RWAc and SDOc: The measurement of right-wing authoritarianism and social dominance orientation in childhood

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#### Abstract

Right-wing authoritarianism (RWA) and social dominance orientation (SDO) predict prejudice and discrimination in adults. To create analogous scales for children, we carried out four studies. First, we gave 112 adults from New Zealand (Study 1) and 146 adults from Turkey (Study 2) novel child-appropriate measures of RWA and SDO, along with the standard adult measures. The two RWA measures correlated more highly with each other than with the SDO measures, and the two SDO measures correlated more highly with each other than with the RWA measures. Study 3 tested 75 children aged 6 to 12, finding acceptable to good reliability for the two child scales. Child RWA (RWAc) and SDO (SDOc) decreased significantly over age. SDOc correlated with maternal SDO and RWA, and RWAc correlated with children's racial bias. Study 4 examined the RWAc scale with 39 children aged 5 to 11 years. There was good reliability for the RWAc scale and a correlation with antifat prejudice. Overall, the findings indicate that: (a) the scales are reliable, (b) SDOc correlates with parental attitudes, (c) RWAc correlates with children's prejudice, and (d) RWA and SDO are present early in life and decline with age.

Keywords: right-wing authoritarianism, social dominance orientation, discrimination, parentchild transmission of attitudes, racial bias

## RWAc and SDOc: The measurement of right-wing authoritarianism and social dominance orientation in childhood

Right-wing authoritarianism (RWA) and social dominance orientation (SDO) are well-studied aspects of attitudes and belief systems that characterize adults' views about others and the structure of society. RWA is characterized by a high degree of submissiveness to authorities perceived as established and legitimate, aggressiveness toward those who deviate from group norms, and adherence to normative social ideals (Altemeyer, 1996). RWA is thought to stem from perceived social threat and a sense of self-righteousness (Altemeyer, 1998), motivating individuals to express uncritical support for the existing social order and respond critically to those perceived as undermining this state of affairs (Altemeyer, 1996). RWA is assessed by a series of attitudinal statements (Altemeyer, 1998). These reflect moralistic, nationalistic, homophobic, paternalistic, and sexist sentiments (e.g., "Women should have to promise to obey their husbands when they get married").

Those high in SDO envision a dog-eat-dog world and prefer hierarchical organizations of power, believing those at the top of the hierarchy are more worthy (Sidanius & Pratto, 2001). People who belong to powerful groups tend to be higher in SDO (Kite & Whitely, 2016; Pratto, Sidanious, Stallworth, & Malle, 1994). SDO is measured by the SDO scale (Ho et al., 2015), in which respondents endorse items such as, "Some groups of people must be kept in their place", and, "We should not push for group equality". Both RWA and SDO are independent predictors of prejudice and discrimination amongst adults (Kite & Whitely, 2016; Sibley & Duckitt, 2008).

Despite their demonstrated importance for adults, up until now there have been no RWA or SDO scales for children. Thus, we created scales measuring children's RWA and SDO in the present study. Although it is assumed that parental attitudes are transferred to children (Adorno, Frankel-Brunswick, Levinson, & Sanford, 1950; Altemeyer, 1988), Altemeyer (1998) argued that authoritarian values are likely to crystallize only by early adulthood, along with other social and political attitudes. In contrast to this claim, there are recent studies linking parent and adolescent RWA and SDO (Duriez & Soenens, 2009; Duriez, Soenens, & Vansteenkiste, 2008). In addition, there are also studies finding authoritarian attitudes in young children and linking parent and child authoritarian attitudes. For instance, 3- to 4-year-olds tend to trust an individual's labelling of a new object if the speaker appeared authoritative (Reifen Tagar, Federico, Lyons, Ludeke, & Koenig, 2014). In another study, Guidetti, Carraro, and Castelli (2017) examined children's threat bias and their preference for order over chaos (central characteristics of RWA). They found that mothers' RWA (but not mothers' SDO or fathers' RWA/SDO) correlated with 4- to 6-year-olds' threat bias such that children looked away from a threatening character. In addition, fathers' SDO (but not fathers' RWA or mothers' RWA/SDO) correlated with children's preference for order. Although the correlations are not entirely consistent, these findings provide some support for a link between right-wing attitudes in parents and children.

The potentially early onset of some right-wing attitudes, as well as the correlations between parent and child, raise a question as to why some people are more inclined than others towards holding such attitudes. For instance, there are differences in basic moral principles including ingroup loyalty or fairness such that when one violates a group norm, an individual with authoritarian tendencies will be more critical (e.g., Haidt & Graham, 2007). The endorsement of authoritarian attitudes can also be construed as an instance of motivated social cognition in which people strive to maximize their wellbeing, for instance, by minimizing fear or uncertainty (e.g., Jost, Kruglanski, & Sulloway, 2003). A third reason for individual differences in right-wing thinking is simply that some will find it easier to go along with familiar ideas or circumstances than to critically evaluate them (e.g., Zucker & Weiner, 1993). For instance, Hussak and Cimpian (2018) found that 4- to 8-year-olds were more likely to agree with inequities in the distribution of wealth, a right-wing bias (e.g., the Blarks have more wealth), when it was justified by referring to intrinsic qualities of the individuals (e.g., the Blarks are smarter and therefore better workers) in contrast to extrinsic circumstances (e.g., the town where the Blarks live has better jobs). Thus, views consistent with right-wing or authoritarian attitudes can be linked with a belief in the inherent qualities of individuals even in young children. Indeed, Hussak and Cimpian found that such thinking decreased rather than increased with age.

If right-wing attitudes are present early in life, it is of interest to examine the social learning that might contribute to such attitudes. What is clear is there are a range of social conditions in which right-wing attitudes are more likely. In the most comprehensive analysis of parent-child attitudes, Degner and Dalege (2013) carried out a meta-analysis involving 131 studies and more than 45,000 parent-child dyads. They showed that different kinds of prejudice (regarding gender, ethnicity, sexual orientation, body weight, religion, disease, disability, social class, etc.) arise in childhood and are closely connected to parental attitudes. Overall, there was a medium-sized effect, although it was affected by whether the parent or child reported the parent's attitude (higher effect sizes for parent-reported measures), conceptual overlap (higher effect sizes for conceptually related measures), privacy in attitude expression (higher effect sizes for private than public expressions), child age (higher effect

sizes for older children), and topic (higher effect sizes for race than body weight, although a consistent parent-child relation for all topics). In contrast, effect sizes were the same for girls and boys, for mothers and fathers, and whether attitudes measured were affective, cognitive or behavioral.

