been debate about the underlying factor structure of RWA and whether it is, in fact, possible to derive sufficiently independent measures of the three proposed components. Some researchers have recognised the theoretical importance of distinguishing the components, and have derived subscales on face validity grounds (Duncan, Peterson, and Winter 1997; Smith and Winter 2002; Wink, Dillon, and Prettyman 2007). Other researchers have used confirmatory factor analysis to derive short forms for each component (Funke 2005; Manganelli Rattazzi, Bobbio, and Canova 2007) and it has recently been shown that a three-factor solution can be derived for the full 30-item RWA (Altemeyer 1996) scale (Mavor, Louis, and Sibley 2010).

Altemeyer (1996) has used several statistical and conceptual arguments to suggest that the RWA scale should be treated as unidimensional. He argued that RWA conceptually represents the covariation of the three clusters and as a result several of the items in the scale deliberately tap into multiple components making simple structure solutions in traditional exploratory factor analysis difficult. Furthermore, since the scale is theorised as

unidimensional, it was considered sufficient to have a balance of positively worded (pro-trait) and reverse-coded (con-trait) items in the overall scale. When two factors sometimes emerge in exploratory factor analyses, they usually align with pro- and con-trait worded items and Altemeyer suggests this is just an artefact of item wording. However, item wording is confounded with the underlying component structure such that aggression items are more often pro-trait worded (agree responses represent higher authoritarianism) and conventionalism items are more often con-trait worded (agree responses represent lower authoritarianism (Funke 2005). This confound has obscured the issue of subscale structure of RWA but has been addressed in two complementary ways.

Funke (2005) approached both the complex structure of some items and the wording direction confound by constructing new items to balance wording within subscales and remove or reword items with a complex subscale structure. This provided researchers with a new shorter (12 item) scale based on RWA that measured all three components with balanced wording. Mavor and colleagues recently argued that the full scale also supports a correlated three-factor solution over the traditional unidimensional interpretation (Mavor, Louis, and Sibley 2010). There is now strong evidence from these studies that RWA can be conceptualised and measured as three components, although researchers still face the choice of which solution should be adopted if they include an RWA measure in their study.

#### Reconsidering the Impact of RWA and Fundamentalism on Prejudice

We have argued that the complex nature of the RWA scale can create misleading results when researchers in the psychology or religion use RWA alongside religiosity measures to predict various prejudices and other social attitudes. These arguments suggest that it is appropriate to revisit the findings from Laythe and colleagues (2001, 2002), for example, that fundamentalism could lead to reduction in racial prejudice after RWA is controlled. If we

find support for our arguments in the original data, then we can be confident that the issues we raise are generalisable and are not restricted to particular scales or historical contexts.

The analyses presented below are based on the original item-level data from Laythe and colleagues (2002). As well as the full scales for RWA, fundamentalism, homosexual prejudice and racial prejudice, this data set also included a measure of Christian orthodoxy, as Laythe and colleagues proposed a two-component model of fundamentalism based on both authoritarian and orthodoxy. By using this data set we can revisit whether fundamentalism would lead to decreased racism after controlling for authoritarianism (Laythe et al. 2001), and explore whether a revised approach to the components of RWA would affect a two-component model of fundamentalism (Laythe et al. 2002).

To explore the issues we have raised here, we will present a series of analyses as follows: (1) We reconsider the factor analysis of the RWA scale to see if a two- or three-factor model is plausible in the dataset using the 1992 version of the RWA scale commonly used in studies of religion and prejudice (e.g., Altemeyer and Hunsberger 1992; Laythe et al. 2002; Laythe, Finkel, and Kirkpatrick 2001; Rowatt and Franklin 2004); (2) We present the correlations between the RWA components and the other variables in the study; which then form the basis for (3) a set of parallel regressions to see if reducing the overlapping method variance between RWA and fundamentalism or orthodoxy changes the outcome from that previously reported. These analyses will test our main statistical argument about the problems in using the full RWA scale and illustrate problems with the current construct definition of RWA. We then (4) revisit the original analyses from Laythe and colleagues (2002) regarding the relationship between fundamentalism, authoritarianism and orthodoxy but based on the separate components of RWA as argued here.



## METHOD

### Participants

A total sample of 318 (118 Men, 195 Women, 5 unknown) participated in the original study. The full details are reported in Laythe and colleagues (2002).

### Measures

The measures used by Laythe and colleagues (2002) were drawn from two studies (Altemeyer and Hunsberger 1992; Fullerton and Hunsberger 1982). The scales used were RWA (30 items), Religious Fundamentalism (RF; 20 items); Christian Orthodoxy (CO; 24 items); an adaptation of the Manitoba Prejudice scale to measure racial prejudice (RP; 19 items), and an Attitudes toward Homosexuals scale to measure homosexual prejudice (HP; 12 items).

## RESULTS

### Factor Analysis of RWA

The RWA items were examined using a principal axis factoring method of factor extraction, and a Promax rotation method. Of six eigenvalues  $>1$ , the first four were 8.6, 3.4, 1.4, and 1.2. Two- or three-factor solutions were indicated according to interpretation of the scree plot. For completeness we also considered a four-factor solution. Both two- and three-factor solutions were interpretable. The fourth factor did not have any loadings above .4 and did not correlate with any of the other factors, so was not a viable factor in this context.

In both the two- and three-factor solutions, the first factor was clearly interpretable as containing primarily aggression with some submission items. The second factor in both solutions clearly represented the conventionalism component. In the three-factor solution, the third factor was interpretable as primarily the con-trait worded submission items (See Table 1

for the two- and three-factor solutions). For our purposes here, the crucial distinction is between conventionalism and the other components of the scale (aggression and submission), and the top-loading items in the first two factors capture this adequately. In the analyses below, then, we distinguish an aggression/submission factor and a conventionalism factor. Submission items from the third factor were not included, nor any items where there was a cross loading which would be problematic for interpretation. That is, we included all items that loaded  $>.4$  on the main aggression/submission factor and did not have a cross loading above  $.25$  on the conventionalism factor, and vice versa (See Table 1). We compute the traditional full RWA score ( $RWA_{Full}$ ), consisting of all the RWA items, reversed as appropriate. The  $RWA_{Agg/Sub}$  scale included 13 items with 8 items tapping aggression and 5 tapping submission. The  $RWA_{Conv}$  scale was computed from nine items. The conventionalism scales were computed with reversed items such that higher scores on conventionalism are consistent with higher RWA.