There is also evidence that parent-child links arise very early. For instance, maternal anti-fat attitudes correlate with children's preference to look at normal-weight as opposed to obese bodies even when children are as young as 2 to 3 years of age (Ruffman, O'Brien, Taumoepeau, Latner, & Hunter, 2016). Thus, prejudice arises early, yet has a range of harmful impacts on victims, including disadvantages in employment and justice, physiological effects (including an increased heart rate and blood pressure, lower birthweights, and general ill health), and psychological effects (including depression, anxiety, and low self-esteem) (Major & Vick, 2005; Okazaki, 2009).

In sum, RWA and SDO are well-researched measures of adult attitudes associated with a range of social, political and inter-group behaviour, as well as negative impacts for victims. However, up until now there have been no measures of RWA and SDO for children, even though these attitudes are likely to begin in childhood and relate to prejudice. Therefore, having child measures of RWA and SDO, and providing information regarding the ways that children's RWA and SDO relate to parental attitudes and different kinds of prejudice, are of crucial importance for the fields of both child development and social psychology.

For this reason, the purpose of the present study was to create RWA and SDO scales for children and link their performance on the scales to (a) parent attitudes and (b) discrimination. We also examined developmental changes in levels of RWA and SDO over childhood. According to the dual process theory of prejudice, higher RWA is associated with perceived threat, whereas higher SDO is associated with competitiveness (Duckitt, 2001). Regarding RWA, threat perception is higher in early childhood and decreases subsequently (Miller, 2014), which predicts a decline in RWA over childhood. Regarding SDO, competitiveness decreases over childhood (Ahlgren & Johnson, 1979; Charlesworth, 1996; Hawley, 1999; Pellegrini, 2008; Strayer & Strayer, 1976) and prosocial development increases across the lifespan (Hammond & Brownell, 2015), both of which predict that SDO, like RWA, might decline over childhood.

In the first study, we created new RWA and SDO items on the basis of the adult items, aiming to simplify the wording so as to be understandable for children from the age of 6 or 7, and eliminating inappropriate items (e.g., those referring to nudity). We chose this age because (a) pilot testing indicated that the items were confusing for younger children, (b) prejudice is firmly in place by age 6 or 7 (Degner & Dalege, 2013), and (c) there are studies clearly linking prejudice to parental attitudes by at least 7 years (Degner & Dalege, 2013). We then tested the new items by giving them to young adults, along with typical adult RWA and SDO scales. We started validation with adults because we thought it important that the new scales measured something similar to what the creators of the adult scales had intended (i.e., that they accurately measured RWA and SDO just like the adult scales). We called these new scales, RWAc (RWA-children) and SDOc (SDO-children). Our interest was in whether (a) the items for the child scales possessed internal consistency as measured by Cronbach's alpha (providing evidence for reliability), and (b) the new child scales correlated with their respective adult counterparts, for instance, young adults' scores on the RWAc and adult RWA scales correlated (providing evidence for validity). Again, we considered it important to ensure that the child items were valid measures of RWA or SDO, in a way that was similar to the adult items.

The first, third and fourth studies were carried out in New Zealand. New Zealand constitutes a WEIRD sample (Westernized, educated, industrialized, rich and democratic; Henrich, Heine, & Norenzayan, 2010). In contrast, we carried out the second study in Turkey, which unlike New Zealand, is less Westernized, 99% Muslim, and highly conservative. Further, we included additional items for the RWAc and SDOc scales in Study 2. We made these changes to ensure that the Study 1 results were not due to idiosyncrasies of particular items or the culture examined.

In the third and fourth studies, we gave the child scales to children, and established validity by examining links between child attitudes and (a) parent attitudes and (b) prejudice.

#### Study 1

#### Method

**Participants.** One-hundred and twelve university undergraduates from New Zealand took part in this study (M = 22 years, range: 20 to 42 years, 83 females). All participants were psychology undergraduates who volunteered as part of a class exercise.

**Materials.** Participants completed paper-and-pencil versions of the questionnaires. For the adult versions, we used Altemeyer's (1981, 1988) 30-item RWA scale and Pratto et al.'s (1994) 16-item SDO scale, each rated 1 to 7. The 20 RWAc items (4 items reverse-scored) and 13 SDOc items (7 items reverse-scored) were re-worded versions of the adult items so as to make them maximally understandable by young children and are listed in Appendices 1 and 2. The items were accompanied by a 5-point "thumbs up" scale, with maximum non-endorsement of items indicated by a score of -2 and maximum endorsement indicated by +2. We created items by beginning with the 36-item RWA scale from Duckitt, Bizumic, Krauss, and Heled (2010), and the 16-item SDO scale from Sidanius and Pratto (2001), trying to create an equivalent child version with simpler words and concepts for every item, while dropping inappropriate items (e.g., that referred to nudity). For instance, for RWA the adult item, "The 'old-fashioned ways' and the 'old-fashioned values' still show the best way to live", became, "We should try to do things the same way as our parents and grandparents". For SDO, "Some groups of people are simply inferior to other groups", became, "Some groups of people are just not as good as others".

**Procedure.** The scales were given in the following order: adult RWA, adult SDO, RWAc, SDOc. Approval for Studies 1 and 3, and 4 was received from the University Human Ethics Committee (F17/008, Interactions Within a Virtual Reality Environment).

## Results

The *N*s, means, standard deviations, and alphas for the measures of RWA and SDO are summarized in Table 1. We examined the correlations between the four measures (see Table 2). In general, all four measures correlated with one another, including the adult measures of RWA and SDO as is often the case in New Zealand samples (e.g., Duckitt, 2006; Sibley, Wilson, & Duckitt, 2007), as well as the child measures of RWAc and SDOc. The RWAc measure correlated more highly with the adult RWA measure than it did with the adult SDO measure, z(110) = 5.16, p < .001. Likewise, the SDOc measure, z(110) = 5.25, p < .001.

## Discussion

Study 1 examined adults' responses on the typical RWA and SDO measures, as well as two new measures meant for children. The RWAc measure correlated significantly more highly with the adult RWA measure than the adult SDO measure. Likewise, the SDOc measure correlated significantly more highly with the adult SDO measure than the adult RWA measure. Further, the measures of RWAc and SDOc correlated with each other. These findings provide evidence for criterion (concurrent), convergent and discriminant validity for the two child scales.

### Study 2

Study 1 provided an examination of the RWAc and SDOc items with an adult group, which was useful to ensure that they measured something similar to the adult scales. However, to ensure that the correlations in Study 1 were not influenced by idiosyncratic features of the items in the scales, nor by cultural peculiarities of the participants, Study 2 examined the RWA and SDO scales in a modified form, and with participants from Turkey rather than New Zealand. Turkey differs from New Zealand in (a) religiosity: it is 99.8% Muslim (Içduygu, Toktas, & Soner, 2008) whereas New Zealand is mainly Christian or non-religious, and (b) structure: Turkey is mainly collectivist (Cukur, De Guzman, & Carlo, 2004) whereas New Zealand is mainly individualist. Our interest was in whether a similar pattern of correlations would be obtained despite differences in the exact items used and the culture examined. As a further test of validity, we gave participants a scale measuring discriminatory attitudes toward immigrants, anticipating a correlation with the new child scales.

**Participants.** One-hundred and forty-six university undergraduates took part in this study (M = 21.70 years, range: 18 to 36 years, 115 females). All participants were psychology undergraduates in Turkey who took part as volunteers in a class exercise.

Materials. Participants completed paper-and-pencil versions of the questionnaires with all scales translated into Turkish by a speaker fluent in both Turkish and English. For the adult versions, we used the 36-item RWA scale from Duckitt et al. (2010), and the 16-item SDO scale from Sidanius and Pratto (2001). All items were rated 1 to 7. The RWAc measure used the 20 items from Study 1, plus an additional 12 items created by transforming other adult items from the Duckitt et al. (2010) RWA scale (see Appendix 2). These items were rated -2 to +2. The SDOc measure used the 13 items from Study 1, plus we transformed an additional two items from the Sidanius and Pratto (2001) SDO scale to child-friendly versions (see Appendix 1). These items were also rated -2 to +2. We then checked the Flesch-Kincaid readability of each child scale. The RWAc scale should have been understandable for those at grade 1.89 and the SDOc scale for those in grade 1.39 (in both cases, suitable for 6- to 7-year-olds). In addition, we gave participants the Classical and Modern Racial Prejudice Scale, a scale validated by examining attitudes toward immigrants in Sweden (Akrami, Ekehammar, & Araya, 2000). There were 17 items with responses to each question rated on a 5-point likert scale (e.g., "Even though there are some exceptions, it seems that most immigrants simply lack those qualities that community members should have").

**Procedure.** The scales were given in the following order: adult RWA, adult SDO, Prejudice, RWAc, and SDOc. Approval was received from the University Human Ethics

Committee (2017.013.IRB3.009, Development of Child Versions of the Right-Wing Authoritarianism Scale and the Social Dominance Orientation Scale).

#### **Results and Discussion**

The *N*s, means, standard deviations, and alphas for the measures of RWA, SDO and Prejudice are summarized in Table 1. As in Study 1, all four measures were correlated with one another (see Table 3). Validity was again shown as the RWAc measure correlated more highly with the adult RWA measure than it did with the adult SDO measure, z(146) = 4.11, p < .001. Likewise, the SDOc measure correlated more highly with the adult SDO measure than it did with the adult SDO measure than it did with the adult RWA measure, z(146) = 4.49, p < .001. In addition, the RWAc and SDOc measures correlated with one another, and all measures, including the RWAc and SDOc measures, correlated with the prejudice scale.

Thus, like Study 1, Study 2 provided external concurrent, convergent, and discriminant validity for the new child scales in a group of adults. Once again, this is an important first step in establishing that the scales measure RWA and SDO in similar ways to the adult scales., and that the child scales correlate with prejudice However, the RWAc and SDOc scales were ultimately meant for children so that we examined children in Studies 3 and 4.

#### Study 3

Study 3 examined the RWAc and SDOc scales with a group of children aged 6 to 12 years. We chose this age range after pilot testing indicated that the items were too difficult for younger children, and because prejudice and parent-child links in prejudice are well established by this age (Degner & Dalege, 2013). Our interest was, first, in whether the two child scales would have reliability when given to children. In addition, we examined the validity of the scales by testing only children of European heritage and giving them two discrimination tasks to test the criterion validity of the scales. The first discrimination task involved the child choosing between European and Asian children as someone they would like to play with. We chose Asians because the Asian population in New Zealand (where this study was carried out) has grown considerably over the last few decades, and Asians are often subjected to prejudice in this context (Butcher et al., 2015; Hunter et al., 2017; Ward & Masgoret, 2008), although no research has examined New Zealand children's attitudes toward Asians. Nevertheless, given that adult RWA correlates with discrimination, we expected RWAc to correlate with discrimination.

The second discrimination task was highly novel and again examined anti-Asian bias. We used a virtual reality (VR) scenario in which the child saw pairs of European and Asian avatars (either both male or both female) through a VR headset (see Figure 1). These avatars were real people who had been pre-recorded, with the recording appearing pixelated, allowing the illusion that the avatars appeared in the present, sitting across from the child at the table. The child was asked to help one of the avatars try to complete a simple puzzle of a face by retrieving a piece depicting the mouth, with the question, which avatar the child would help first. In addition, mothers, who accompanied children to testing, completed the adult RWA and SDO scales in an effort to gauge relations between parent and child attitudes.

Thus, our aims were fourfold: (a) test the reliability of the two scales with a group of children, (b) test whether RWAc and SDOc change over childhood, (c) test whether children's performance on the scales was related to discrimination, and (d) test whether child attitudes were related to parent attitudes. Evidence for aims (c) and (d) would provide support for the criterion validity of the RWAc and SDOc scales.

## Method

**Participants.** The participants were: (a) 75 children ( $M_{age} = 9.36$  years, range: 6.67 to 12.00 years, with all but two children  $\geq$  7 years), and (b) their mothers. Mother, father, and mean mother/father highest education were coded as follows: (1) high school certificate, (2) trade certificate, (3) technical certificate, (4) BA/BSc, and (5) post-graduate. We split children into three age groups of roughly equal size: youngest (6.67 to 7.92 years, M = 7.30, n = 22, 11 girls, mother/father education = 3.07), middle (8.00 to 9.83 years, M = 8.90, n = 23, 11 girls, mother/father education = 3.24), and oldest (10.0 to 12.0 years, M = 11.22, n = 30, 15 girls, mother/father education = 2.42). There were no significant differences in mother/father education between the three age groups, F(2, 72) = 2.58, p = .083,  $\eta_p^2 = .067$ . Nevertheless, because this result was marginally significant, and because we wanted to examine the effect of parental attitudes *independent of their general SES*, we partialled out mother/father education when examining correlations below. Recruitment was through a database built up over many years, established after parents volunteered, having been sent information about Psychology Department studies upon the birth of their child.