---- Insert Table 1 about here ----

## Correlation and Regression Analyses with RWA and Fundamentalism

### Overview

To demonstrate the problems arising in regression analyses that include fundamentalism and the full RWA scale we will consider several forms of evidence. We first examine the scale correlation matrix. Evidence of our concern will show as higher correlations between RWA conventionalism and fundamentalism, than between the two RWA components, and as different patterns of correlations of the two RWA components with the criterion variables. These correlation patterns will be further explored in parallel sets of regressions. In each set of regression analyses we consider first the model with the full RWA scale and fundamentalism predicting the criterion measures, followed by a parallel analysis with the RWA aggression/submission scale and fundamentalism. Our argument will be supported if

the second set of analyses in the pair substantively changes the pattern of beta weights in the regression, with only minimal change in the overall prediction (variance accounted for). This pattern would show that the path weights in the original regression are distorted by the inflated correlation between RWA and fundamentalism due to the presence of the conventionalism factor within RWA. We also expect that these changes in path weights will be sufficient to undermine the conclusion that fundamentalism leads to reduced racial prejudice after controlling for RWA (Laythe et al. 2002; Laythe, Finkel, and Kirkpatrick 2001), and also will reverse the pattern for homosexual prejudice such that fundamentalism will be a stronger predictor than RWA.

### Correlations

The correlation matrix shows strong support for our arguments (see Table 2). The correlations between RWA conventionalism and both fundamentalism and orthodoxy are stronger than that between conventionalism and the aggression/submission component, undermining use of the full RWA scale and fundamentalism (or orthodoxy) together as distinct variables. (Note 1) The two component measures of RWA also have distinct relationships with the two criterion measures. Aggression/submission correlates strongly with both homosexual and racial prejudice, whereas conventionalism correlates strongly with homosexual prejudice but not racial prejudice. However, both RWA components correlate equally strongly (about .8) with the full scale RWA measure, which is about as high as their respective reliabilities allow. The same evidence of construct contamination found by Mavor and colleagues (2009) based on short RWA subscales in an independent data set is thus replicated here, in analyses of the full-length scales in the original Laythe et al. (2002) data.

---- Insert Table 2 about here ----

### RWA with fundamentalism predicting prejudice components

In the following pair of regressions, we consider first the full RWA scale and then the effect of removing the conventionalism cluster and including only the aggression/submission component along with fundamentalism. The analyses are summarized in Figure 2. We present the results of the regression analyses as path models, so that the inter-correlations among the independent variables are shown alongside the beta coefficients measuring the relationship with the dependent measures.

---- Insert Figure 2 about here ----

Considering first the prediction of racial prejudice from fundamentalism and the full RWA scale (see Figure 2, left side of panel a), we see that we replicate the general pattern found by Laythe and colleagues previously (Laythe et al. 2002; Laythe, Finkel, and Kirkpatrick 2001), such that fundamentalism has a negative path weight for racial prejudice (-.28). However, when we remove the conventionalism component of RWA and predict racial prejudice from fundamentalism and RWA aggression/submission, we find several changes that support our argument (see Figure 2, right side of panel a); (1) the beta weight for fundamentalism is considerably reduced, dropping to a non-significant value (-.09), (2) the correlation between the predictors drops from .72 to .46 (a reduction in overlapping variance of 31% from 52% to 21%), and yet (3) the prediction of racial prejudice actually increases by 4.5%. We argue that removing the conventionalism items from the RWA scale actually improves the prediction of racial prejudice because it is the aggression component of RWA that is most associated with prejudice (Altemeyer 1996). Using a measure of authoritarian aggression specifically may often allow the relationship with racial prejudice to become clearer.

Considering the pair of regression analyses predicting homosexual prejudice from fundamentalism and RWA, the patterns are also in line with our argument. When predicting

homosexual prejudice from fundamentalism and the full RWA scale, both predictors have positive beta weights (each is associated with increasing homosexual prejudice), but fundamentalism is the weaker predictor (.19. *vs.* .43). When including only fundamentalism and RWA aggression/submission in the regression, both beta weights remain positive but the relative strength of prediction reverses; fundamentalism becomes the stronger predictor (.37 *vs.* .29). When RWA includes the conventionalism cluster, RWA appears to be a stronger predictor because conventionalism includes fundamentalism and homosexual prejudice already. Once this confound is removed, fundamentalism is seen as the stronger predictor. As with racial prejudice, in spite of the substantial (31%) drop in shared method variance once conventionalism is removed, the overall prediction remains essentially the same (dropping by only 2.5% in this case). (Note 2)

#### Extending the prejudice measures

It has become common to focus on racial and homosexual prejudice in studies of this kind (e.g., Altemeyer and Hunsberger 1992; Herek 1987; Hunsberger 1995; Laythe et al. 2002; Laythe, Finkel, and Kirkpatrick 2001; Rowatt and Franklin 2004; Rowatt et al. 2006; Wylie and Forest 1992) as indicators of proscribed and non-proscribed prejudice respectively (Batson, Shoenrade, and Ventis 1993). The patterns of correlation with these two variables are commonly different, particularly with religiosity variables such as fundamentalism, as shown here. However there is also substantial shared variance between these two measures (.54 here, and around .5 is common).

Some studies using a larger number of criterion variables have explicitly created a generalized prejudice measure from the shared variance (Kirkpatrick 1993; McFarland 1989; Mavor and Gallois 2008). In particular, Mavor and Gallois show that homosexual prejudice can be explicitly modelled as a composite of group-based prejudice shared with racial prejudice measures, and a moral orientation component. By decomposing homosexual

prejudice in this way it is possible to examine the proscribed and non-proscribed *components* of homosexual prejudice, which might be broadly seen as aligning with the maxim of “loving the sinner but hating the sin” (Fulton, Gorsuch, and Maynard 1999; Mak and Tsang 2008) and with the distinction between attitudes to homosexual behaviour versus civil rights (Kite and Whitley 1996). To allow this more nuanced description of the data we computed a shared prejudice measure based on the first principal component of the two prejudice measures, and then computed the residual on the homosexual prejudice measure after removing this shared component. Based on Mavor and Gallois (2008) we argue that the homosexual prejudice residual is an indicator of the moral judgement aspect of the homosexual prejudice measure.

The analyses that follow therefore are based on four criterion variables that partition the variance in slightly different ways. They are racial prejudice, shared or generalized prejudice, homosexual prejudice, and the residual of homosexual prejudice, which we will call moral judgement. By creating these distinctions we can examine in particular whether the effects of orthodoxy, fundamentalism and  $RWA_{\text{Agg/Sub}}$  on homosexual prejudice are based on the shared proscription of prejudices or the more normatively acceptable expression of moral judgement.

#### Extended regression analyses

To explore the more nuanced associations between these variables we conducted a series of regression analyses on each of the four criterion variables. The first set of analyses replicates the analyses previously conducted for fundamentalism and RWA as shown in Figure 2, but extended to the additional criterion variables for completeness (See Table 3, panel 1). We repeat the same approach using orthodoxy and RWA to see if the overlap in variance with  $RWA_{\text{Conv}}$  creates the same problematic pattern for orthodoxy (See Table 3, panel 2) and we examine two more complex analyses with RWA, fundamentalism and orthodoxy in the same regressions (See Table 3, panel 3).

---- Insert Table 3 about here ----

### RWA and fundamentalism

Extending the analysis shown in Figure 2 to include the new component variables (Table 3, panel 1) gives some sense of the range of the artefact phenomenon we discuss here. The differences in the beta weights for fundamentalism between the two analyses are most clear for those variables involving some level of group-based prejudice. For racial, generalized, and homosexual prejudice, the effect of including  $RWA_{Agg/Sub}$  in the equation in place of  $RWA_{Full}$  changes the beta weight by .18-.21 in the direction of less negativity or more positivity. For the more pure moral judgement variable which partials out the shared group prejudice elements from homosexual prejudice, the beta weight for fundamentalism is strongly positive and changes by only .02 between the two analyses. This demonstrates the specificity of the effect and supports the view that the changes in beta weights are due to the problematic construct validity of RWA rather than being a simple consequence of high correlations between RWA and fundamentalism *per se*. The effect of fundamentalism on prejudice generally can be seen most clearly for generalised prejudice where the beta changes from a non-significant negative relationship to a significant positive relationship.

### RWA and orthodoxy

The pattern for orthodoxy shown in Table 3, panel 2 is similar to that shown for fundamentalism, but where all the beta values are shifted in a less prejudiced direction compared to fundamentalism. After removing the problematic overlapping variance in RWA, the beta weights for orthodoxy shift in the direction of more prejudice but in absolute terms still show some tendency for reduced prejudice. For generalized prejudice, the negative beta weight changes from a significant -.31 to a non-significant -.10. When the criterion variables include a moral judgement component however orthodoxy predicts greater prejudice which is shown most clearly on the moral judgement variable ( $\beta = .23, p < .001$ ). As with

fundamentalism, the effect of removing the overlapping variance is most striking for criterion variables with some group prejudice component (.16 - .22) such that the apparent prejudice-reducing effect of orthodoxy is partially undermined. The effect on the moral judgement variable is a considerably smaller change in beta of .05.

#### RWA, fundamentalism and orthodoxy

Based on the two-component model of fundamentalism proposed by Laythe and colleagues (2002), we entered the combination of RWA, fundamentalism and orthodoxy into a series of regressions for each criterion variable. The top part of Table 3, panel 3 shows the results when using the full RWA scale and the bottom part of the panel shows the equivalent results when  $RWA_{Agg/Sub}$  is substituted. As with the analyses reported above, the effect of reducing the artefactual overlap in variance is to shift the beta weights for both fundamentalism and orthodoxy in the direction of more prejudice such that the prejudice-reducing effect is partially undermined in the case of orthodoxy and the effect is reduced or reversed for fundamentalism. The pattern of change in beta is still quite strong for fundamentalism which changes of .18 - .20 toward prejudice, but smaller for orthodoxy, with changes of .06 - .09.

In the case of homosexual prejudice, the primacy of RWA and fundamentalism as predictors reverses. The full RWA scale appears to be the dominant predictor of homosexual prejudice, but when the overlap is removed fundamentalism emerges as the main predictor of homosexual prejudice. The reason for this can be seen in the fourth column because fundamentalism has a strong association with the moral judgement component, whereas  $RWA_{Agg/Sub}$  has the stronger impact on group prejudices.

Inclusion of the additional criterion variables also clarifies the findings somewhat. Although orthodoxy shows a largely consistent effect in the direction of prejudice reduction for all the components involving some group-based prejudice (racial, generalized, and



homosexual prejudice), fundamentalism beta weights vary quite a lot depending on the nature of the prejudice. Only for the racial prejudice measure is there a non-significant trend toward reduced prejudice when controlling for full RWA. When using  $RWA_{\text{Agg/Sub}}$  in the equation, the betas for fundamentalism range from a non-significant positive association for racial prejudice (.05) to significant positive associations for generalized prejudice (.31) and homosexual prejudice (.49). Thus the broad pattern of the two-component model of fundamentalism is supported (Laythe et al., 2002), but although orthodoxy does seem to function as the prejudice-reducing component of fundamentalism, the RWA component is not sufficient to explain the prejudice-increasing component of fundamentalism (even when we focus this component on the aspect of RWA most clearly associated with prejudice).