**Materials.** Mothers completed paper-and-pencil versions of the RWA scale (Altemeyer, 2007; rated 1 to 9) and the SDO scale (Ho et al., 2015; rated 1 to 7). Children completed the RWAc and SDOc scales. The RWAc and SDOc scales were identical to those

in Study 1. The experimenter first trained children on the rating scale and then read items to the child, recording the child's answer on paper with a pencil.

To select stimuli for the Friend Choice task, we asked 23 European adults (M = 29.8 years, 16 females) to rate the attractiveness and age of the children portrayed in 12 color photographs of Asian children and 12 of European children. Each photograph was 18.5 x 25 cm. The Asian children resembled Chinese individuals (as opposed to other countries in Asia such as India). We then created eight pairs of child photographs with equivalent ratings of attractiveness and age. Six pairs included an Asian and European child, one included two Asian children, and one included two European children. The eight pairs were presented in a pseudo-random order, counterbalancing the side of the Asian and European child.

For the VR task, we recruited eight adults to act as avatars (two female Chinese, two male Chinese, two female Europeans, two male Europeans). We recorded these individuals in a Mixed Voxel Reality system interaction space of 2.56m<sup>3</sup>, similar to the layout used by Regenbrecht et al. (2017). The dimensions chosen were specified so that the area could be monitored by the depth camera, allowing appropriate head-mounted tracking of the display, and easy mapping into a voxel space of a metal frame, similar to Regenbrecht et al. (2017). The VR goggles comprised an Oculus Rift CV1 head-mounted display. The interaction space consisted of one Microsoft Kinect2 camera placed on a metal frame (see Appendix A). This camera was connected to a standard personal computer with an Intel i7-6700 Quad-Core Processor. Following the recording, the Kinect sensor's raw depth and colour data were mapped into the 2.56m<sup>3</sup> voxelspace so that the recorded clip could be viewed on a computer screen.

The resulting video was purposely grainy (see Figure 1), which helped us at a later time to integrate these pre-recordings with the live experience of the child participants. That is, we later played these pre-recordings through the VR goggles such that they were integrated with the live visual information in the goggles so that it appeared that the prerecorded avatars were interacting in the present. The VR scene contained a rectangular table with three chairs facing the main recording Kinect2 camera (see Figure 1). There were two printed sheets on the table displaying a drawing of a person's head, two pairs of eyes and two mouths.

Using the pre-recordings, the same 23 European adults who rated the child photos, also judged the age, race, gender and attractiveness of the eight avatars. Four avatars were chosen on the basis of these ratings (one Chinese female, one Chinese male, one European female, one European male), with avatars within each pair (e.g., Chinese female and European female) equated for attractiveness (ratings varied between 5.09 and 5.65 on a 1 to 10 scale) and age (ratings varied between 23.7 and 27.0 years), and near-ceiling agreement for the gender and race of individuals.

**Procedure.** Children and parents were tested in the university laboratory. We gave children the VR task first, followed by the Friend Choice task, the SDOc scale, and the RWAc scale. After mothers read the Information Sheet and signed the consent form, children were familiarized with the VR goggles by having their mothers wear them first. Then the child put on the goggles and could see the two avatars sitting at the table. The pre-recorded avatars waved to the child. The experimenter could loop segments of the pre-recorded video (e.g., waving) for as long as necessary. The experimenter showed the child the face puzzle (an outline of a face with the nose in place). The avatars each put the eyes in place on the puzzle, but then pondered as if unsure what to do next. The experimenter said, "First they put the eyes in the face. Hmmm. They can't seem to find the last piece, the mouth piece. I wonder where the mouth piece is ..." If the child did not immediately help either avatar, the experimenter prompted with, "Which one would you like to help first?" All children responded by passing the mouth piece to one of the avatars. First we used the two female avatars, then the experimenter had the child look away from the table and when s/he looked back, the two male avatars were seated at the table and the experimenter repeated the procedure again. We counterbalanced the side which each avatar sat on (e.g., European avatar on left versus right side). While children were involved with the VR task, mothers filled out the adult SDO and RWA scales. Each time the child chose to help the Asian avatar s/he received a score of "0", whereas each time the child helped the European avatar s/he received a score of "1". This meant that a child could score between 0 and 2, with 2 representing a European bias and 0 representing an Asian bias.

For the Friend Choice task, the experimenter said, "So, for the next part of the game, I am going to be showing you two different photos of people, and I want you to tell me which of the two people you want to play with. We will go through a few pairs of photos. Are you ready?" The experimenter then began the task. There were six mixed-race pairs and for each pair that the child chose a European child as playmate they were given a "1", whereas each time they chose an Asian child they were given a score of "0". Three of the mixed-race pairs included two females and three included two males. The two same-race pairs (one female-female and one male-male) were interspersed randomly within the eight pairs. We analyzed

only the mixed-race pairs. Thus, a score of 3 indicated no bias, a score below 3 indicated an Asian bias, and a score over 3 indicated a European bias.

Children were given the VR task first, then the Friend Choice task, then the RWAc and SDOc questionnaires.

## Results

The RWAc scale had acceptable reliability,  $\alpha = .777$ . However, there was one item with low reliability with the rest of the scale (item 6) so that we omitted this item (see Table 1 for final reliability). The SDOc scale had low reliability,  $\alpha = .587$ . There was one item in particular (item 10) that negatively affected the reliability. When this item was omitted, reliability increased to .600, although this level of reliability is still deemed questionable. Suspecting that the questions were not understandable for the youngest age group, we therefore examined reliability separately in the youngest versus the oldest two age groups. As suspected, reliability was poor in the youngest age group,  $\alpha = -.201$ , whereas it was acceptable over the two oldest age groups,  $\alpha = .700$ . As a result, our analyses are based on all children for the RWAc task, but only the two oldest age groups for the SDOc task. The *N*s, means, standard deviations, and alphas for the final measures of RWA, RWAc, SDO and SDOc are summarized in Table 1.

Table 4 includes the descriptive statistics for the main tasks, and Figure 2 plots children's scores on the RWAc and SDOc measures along with the adult scores from Study 1 for comparison. We used a univariate analysis of variance (ANOVA) with age group (young children, middle children, older children, adults) as the independent variable and RWAc score as the dependent variable. The effect for age group was significant, F(3, 183) = 43.20, p < .001,  $\eta_p^2 = .411$ . Tukey's test was used to test the differences between pairs of means (see Figure 2). RWAc decreased consistently across the four age groups. A similar analysis was used for SDOc scores (omitting the youngest age group), which also found a consistent decrease across the three age groups, F(3, 183) = 28.88, p < .001,  $\eta_p^2 = .317$ . Neither RWAc, nor SDOc, correlated with gender (both rs < .07, both ps > .560).

Next, we examined correlations with RWAc and SDOc (see Table 5). To this end, we partialled out age (because RWAc decreased with age) and the combined measure of mother and father education (because we wanted to know whether maternal attitudes were related to child attitudes independently of parents' general educational background). As stated above, correlations for SDOc are based just on the older two child age groups whereas analyses for all other variables are based on the full Study 3 sample. Higher SDOc correlated with higher

maternal SDO and maternal RWA. Higher RWAc correlated with children's tendency to choose a European rather than an Asian playmate in the Friend task, and there was also a marginally significant partial correlation with children's tendency to help the European rather than the Asian avatar in the VR task. Besides correlating with children's SDO, higher maternal SDO correlated with children's tendency to help the European rather than the Asian avatar and with higher maternal RWA. The correlation between maternal SDO and RWA is consistent with a number of other studies conducted in New Zealand (e.g., Duckitt, 2006; Sibley, Wilson, & Duckitt, 2007).

Because some of the correlations of theoretical interest failed to reach significance, we conducted a posthoc power analysis using G\*Power (Faul, Erdfelder, Lang, & Buchner, 2007). Expecting medium effects (r = .30), with statistical significance set at  $\alpha = .05$ , and with our sample size of 75, the power was at an acceptable level (.842).

#### Discussion

In Study 3, we gave the RWAc and SDOc scales to children. After deleting one item from the RWAc scale, the internal consistency was good. We also deleted one item from the SDOc scale, with acceptable reliability in the older two age groups. We then examined age-related change over the three child age groups and the adults from Study 1. SDOc and RWAc each decreased with age. Next, we examined correlations between the main variables, having partialled out children's age and mother/father education. Consistent with general findings of links between parent and child attitudes (Degner & Dalege, 2013), and providing evidence for the criterion validity of the SDOc scale, SDOc correlated with mothers' SDO and RWA scores. The correlation between RWAc and children's bias on the friend choice task to want to play with fellow European children (and marginal correlation indicating a similar bias to help the European avatar in the VR task), provide criterion (concurrent) validity for the RWAc measure. Finally, the maternal measure of SDO correlated with the child's tendency to help the European rather than the Asian avatar in the VR task, again consistent with previous findings that parental attitudes correlate with children's attitudes (Degner & Dalege, 2013).

#### Study 4

We had three aims in Study 4: (a) test the reliability of the RWAc scale with a larger set of items (the 32 items from Study 2) and a new group of children to ensure that the Study 3 results were not a facet of a particular group of RWA items, and (b) in an effort to provide additional validity for the RWAc scale, test whether children's performance on this scale was

related to a different kind of prejudice, anti-fat prejudice, given the known relation between RWA and anti-fat prejudice in adults (e.g., Crandall, 1994). We examined only RWAc and not SDOc due to restrictions in allowable testing time because data collection was carried out in a primary school rather than our lab as in Study 3, and also, because the available participants ranged from 5 years but Study 3 had established that there was no reliability for the SDOc scale below 8 years.

#### Method

**Participants.** The participants were 39 children between the ages of 5.00 and 11.92 (M = 9.52 years, 20 girls). Children were tested in a school in a small community. The school's decile rating (taking into account income, parent employment in low skill-level occupations, household crowding, parent education qualifications, and parent income support; Ministry of Education, 2015) was 5 (midway on the 1-10 scale).

**Materials and Procedure.** The RWAc scale used the 32 items from Study 2. For the anti-fat pictures, we initially ran a pilot study (n = 8, age range: 5-11,  $M_{age} = 7$ ) with eight pairs of images, asking participants to rate the weight of photographed children on a 1 to 5 scale. Children in the pilot study believed six of the pairs were significantly different in terms of weight (as measured by *t*-test), and those six image pairs were used as the six mixed-weight pairs in the present study. To mix up the items, we also used two same-weight pairs (average weight-average weight, and overweight-overweight). For the mixed-weight pairs the position of the average weight and overweight children (left/right) was counterbalanced. Three of the mixed-weight pairs included two boys and three included two girls. The children's clothes in each pair of photographs were identical (school uniforms with a generic logo made for the present study) and a hat was placed over each child's head to cover their face.

The eight pairs of photographs were then pseudo-randomized, with the six mixed pairs serving as experimental items, and the two same-weight pairs as control items. Children were shown each pair of photographs and asked, "How much would you like to be friends with this child?" Children's friendship ratings were given on the "thumbs" scale used for RWAc and SDOc, with thumbs labelled 1 to 5 (rather than -2 to +2). 1 was anchored by the description, "No, I don't think so", and 5 by the description, "Yes, I very much think so". We report only the results for the mixed-weight experimental items.

#### Results

The descriptive statistics for the measure of RWAc are summarized in Table 1. Across Studies 3 and 4, there was no relation between gender and RWAc, r = .064, p = .497. Non-parametric analyses (e.g., Spearman's correlations) were used because of non-normally distributed data. Figure 3 shows the age trend for the RWAc scale. As in Study 3, RWAc decreased over age, with age correlating negatively with RWAc, rs(37) = -.518, p < .001. We then calculated a weight bias score (mean friend rating for average-weight children minus mean friend rating for overweight children). A positive score meant children gave higher friend ratings to average-weight children than overweight children. The weight bias score did not correlate with age, rs(37) = -.158, p = .337, indicating that weight bias was relatively constant over age. Given the correlation between age and RWAc, we then calculated non-parametric partial correlations, partialling out age. RWAc correlated with weight bias both before controlling for age, rs(37) = .400, p = .012, and after controlling for age,  $rs_p(36) = .377$ , p = .020. Thus, children with higher RWAc scores were more likely to rate average-weight children as potential friends.