## DISCUSSION

We have shown that the issues raised in the present paper concerning the structure of RWA and the overlap with other measures of interest do indeed cause problems in interpretation for researchers in this domain. The central issue is the problematic construct definition of RWA. Consistent with the growing trend in recent work (Duckitt and Fisher 2003; Duncan, Peterson, and Winter 1997; Funke 2005; Manganelli Rattazzi, Bobbio, and Canova 2007; LaBouff et al. 2010; Mavor, Louis, and Sibley 2010; Mavor et al. 2009; Smith and Winter 2002) we show that the Altemeyer and Hunberger (1992) RWA scale, used by many researchers in the social psychology of religion, can be divided into distinguishable factors. Not only are these factors interpretable, they have very different relationships with other criterion variables. Indeed, we show here that the two components of RWA have stronger correlations with distinct criterion variables than they do with each other. The conventionalism component has stronger correlations with fundamentalism, orthodoxy and homosexual prejudice than it does with RWA aggression/submission. Similarly, the RWA aggression/submission component has stronger correlations with both racial and homosexual

prejudice than it does with conventionalism. Such findings undermine the construct validity of RWA as a unidimensional scale and support the discriminant validity of at least two components.

We have also demonstrated, in the present paper, the nefarious consequences of assuming RWA as a unitary construct in regression involving these other variables of interest. As we predicted, regressions involving the full RWA scale and either fundamentalism or orthodoxy are distorted by the overlapping variance among the independent variables. When the problematic overlapping variance is removed by using RWA aggression/submission in the regression instead of the whole scale, the effect is to reduce (for orthodoxy) or eliminate (for fundamentalism) the apparent beneficial effects of religiosity leading to reduced prejudice. In regressions involving fundamentalism and RWA, when the conventionalism component was removed, leading to a reduction in the overlapping variance between predictors, the degree of prediction of the criterion variable remained essentially the same, or even increased slightly.

These changes have important implications for research on the relationship between forms of religiosity and prejudice. Previous evidence supported the view that fundamentalism could be associated with reduced prejudice once authoritarianism was controlled. This was supported in a recent meta-analysis (Hall, Matz, and Wood 2010) which found an estimated parameter value over 8 studies of  $-.12$  for fundamentalism and prejudice with RWA controlled, with a confidence interval of  $[-.19, -.04]$ . The evidence here suggests that at best this effect is not a significant one but in many cases fundamentalism will be significantly associated with prejudice even after controlling for the component of RWA that is most associated with prejudice. The effect is to consistently alter the beta weights for fundamentalism in the direction of more prejudice. The difference in the betas reported here is around  $.2$  and in other studies has been higher ( $.34$  difference for racial prejudice in Mavor

et al., 2009). These differences would completely undermine and might even reverse the conclusion in a meta-analysis. Such a finding is quite significant.

Similarly, although the differences are slightly smaller for orthodoxy, the change is sufficient to be worth accounting for in any future meta-analyses. Based on currently published research we believe that the effect of orthodoxy on reducing prejudice (with RWA controlled) is likely to be over-estimated.

We have also demonstrated here the value of exploring a wider range of criterion measures and attempting to disentangle the associations between different prejudices. While racial and homosexual prejudice may act broadly as indicators of proscribed and non-proscribed prejudices respectively, we have shown that it is possible to disentangle these effects in a more nuanced way by examining also the effects on a generalized prejudice composite and examining the moral judgement component of homosexual prejudice separately. Although we have adopted a simple approach to this here based on only two original measures, the method adopted by Mavor and Gallois (2008) based on a larger number of criterion measures is likely to be even more fruitful in future studies.

#### Understanding the “artefact”

We have made several strong claims here: that the paradoxical suppression effect whereby fundamentalism seems to be associated with reduced racial prejudice, and that RWA seems to be a stronger predictor of homosexual prejudice than fundamentalism, are both consequences of a statistical artefact in these regression analyses. We further claim that a similar but weaker pattern emerges with orthodoxy when RWA is controlled. It is important to be clear about what features may or may not be signs of this artefact in operation. Moderate to high correlations between the IV's are not in themselves sufficient to explain these effects, though we argue that it is a good indicator that further examination is worthwhile. Higher correlations between some IV's than between those IV's and the criterion

variables are likely to create the defining conditions for suppression and under these circumstances it is worth explicitly considering the first-order partial correlation between the IV's controlling for each criterion variable in turn. If the variance shared in common between the IV's that is unrelated to the criterion variable is greater than the variance shared by the IV's with the criterion then a suppression effect will occur (see the explanation in Maassen and Bakker 2001; Mavor et al. 2009). The presence of a suppression effect is neither necessary nor sufficient to show the artefact we explore here, but it is a good indicator that careful attention is required. Paradoxical suppression relationships can be meaningful and interesting theoretical findings and should not be rejected out of hand, but we hope that researchers will now consider the alternative hypotheses of the kind we present here before drawing confident conclusions.

We have made a strong case that the RWA – fundamentalism – prejudice relationship is subject to artefact because several conditions have been met: (1) RWA has been shown to have distinguishable components in this context (such that relationships between the components are weaker than with external variables) (2) The strong relationship between one of the components (conventionalism) and other variables of interest is artificially inflated by method variance. The consequence is an artificial shift in the beta weights for the other IV (e.g. fundamentalism) that can have a variety of consequences depending on the underlying zero-order correlations. We hope that researchers will consider the possibility of these circumstances when they find paradoxical suppression effects (as with fundamentalism and racial prejudice here), but that they will also think more broadly about the dimensionality of focal constructs in the domain of interest.

#### Contextual Changes in RWA and the RWA-Prejudice Relationship

We have focused our attention largely on the consequences of challenges to the validity of RWA as a unitary construct and have argued that the accumulated evidence now supports

both the discriminant validity of multiple components within RWA; and the interpretational necessity of treating it as multi-dimensional, particularly in the context of religiosity and prejudice. In addition, recent research on contextual changes in RWA and the RWA-prejudice relationship is also relevant to researchers in religiosity, and our arguments equally apply to this new contextually-oriented research.