#### Discussion

Like Study 3, Study 4 indicated that RWAc correlated with prejudice. Moreover, we tested a different group of children, used different RWAc items in the two studies, and we examined different kinds of prejudice (anti-Asian versus anti-fat). The similar results help to show that the findings were not due to idiosyncrasies in the sample, RWAc items, or prejudice task. Furthermore, in both studies, the RWAc measure was reliable in the sense that it had good internal consistency.

#### **General Discussion**

Right-wing authoritarianism (RWA) and social dominance orientation (SDO) are frequently measured attitudes in adults that are associated with discrimination toward outgroups. In the present study, we created analogous scales for children: RWAc and SDOc. In the first and second studies, we gave these child scales to a group of adults, along with the typical adult scales. The two child scales had good to excellent reliability. Further, there was evidence for criterion (concurrent), convergent and discriminant validity in that each scale correlated with the adult scales in the predicted manner (SDOc correlating significantly more highly with the adult SDO scale than the adult RWA scale; RWAc correlating significantly more highly with the adult RWA scale than the adult SDO scale).

In the third study, we gave the child scales to children aged 6 to 12 years. The RWAc scale had good reliability over the entire sample, whereas the SDOc scale had good reliability only for children aged 8 years and over. At the outset we claimed that the attitudes measured by the RWA and SDO scales likely begin in childhood. That was indeed the case, with levels

of RWA and SDO *higher* early in childhood compared to later, and when compared to adults. This result bears on the original claims of Altemeyer (1998) who argued that right-wing attitudes would crystallise in early adulthood. Although right-wing attitudes might indeed crystallize in young adulthood, they are certainly present much earlier and appear to decline rather than increase through to early adulthood. Once again, this finding points to the importance of studying childhood when trying to understand the onset of RWA and SDO.

Even after controlling for child age and parental education, the two child scales correlated in sensible ways with the other measures. For instance, the SDOc scale correlated with maternal SDO and RWA, consistent with findings that children's attitudes are influenced by parental attitudes (Degner & Dalege, 2013), and providing criterion validity for the SDOc scale. The RWAc measure correlated with the friend choice task (such that children with higher RWAc scores showed an ingroup bias by wanting to play with fellow European children more than Asian children), and marginally with the VR task (such that children with higher RWAc scores showed an ingroup bias by sharing preferentially with the European avatar compared to the Asian avatar). These findings are consistent with those discerned amongst adults (Kite & Whitely, 2016; Sibley & Duckitt, 2008), indicating a correlation between adult RWA and discrimination, and again provide criterion validity for the RWAc scale. In addition, mothers with higher SDO had children who showed more of an ingroup bias on the VR task, again consistent with the idea that children's attitudes are influenced by parental attitudes (Degner & Dalege, 2013).

In the fourth study, we gave a modified RWAc scale that included 12 items additional to those used in Study 3 to another group of children. This new 32-item RWAc scale also had good reliability. As in Study 3, RWAc declined over age whereas prejudice did not change. Importantly, even after controlling for children's age, there was a significant correlation between RWAc and anti-fat prejudice, just as in adults (Crandall, 1994). Thus, in both Studies 3 and 4, RWAc correlated with prejudice despite differences in the exact RWAc scale used and the measure of prejudice. This is important for showing that our results are not a function of peculiarities in particular items or the type of prejudice measured.

The good inter-item reliabilities in all four studies, the correlations between child and adult measures, and between the two child measures in Studies 1 and 2, the correlations between parent and child attitudes in Study 3, and the correlations between RWAc and prejudice in Studies 3 and 4, show clearly that children's responding on the RWAc and SDOc scales was not random and was instead indicative of meaningful latent attitudes. Although the SDOc scale seemed too difficult for the youngest age group in Study 3, the general pattern of

our findings simply would not have occurred if children did not understand the questions, or their responses were simply due to question wording biases.

Despite the promise in the findings overall, an important question is why RWAc and SDOc decreased over age, whereas prejudice remained stable. In fact, our findings are similar to that of Hussak and Cimpian (2018) who found that their measure of conservatism decreased with age. One thing that is clear is that there are multiple contributors to prejudice in addition to an authoritarian personality, including (a) sociological factors (such as the norms that children encounter in their environment), (b) the realistic threat (taking jobs) or symbolic threat (different culture) that children perceive (e.g., from immigrants), or (c) an inherent human tendency to categorize others into an in-group and out-group, and then discriminate against the outgroup (Duckitt, 1992). Because an authoritarian personality is but one of many potential contributors to prejudice, one shouldn't expect an exact correspondence between prejudice and RWA.

Nevertheless, a lack of correspondence between prejudice and RWA does not explain why prejudice remained stable whereas RWA and SDO declined. Perhaps the most likely explanation for the different developmental trajectory comes from the dual process theory of prejudice. This states that higher RWA is associated with perceived threat, whereas higher SDO is associated with competitiveness (Duckitt, 2006). If so, our findings suggest that threat and competitiveness might also decrease over age. Consistent with this idea, a recent review article examining biological indications of threat (event-related potentials and fMRI), and observational data (gaze duration and response time) indicates that threat perception decreases from birth to 19 years across all measures (Miller, 2014). Likewise, there are various studies indicating that competitiveness also decreases with age (Ahlgren & Johnson, 1979; Charlesworth, 1996; Hawley, 1999; Pellegrini, 2008; Strayer & Strayer, 1976). Although we did not measure threat or competitiveness in the present study, decreases in each would help explain why RWA and SDO reduced with age. In contrast, prejudice as measured in the present study (toward overweight individuals or different ethnicities), does not relate as clearly to competitiveness or threat (either symbolic threat due to different values, or realistic threat due to competition for resources). Instead, it tends to stem more exclusively from the attitudes of others, leading to stronger parent-child links as children get older due to greater influence over an extended period of time (as shown in the Degner & Dalege, 2013 meta-analysis).

Limitations and future directions

Despite their promise, the RWAc and SDOc scales had limitations. In Study 3, the reliability of the SDOc scale was poor before 8 years of age, and it did not correlate with the Friend Choice or VR task. It might be that the SDOc items are worded in a softer manner than the adult items, thereby losing some of the essence of a dominance mindset. Further, although parent RWA and SDO correlated with SDOc, they did not correlate with RWAc. This might simply be a function of the messiness of giving tasks to children who are prone to distraction, leading to error variance and non-significant correlations. Indeed, in the introduction we noted a similar messiness in the findings of parent-child correlations for RWA and SDO in Guidetti et al. (2017).