RWA is often considered sufficiently stable to call a personality variable, and at the very least it is usually assumed to be a stable individual difference measure (Altemeyer and Hunsberger 1992; Laythe et al. 2002; Laythe, Finkel, and Kirkpatrick 2001; Rowatt and Franklin 2004; Rowatt et al. 2006). However several recent lines of work have challenged the normative stability of RWA across time and contexts (Lehmiller and Schmitt 2008; Lehmiller and Schmitt 2007; Louis, Mavor, and Terry 2003; Reynolds et al. 2001; Verkuyten and Hagendoorn 1998). These studies suggest that RWA may not be acting as a dispositional individual difference, and that the consistency found in many studies may result from relative stability on the overall political context at the time.

Taking this approach, Stellmacher and Petzel (2005) developed a group authoritarianism measure based on Duckitt's (1989, 1992) reconceptualization of RWA as a group-level phenomenon. Duckitt argued that RWA could be seen as a response to group-level threats and that the three components of RWA could be thought of as three forms of reaction to threat; intolerance of deviance (aggression), obedience to leaders (submission), and conformity to norms (conventionalism). The Stellmacher and Petzel (2005) data are consistent with this interpretation. Taken together, this line of research suggests that RWA and its relationship to other variables are conditional upon the broader social context (particularly group threat), the particular identity that is made salient for the participants, and their degree of commitment to that identity in addition to any underlying disposition.

All of the studies which have focused on contextual variability in RWA-prejudice relationships have assumed the traditional unitary view of RWA. Accordingly, there is room for further development of a contextual threat model of RWA in the light of the emerging evidence that the underlying components can be separately measured. It is not yet clear which components of RWA are most susceptible to contextual variation, and the inconsistent use of RWA scale variations in these studies makes it difficult to anticipate what might be found. However, it seems likely that when religious contexts are made salient, and when religious identity is strong, conventionalism as currently measured is likely to increase significantly. While the wording of many RWA aggression items implies a national context, if we are interested in the role of religiosity it may be appropriate to pursue a group authoritarianism line of research in a specifically religious group context.

#### RWA: Boon or Bane?

Researchers have embraced the use of RWA because it has strong predictive power for a variety of attitudes (e.g., Duckitt 2006; Heaven and St. Quinton 2003; Haslam and Levy 2006; Peterson, Doty, and Winter 1993). Moreover, RWA has interesting connections to other religiosity measures such as fundamentalism that intrigue researchers in the study of prejudice and religion (e.g., Duck and Hunsberger 1999; Hunsberger 1995; Laythe, Finkel, and Kirkpatrick 2001; Rowatt and Franklin 2004). However, the arguments that we present here challenge the use of RWA in this context. RWA, as it currently stands, is not compatible with research questions concerning the question of *when* religiosity is linked to prejudice. As it is currently defined, RWA explains the relationship between fundamentalism and negative attitudes to homosexuality, for example, as multiple indicators of the common causal construct, conventionalism. In turn, conventionalism is tied to the overall RWA construct, so that conventionalism, aggression and submission are all multiple indicators of an underlying construct of authoritarianism. This model is incompatible with an alternative model that sees

attitudes to homosexuality as a causal outcome of fundamentalist belief. Both models are, of course, plausible, but they are nonetheless mutually inconsistent, and the relative implications of the competing models are effectively untestable using the overall RWA construct.

Unfortunately, this has previously placed researchers in the social psychology of prejudice in a Catch-22 position in terms of measurement of RWA in their studies.

Altemeyer (1996, 2007) strongly opposes the use of anything short of the full RWA scale in research, reserving a special hell full of “badly played banjo music” for researchers who “chop up” his “carefully developed instrument” (Altemeyer 2007 p 36 note 3). We agree that to use arbitrarily selected items from a scale without due thought to construct validity concerns is unwise and pernicious. However, researchers who do use the full RWA scale, along with fundamentalism, to predict any of a range of social attitudes of interest, will also run headlong into the alternative construct validity problems we have raised here. This effectively makes it impossible to explore key questions of religion and of prejudice while using the full RWA scale.

The present paper extends concerns previously raised about measurement processes (Gorsuch 1984) and conceptually problematic constructs in the psychology of religion (Kirkpatrick and Hood 1990). We believe that RWA has, so far, been more of a bane than a boon to the study of religion and prejudice, and has prevented the development of alternative models in the social psychology of religion. Our central argument is that correlational analyses, including multiple regression and structural equation modelling, presume a correctly specified model which is effectively impossible when including RWA and other constructs of interest in this domain such as fundamentalism. We argue that within the social psychology of religion, artefactual suppressor effects created by measurement overlap are routinely wrongly interpreted. This fundamental issue arises whenever RWA and other inter-correlated ‘conventional’ social attitudes such as fundamentalism are jointly considered as ‘independent’

variables in analyses such as multiple regression and structural equation modelling. In addition we cite a growing literature pointing to the need to reconceptualise RWA to take into account processes of intergroup relations and social identity rather than simply assuming authoritarianism to be a dispositional construct.

For the purposes of eliminating the main statistical (and some of the conceptual) problems we have raised here, it is the conventionalism cluster that is the culprit. Simply leaving that cluster out of the analysis will often improve the validity of the outcome, but generally we would recommend just using the RWA aggression subscale when possible. Researchers using the 1996 version of the RWA scale may be guided by the factor analysis findings of Mavor and colleagues (2010) in deciding which items to include. The aggression subscale is theorized to have the strongest relationship with prejudice, so if the goal is to control for RWA as an alternative explanation for prejudice, use of the aggression subscale may actually increase prediction as it did here in several cases. Researchers should report their primary results for an analysis that measures RWA in terms of aggression/submission items only. For comparison, full RWA scale results may be footnoted or included in the text as well. However, researchers should explicitly note, we believe, that negative suppression effects due to the use of the full RWA scale with other inter-correlated independent variables should not necessarily be interpreted as meaningful. They may arise as statistical artefacts of the inclusion of items tapping those other independent variables within the RWA scale itself.

Finally, many researchers may also find it theoretically interesting to consider alternative models where the conventionalism cluster, or the items which form part of it, are considered as outcome variables of authoritarian aggression or submission not simply as construct defining covariates. For example, authoritarian aggression and submission may cause fundamentalism, and through this variable be linked indirectly as well as directly to homophobia, sexism, or other forms of prejudice. The explanatory power of these and other



causal models disentangling fundamentalism from RWA remains to be tested in empirical research.

### Conclusions

We have presented here a number of critiques of using right-wing authoritarianism (conceptualised as a single dimension incorporating aggression, submission, and conventionalism) in research concerning the link between religiosity and prejudice. We believe that past conclusions drawn from some research using RWA in this domain are suspect, and that RWA will remain of questionable value in this important area of research until these concerns are addressed.

However, there are clearly useful insights to be gained from the extensive authoritarianism research tradition that should not be discarded in the process. We encourage efforts to improve the measurement of distinct components of authoritarianism that could be used to test various alternative models. Until the underlying conceptual models have been made more explicit, and the measures we use mirror those models in a sufficiently nuanced manner, there is a grave danger that statistical artefacts may be wrongly interpreted to contaminate the evolution of the field.

The last decade has reminded us that a fundamental research question in the scientific study of religion remains as central as ever. As new forms of religious political mobilization and terrorism emerge in the 21<sup>st</sup> century, understanding the paradoxical relationships between religiosity, prejudice, and social conflict is vitally important. At the moment RWA represents a bane to researchers in this important area, hiding or distorting relationships of interest. It still has the potential to be a boon in the future if researchers in the RWA domain develop commonly accepted measures of the three component elements within the construct, relieving religiosity researchers of the double-bind in which they currently find themselves. In the meantime, we hope that researchers will take seriously the concerns we have raised here and

do their best to avoid the inherent conceptual and statistical traps when including current forms of the full RWA scale in research programs. With those admonitions and cautions in mind, RWA may yet prove a useful construct in understanding the nature of religiosity and social attitudes such as prejudice.

## Notes

1. Following Mavor et al, 2009, we also carried out several large factor analyses with combinations of orthodoxy, fundamentalism and authoritarianism items to see if the RWA scale held together at the item level. Conventionalism items fell in the same factors with orthodoxy and fundamentalism items, but in distinct factors from the aggression/submission items. This is consistent with the findings of Mavor et al., and is a further challenge to the construct validity of RWA in this context.
2. In response to a reviewer's suggestion we checked to make sure that the same pattern would hold when excluding the 8 items that were not used in either of the subscales reported here. We computed a version of the full RWA scale based only on the 13 aggression/submission items and the nine conventionalism items and ran the equivalent regressions to those reported on the left side of Figure 1. The pattern of beta weights changed by less than .02 and hence the interpretation would be the same.

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Table 1: Two and three factor solutions for the 1992 RWA scale

| RWA Item   | Item # | Two Factor  |        | Three Factor |        |        | Scale |
|--|--------|---|--------|--------------|--------|--------|-------|
|  |        | F1  | F2     | F1           | F2     | F3     |       |
|  |        | The situation in our country is getting so serious, the strongest methods would be justified if they eliminated the troublemakers and got us back to our true path. | 22     | 0.802        | -0.094 | 0.779  |       |
| Once our government leaders give us the "go ahead" it will be the duty of every patriotic citizen to help stomp out the rot that is poisoning our country from within.                           | 14     | 0.696   | -0.053 | 0.758        | 0.038  | -0.19  | AS    |
| Authorities, such as parents and our national leaders, generally turn out to be right about things, and the radicals and protestors are almost always wrong.                                     | 23     | 0.692   | -0.099 | 0.665        | -0.12  | 0.063  | AS    |
| What our country really needs is a strong determined leader who will crush evil and take us back to our true path.   | 28     | 0.665   | 0.128  | 0.7          | 0.173  | -0.088 | AS    |
| Our country will be great if we honour the ways of our forefathers, do what the authorities tell us to do, and get rid of the "rotten apples" who are ruining everything.                        | 01     | 0.665   | -0.033 | 0.657        | -0.032 | 0.013  | AS    |
| In these troubled times laws have to be enforced without mercy especially when dealing with the agitators and revolutionaries who are stirring things up.  | 17     | 0.663   | -0.181 | 0.655        | -0.169 | -0.007 | AS    |
| What our country really needs, instead of more "civil rights," is a good dose of law and order.  | 05     | 0.653   | -0.065 | 0.572        | -0.183 | 0.262  | AS    |
| It is always better to trust the judgment of the proper authorities in government and religion, than listen to noisy rabble-rousers in society who are trying to create doubt in people's minds. | 03     | 0.634   | 0.014  | 0.591        | -0.041 | 0.132  | AS    |
| Some of the worst people in our country nowadays are those who do not respect our flag, our leaders, and the normal way things are supposed to be done.  | 16     | 0.624   | 0.091  | 0.598        | 0.056  | 0.087  | AS    |