A second limitation is that the child samples came from the general population whereas the adults were from university samples. Wilson and Sibley (2013) found that RWA in the general population in New Zealand is higher than in university samples, although SDO was near identical. Thus, sampling could have affected the age comparison for RWA in Figure 2. Likewise, although there were no gender differences for children on the RWAc and SDOc scales, there are gender differences in adult RWA, with RWA typically higher in women than men (Brandt & Henry, 2012), whereas SDO is typically higher in men (Pratto et al., 1994). Given the predominance of females in our adult samples, these gender differences might have led to a slight underestimate of the reduction in RWA from childhood to adulthood, but a slight over-estimate of the reduction in SDO from childhood to adulthood (see Figure 2).

A final limitation is that our findings for children were obtained in New Zealand. Therefore, it is important to test these scales in other developed nations as well as developing nations.

Future research should continue to examine the psychometric aspects of these scales, as well as the development of SDO and RWA through the teenage years. Also, a longitudinal study would be helpful for at least two reasons. First, it could examine the predictive validity of the RWAc and SDOc scales (e.g., ability to predict future discrimination). Second, we found that SDO and RWA are generally higher in childhood than adulthood, but these analyses were based on cross-sectional age group differences rather than individual change. Although our findings suggest that it is reasonable to assume that there is a decrease in RWAc and SDOc over age, a longitudinal study could provide more robust evidence both for the extent of age-related stability (such that individuals with higher SDOc/RWAc at Time 1 also have higher scores at Time 2), as well as age-related change (such that individuals' levels of SDOc/RWAc drop through childhood). Finally, it would be useful to further

examine the transmission of parental attitudes to children, as well as whether RWAc and SDOc are as malleable as they are in adults (see Brown, 2010; Kite & Whiteley, 2016). **Summary and Conclusions.** 

RWA and SDO are extensively researched measures of adult attitudes and are predictors of social, political and inter-group behavior. The present study is the first to demonstrate that these attitudes begin in childhood and, in fact, *decrease* through to adulthood. The present study also provided evidence of the reliability and validity of the RWAc scale for children aged at least 7 years and above, and of the SDOc scale for children aged 8 and above. Our study provides a promising beginning for the measurement of RWA and SDO in children.

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Note Regarding Data Sharing: The data that support the findings of this study are available from the corresponding author upon reasonable request.



**Appendix 1: SDOc Items** 

- <sup>1</sup>1. Some groups of people are just not as good as others. (positive wording)
- <sup>1</sup>2. It would be good if different groups of people had the same things in life. (negative wording)
- <sup>1</sup>3. We should try to make sure that different groups of people get the same things. (negative wording)
- <sup>1</sup>4. It is OK if some groups have more of a chance in life than others. (positive wording)
- <sup>1</sup>5. All groups of people should be given the same chances in life. (negative wording)
- <sup>1</sup>6. To do well in life it is sometimes OK to be mean to other groups. (positive wording)
- <sup>1</sup>7. We should do what we can to make sure different groups have the same kind of life. (negative wording)
- <sup>1</sup>8. We would have fewer problems if we treated people more fairly. (negative wording)
- <sup>1</sup>9. If some groups of people just accepted they weren't as good as others we would have fewer problems. (positive wording)
- <sup>1</sup>10. We should try to make sure that people make the same amount of money when they work. (negative wording)
- <sup>1</sup>11. It is probably a good thing that some groups of people are at the top and other groups are at the bottom. (positive wording)
- <sup>1</sup>12. Groups of people who are not as good as others should not try to change this. (positive wording)
- <sup>1</sup>13. No one group of people should always be the best. (negative wording)
- <sup>2</sup>14. To get what you want, it is OK to be mean to people who stand in your way. (positive wording)
- <sup>2</sup>15. Sometimes other groups of people should try to be the best. (negative wording)

*Note*. <sup>1</sup>Items used in Studies 1 to 3. <sup>2</sup>Additional items used in Study 2.



**Appendix 2: RWAc Items** 

- <sup>1</sup>1. What our school needs most is for everyone to do what our teachers say. (positive wording)
- <sup>1</sup>2. It's okay for children to say that teachers don't always know what is right. (negative wording)
- <sup>1</sup>3. Children should learn to always do what their parents say. (positive wording)
- <sup>1</sup>4. The world would be great if we always did what our parents and teachers said. (positive wording)
- <sup>1</sup>5. People should be allowed to say when they think that leaders are not doing a good job. (negative wording)
- <sup>1</sup>6. People should stop teaching children to always do what they are told. (negative wording)
- <sup>1</sup>7. People are happiest when they do what their parents and teachers tell them to. (positive wording)
- <sup>1</sup>8. Children should always do what their parents and teachers say because they know what is best. (positive wording)
- <sup>1</sup>9. Parents and teachers should always be followed. (positive wording)
- <sup>1</sup>10. People should not just do the same things that others have done before. Instead, they should try out lots of new things to do. (negative wording)
- <sup>1</sup>11. Children should always try to do things the same way as their parents. (positive wording)
- <sup>1</sup>12. People should not do the things that God says are bad. (positive wording)
- <sup>1</sup>13. The world would be better if people did the things that their family wants them to. (positive wording)
- <sup>1</sup>14. We should try to do things the same way as our parents and grandparents. (positive wording)