|   |    |        |        |        |       |        |    |
|---|----|--------|--------|--------|-------|--------|----|
| Obedience is the most important virtue children should learn.   | 12 | 0.605  | -0.024 | 0.643  | 0.037 | -0.122 | AS |
| Some young people sometimes get rebellious ideas, but as they grow older they ought to become more mature and forget such things.   | 19 | 0.521  | 0.034  | 0.511  | 0.025 | 0.031  | AS |
| The facts on crime, sexual immorality, and the recent public disorders all show we have to crack down harder on deviant groups and troublemakers if we are going to save our moral standards and preserve law and order.        | 09 | 0.458  | 0.077  | 0.448  | 0.062 | 0.04   | AS |
| One reason we have so many troublemakers in our society nowadays is that parents and other authorities have forgotten that good old-fashioned physical punishment is still one of the best ways to make people behave properly. | 30 | 0.42   | 0.11   | 0.438  | 0.132 | -0.041 | AS |
| Our country will be destroyed someday if we do not smash the perversions eating away at our moral fibre and traditional beliefs.  | 06 | 0.414  | 0.26   | 0.434  | 0.273 | -0.024 |    |
| The real keys to the "good life" are obedience, discipline, and sticking to the straight and narrow.  | 26 | 0.375  | 0.321  | 0.395  | 0.329 | -0.017 |    |
| It is important to protect fully the rights of radicals and deviants.   | 11 | 0.318  | 0.168  | 0.182  | -0.05 | 0.475  |    |
| There is nothing wrong with premarital sexual intercourse.  | 08 | -0.161 | 0.752  | -0.101 | 0.792 | -0.09  | C  |
| People should pay less attention to the Bible and the other old traditional forms of religious guidance, and instead develop their own personal standards of what is moral and immoral.   | 04 | -0.074 | 0.714  | -0.052 | 0.69  | 0.035  | C  |
| There is really nothing wrong with a lot of the things that people call "sins".   | 20 | -0.027 | 0.676  | 0.009  | 0.679 | -0.018 | C  |
| A lot of our rules regarding modesty and sexual behaviour are just customs which are not necessarily any better or holier than those which other people follow.   | 24 | 0.016  | 0.665  | 0.04   | 0.649 | 0.022  | C  |
| There is no "one right way" to live life; everybody has to create their own way.  | 13 | -0.133 | 0.662  | -0.112 | 0.639 | 0.031  | C  |
| Everyone should have his own lifestyle, religious beliefs and sexual preferences even if it makes him different from everyone else.   | 21 | -0.065 | 0.659  | -0.05  | 0.627 | 0.053  | C  |
| There is nothing immoral or sick in somebody's being a homosexual.  | 10 | 0.138  | 0.587  | 0.185  | 0.617 | -0.066 | C  |
| There is absolutely nothing wrong with nudist camps.  | 25 | 0.077  | 0.587  | 0.079  | 0.543 | 0.082  | C  |
| Atheists and others who have rebelled against the established religions are no  | 18 | 0.047  | 0.572  | -0.019 | 0.435 | 0.291  | C  |

doubt every bit as good and virtuous as those who attend church regularly.

It is wonderful that young people can protest anything they don't like, and act however they wish nowadays.

02 0.009 0.467 -0.079 0.309 0.342

The sooner we get rid of the traditional family structure, where the father is head of the family, and the children are taught to obey authority automatically, the better. The old-fashioned way has a lot wrong with it.

07 0.052 0.394 0.048 0.358 0.07

Students must be taught to challenge their parents' ways, confront the authorities, and criticise the traditions of our society.

29 0.007 0.392 -0.086 0.233 0.345

We should treat protestors and radicals with open arms and open minds, since new ideas are the lifeblood of progressive change.

27 0.158 0.385 -0.033 0.097 0.658

Government, judges and the police should never be allowed to censor books.

15 0.207 0.299 0.131 0.168 0.284

Notes:

(1) Item numbers are from the version of the scale reported in Altemeyer and Hunsberger (1992).

(2) AS = RWA aggression/submission scale; C = RWA conventionalism scale.

Table 2: Reliabilities and correlations for RWA, religiosity and prejudice variables.

|                          | Alpha | 2   | 3   | 4   | 5   | 6    | 7   | 8   | 9    |
|--------------------------|-------|-----|-----|-----|-----|------|-----|-----|------|
| 1.Fundamentalism         | .92   | .58 | .72 | .46 | .77 | .15  | .37 | .50 | .37  |
| 2. Orthodoxy             | .98   | --  | .49 | .23 | .62 | -.09 | .03 | .15 | .25  |
| 3.RWA (Full)             | .91   |     | --  | .84 | .78 | .39  | .55 | .57 | .18  |
| 4.RWA (Agg/Sub)          | .89   |     |     | --  | .37 | .48  | .54 | .46 | -.03 |
| 5.RWA (Conventionalism)  | .87   |     |     |     | --  | .11  | .36 | .51 | .41  |
| 6.Racial Prejudice       | .91   |     |     |     |     | --   | .88 | .54 | -.48 |
| 7. Generalized Prejudice | --    |     |     |     |     |      | --  | .88 | .00  |
| 8. Homosexual Prejudice  | .91   |     |     |     |     |      |     | --  | .48  |
| 9. Moral Judgement       | --    |     |     |     |     |      |     |     | --   |

Note: To avoid cluttering the table we note that with N=318,  $r$ 's  $\geq .12$  are significant at  $p < .05$ ;  $r \geq .15$ ,  $p < .01$ ;  $r \geq .19$ ,  $p < .001$ .

Table 3: Regressions of prejudice measures on fundamentalism, orthodoxy and RWA.

|                                     | Racial<br>Prejuice | Generalized<br>Prejudice | Homosexual<br>Prejudice | Moral<br>Judgement |
|-------------------------------------|--------------------|--------------------------|-------------------------|--------------------|
| 1 RWA and Fundamentalism            |                    |                          |                         |                    |
| RWA <sub>Full</sub>                 | .60 ***            | .58 ***                  | .43 ***                 | -.18 *             |
| Fundamentalism                      | -.28 ***           | -.05                     | .19 **                  | .50 ***            |
| R <sup>2</sup>                      | .19 ***            | .30 ***                  | .34 ***                 | .15 ***            |
| RWA <sub>Agg/Sub</sub>              |                    |                          |                         |                    |
| RWA <sub>Agg/Sub</sub>              | .53 ***            | .46 ***                  | .29 ***                 | -.25 ***           |
| Fundamentalism                      | -.09               | .16 **                   | .37 ***                 | .48 ***            |
| R <sup>2</sup>                      | .24 ***            | .31 ***                  | .32 ***                 | .19 ***            |
| 2 RWA and Orthodoxy                 |                    |                          |                         |                    |
| RWA <sub>Full</sub>                 | .58 ***            | .70 ***                  | .65 ***                 | .08                |
| Orthodoxy                           | -.37 ***           | -.31 ***                 | -.17 **                 | .22 **             |
| R <sup>2</sup>                      | .26 ***            | .37 ***                  | .34 ***                 | .26 ***            |
| RWA <sub>Agg/Sub</sub>              |                    |                          |                         |                    |
| RWA <sub>Agg/Sub</sub>              | .53 ***            | .56 ***                  | .45 ***                 | -.09               |
| Orthodoxy                           | -.21 ***           | -.10                     | .05                     | .27 ***            |
| R <sup>2</sup>                      | .28 ***            | .29 ***                  | .21 ***                 | .07 ***            |
| 3 RWA, Fundamentalism and Orthodoxy |                    |                          |                         |                    |
| RWA <sub>Full</sub>                 | .65 ***            | .64 ***                  | .47 ***                 | -.19 *             |
| Fundamentalism                      | -.13               | .11                      | .31 ***                 | .46 ***            |
| Orthodoxy                           | -.34 ***           | -.34 ***                 | -.26 ***                | .08                |
| R <sup>2</sup>                      | .27 ***            | .38 ***                  | .38 ***                 | .16 ***            |
| RWA <sub>Agg/Sub</sub>              |                    |                          |                         |                    |
| RWA <sub>Agg/Sub</sub>              | .52 ***            | .45 ***                  | .28 ***                 | -.25 ***           |
| Fundamentalism                      | .05                | .31 ***                  | .49 ***                 | .46 ***            |
| Orthodoxy                           | -.24 ***           | -.25 ***                 | -.20 **                 | .05                |
| R <sup>2</sup>                      | .28 ***            | .35 ***                  | .34 ***                 | .19 ***            |

Notes: \* <.05; \*\* <.01; \*\*\* <.001

Figure 1: Statistically artefactual relationships that arise from using RWA in multiple regression.

Note: Roman sequence (i-v) represents the expected consequences for racial prejudice. The values given are purely illustrative.

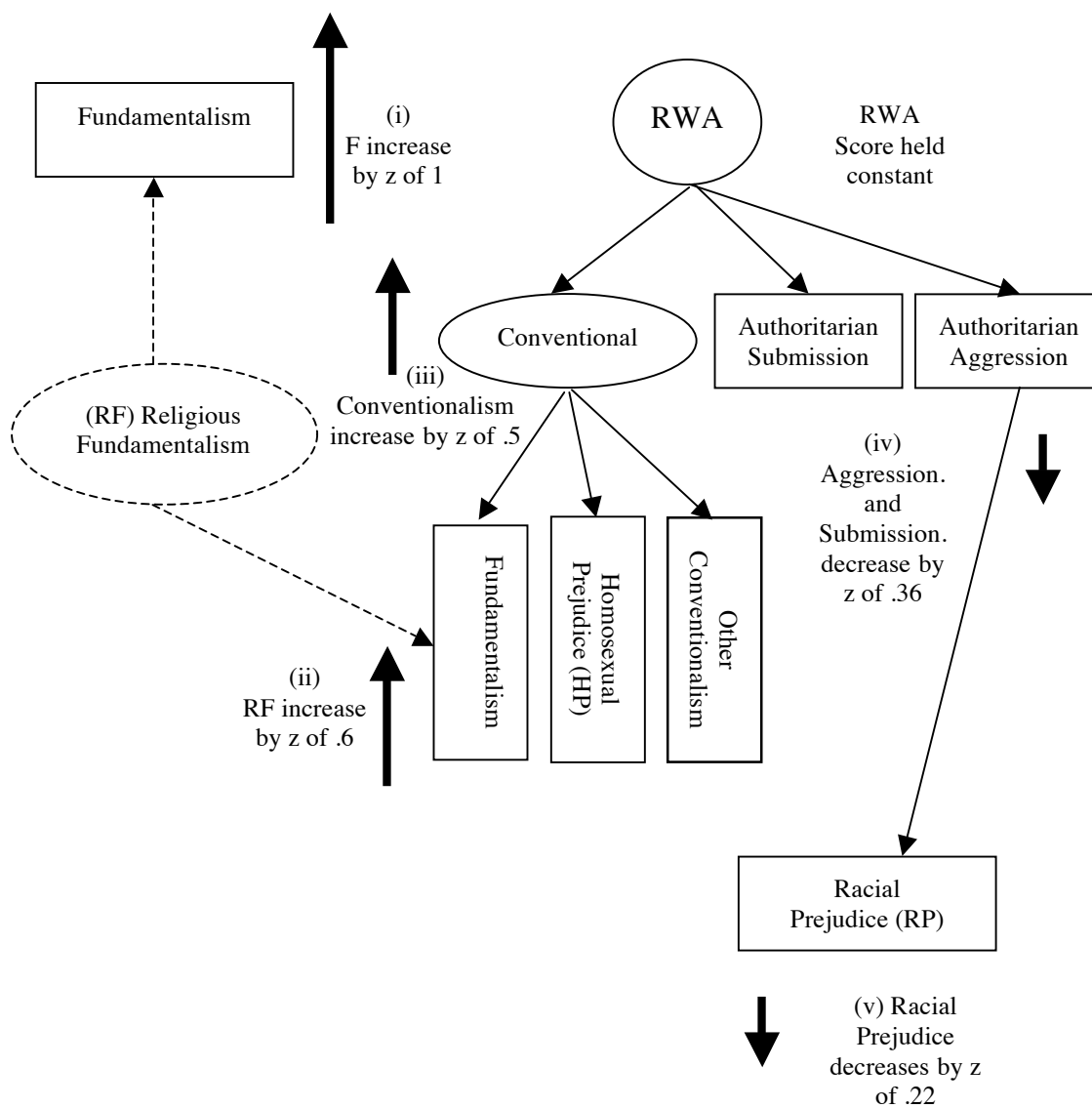


Figure 2: Path weights for RWA and fundamentalism predicting racial prejudice (panel a) and homosexual prejudice (panel b).