- <sup>1</sup>15. Being kind to bad people will only make them more nasty, so it's better to send them to jail. (positive wording)
- <sup>1</sup>16. We need to send more people to jail to make things right in the world. (positive wording)
- <sup>1</sup>17. There are so many bad people in the world more should be sent to jail to teach them how to behave. (positive wording)
- <sup>1</sup>18. We should crush all the bad people who cause trouble in the world. (positive wording)
- <sup>1</sup>19. Things are getting so bad that we should send more bad people to jail to make the country better. (positive wording)
- <sup>1</sup>20. Our country would be better if our laws were tougher and more people were sent to jail. (positive wording)
- <sup>2</sup>21. It's great that children today can say and do different things than their parents want them to. (negative wording)
- <sup>2</sup>22. People should say when they think rules and laws are wrong. (negative wording)
- <sup>2</sup>23. It is better for the world when people can say they don't like the things our leaders do. (negative wording)
- <sup>2</sup>24. The way my grandparents lived their lives is not the way for me. (negative wording)
- <sup>2</sup>25. People should do things their own way, even if that makes them different from everyone else. (negative wording)
- <sup>2</sup>26. Many books written today are teaching people the wrong things. (positive wording)
- <sup>2</sup>27. People should not just listen to their parents and should work out what is right and wrong for themselves. (negative wording)
- <sup>228</sup>. When our leaders are strong and tough that makes our country worse. (negative wording)
- <sup>2</sup>29. Our world does NOT need leaders who are tough or laws that send more people to jail. (negative wording)
- <sup>2</sup>30. Our jails are not good. People in jail are unlucky and should be treated better. (negative wording)
- <sup>2</sup>31. When people break the law we should be nice to them and try to help them. (negative wording)
- $^{2}$ 32. Even if people do really bad things we should never hurt them. (negative wording)

*Note*. <sup>1</sup>Items used in all four studies. <sup>2</sup>Additional items used in Studies 2 and 4.

## Table 1

Descriptive Statistics for Measures of RWA, SDO and Prejudice in Studies 1 to 4

	Study 1				Stuc	dy 2		Study 3			Study 4					
	N	М	SD	α	Ν	М	SD	α	Ν	М	SD	α	Ν	М	SD	α
Child RWA <sup>1</sup>	112	-0.94	0.61	.916	146	-0.77	0.43	.875	75	-0.03	0.61	.801	39	0.27	0.78	.873
Child SDO <sup>1</sup>	112	-1.26	0.53	.807	146	-0.70	0.54	.820	53	$-0.72^5$	$0.60^{5}$	.700 <sup>5</sup>				
Adult RWA <sup>2</sup>	112	3.45	1.10		146	3.81	1.29	.933	75	3.43	0.93	.909				
Adult SDO <sup>3</sup>	112	2.28	0.94		146	2.89	1.35	.903	75	1.76	0.80	.901				
Prejudice <sup>4</sup>					146	2.80	0.61	.886								

*Note.* <sup>1</sup>Range: -2 to +2. <sup>2</sup>Range: 1 to 7 in Studies 1 and 2; 1 to 9 in Study 3. <sup>3</sup>Range: 1 to 7. <sup>4</sup>Range: 1 to 5. <sup>5</sup>Based on the older two age groups only.

# Table 2Correlations Between Main Variables for Adult Respondents in Study 1

	Adult SDO	RWAc	SDOc
Adult RWA	.540 <sup>c</sup>	.747 <sup>c</sup>	.413 <sup>c</sup>
Adult SDO		.407 <sup>c</sup>	.755°
RWAc			.404 <sup>c</sup>

*Note*. <sup>*c*</sup>*p* < .001.

## Table 3Correlations Between Main Variables for Adult Respondents in Study 2

_		Adult SDO	RWAc	SDOc	Prejudice
201	Adult RWA	.420 <sup>c</sup>	.727 <sup>c</sup>	.489 <sup>c</sup>	.416 <sup>c</sup>
	Adult SDO		.464 <sup>c</sup>	.761 <sup>c</sup>	.475 <sup>c</sup>
	RWAc			.540 <sup>c</sup>	.443 <sup>c</sup>
	SDOc				.567 <sup>c</sup>

*Note*. <sup>*c</sup></sup><i>p* < .001.</sup>

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#### Table 4

Descriptive Statistics for Main Variables for Child Respondents in Study 3

		Age Group			
	Younger	Middle	Older		
Mother/Father Education $(1-5)$	2.53	2.61	2.21		
Friend Choice Task $(0-6)^1$	3.77 <sup>a</sup>	3.96 <sup>b</sup>	3.20		
VR Task $(0-2)^2$	1.32 <sup>a</sup>	1.05	1.17		
Parent SDO (1 – 7)	1.69	1.62	1.93		
Parent RWA $(1-9)$	3.27	3.36	3.62		

*Note.* <sup>1</sup>There were six mixed race pairs and for each pair that the child chose a European child as playmate they were given a "1", whereas each time they chose an Asian child they were given a score of "0". Thus, a score below 3 indicates an Asian bias, whereas a score over 3 indicates a European bias. <sup>2</sup>There were two trials, one for the female avatars and one for the male avatars. Each time the child chose to help the Asian avatar s/he received a score of "0", whereas each time the child helped the European avatar s/he received a score of "1". Thus, a score below 1 indicates an Asian bias, whereas a score over 1 indicates a European bias. <sup>a</sup>p < .05 (against chance). <sup>b</sup>p < .01 (against chance).

## Table 5

Partial Correlations with RWAc and SDOc for Child Respondents in Study 3 (Partialling out Age and Mother/Father Education)

	RWAc	Mother	Mother	Friend	VR
		SDO	RWA	Choice	Task
SDOc <sup>1</sup>	.178	.401 <sup>b</sup>	.379 <sup>b</sup>	.117	.036
RWAc <sup>2</sup>		033	.132	.279 <sup>a</sup>	.201 <sup>t</sup>
Mother SDO <sup>2</sup>			.575 <sup>c</sup>	.090	.412 <sup>c</sup>
Mother RWA <sup>2</sup>				.168	.163
Friend Choice <sup>2</sup>					.166
VR Task <sup>2</sup>					

*Note*.  ${}^{a}p < .05$ ,  ${}^{b}p < .01$ ,  ${}^{c}p < .001$ . <sup>1</sup>The SDOc scale includes only the older two age groups. <sup>2</sup>All other correlations are based on the full sample. Friend Choice: a positive bias indicates a tendency for children to choose European playmates. VR (Virtual Reality) Task: a positive bias indicates a tendency for children to help the European avatar. List of Figures

*Figure 1*. Example image through virtual reality goggles in Study 3.

Figure 2. Age differences in RWAc and SDOc over Studies 1 and 3.

*Note*. The children were tested in Study 3 using the RWAc and SDOc measures, and the adults in Study 1. RWAc: different lower-case letters (e.g., a vs. b) indicate significant differences between age groups. SDOc: different upper-case letters (e.g., A vs. B) indicate significant differences between age groups. Young children: n=22. Middle children: n=23. Older children: n=30. Adults: n=112.

*Figure 3*. Age differences in RWAc in Study 4. N = 39.





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