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Social dominance orientation in children: The validation of the long and short version of the child SDO$_6$ scale

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ABSTRACT
We aimed to validate a long and a short version of the popular SDO$_6$ scale for children, by testing their reliability and factorial structure, as well as divergent and criterion validity. Italian fourth- and fifth-graders ($N = 271$; 49.45% female) were administered the Child SDO$_6$ scale, composed of 16 items, along with a series of personality and intergroup relations measures (using foreigners as the minority group). Paralleling results obtained with adults, findings concerning the short version provided evidence for a two-factorial structure, consisting of an SDO-Dominance and an SDO-Anti-egalitarianism dimension. Both for the long and the short version, greater levels of SDO-Dominance and SDO-Anti-egalitarianism were associated with more neuroticism, attitudinal and stereotypic bias, and with less agreeableness, openness to experience, dispositional and intergroup empathy. In conclusions, the two SDO dimensions as assessed by the short Child SDO$_6$ Scale may be relevant variables to consider when testing intergroup relations processes among children.

Social dominance orientation is defined as a general preference for unequal status relationships, or the desire for group-based dominance (Sidanius & Pratto, 1999). High-SDO individuals are typically characterized by aggression tendencies and coldness, they are scarcely empathic,

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vindictive and tough-minded, and prefer a society characterized by a high ratio of power differential between groups (Pratto et al., 2006). Research has demonstrated that SDO powerfully predicts prejudice across different contexts towards a wide range of groups, such as Blacks, immigrants, gay people, disabled people (Pratto et al., 2006). It is, therefore, a key variable to consider when examining intergroup relations.

Surprisingly, research considering SDO in children is scant. Since SDO is an important variable for scholars interested in intergroup relations and can have wide applicability in child studies, we argue that a validated measure is needed. Therefore, in the present study, we validated the SDO_6 scale (the most popular scale used to assess SDO in adults; Sidanius & Pratto, 1999) with a sample of 8 to 10 years old majority children. We tested the psychometric properties of the 16-item scale (as in the original version for adults) as well as of a 10-item scale. The long version would better serve the purpose of comparing results obtained with children with those obtained with adults, while the short version could be more suitable under time constraints or when administering long questionnaires.

SDO and children's development

The meta-analysis by Raabe and Beelmann (2011) showed that prejudice increases from 2–4 (early childhood) to 5–7 years (middle childhood) and declines between 8 and 10 years (late childhood). These patterns may indicate that children in middle-late childhood start to be sensitive to the larger social context, taking into account status relations and differences between majority and minority groups.

These considerations are consistent with cognitive-developmental theory (Aboud, 2008), which considers changes in prejudice as related to corresponding changes in cognitive abilities. While early emergence of prejudice may largely depend on cognitive limitations, subsequent changes may be a function of greater cognitive flexibility and newly acquired cognitive abilities such as abstract reasoning (Doyle & Aboud, 1995).

The greater cognitive flexibility that children acquire in middle-late childhood makes them better equipped to perform comparisons between groups, by considering the differences and similarities between members of different groups, as well as the group status differential. A relevant cognitive advancement in this sense is related to the development of multiple classification skills, allowing children to consider multiple

classifications simultaneously and providing them with a more sophisti-cated view of group memberships within the society (Aboud, 2003). Further skills that develop in middle-late childhood are theory of mind and perspective-taking (Abrams et al., 2008); consistent with morality development, they allow a better understanding of group norms and group positioning in society.

Based on this literature, we argue that SDO develops around middle-late childhood, and that it can be a critical variable in the development of children's prejudice. SDO implies that individuals are aware of differences between groups of different status and power as well as of different group categorizations which ultimately have an impact on their relative status position, on unequal treatment of individuals and on the impor-tance of achieving group equality. These considerations are strongly related to the development of abstract reasoning, cognitive flexibility, and adherence to group norms. They are also consistent with children's development of morality, which is concerned with treatment of others and justice.

Surprisingly, studies examining SDO in children are sparse. One excep-tion is represented by Vezzali et al.'s (2018) study, which tested SDO as a mediator between intergroup contact and outgroup attitudes among majority children aged approximately 8–10 years. They used, however, a loose operationalization of SDO, based on the adaptation of two items from the SDO_6 scale. Imhoff and Brussino (2017, 2019) validated the Argentinian version of the SDO_6 scale for use among children aged 9–11 years, with the final version composed of 10 items capturing two dimensions (orientation towards dominance and egalitarianism). However, the English translation is not available, and analyses were mostly exploratory, providing however ground for further validations.

The present study

In this study, we aimed to validate a long and a short child version of the SDO_6 scale. The Italian version of the SDO_6 scale (Aiello et al., 2005) was adapted and administered to Italian (i.e., majority group) fourth- and fifth-graders, along with personality and intergroup relations measures. We administered three Big Five personality dimensions, which were expected to be significantly correlated with SDO (positively for agreeableness and openness to experience, negatively for neuroticism), and dispositional empathy, which should relate negatively to SDO (Pratto et al., 2006). As

for intergroup relation measures, we administered measures of inter-group empathy, attitudes, and stereotypes towards the minority group (i.e., foreign children), all expected to negatively correlate with SDO (Pratto et al., 2006).

Ho et al. (2012) found that the SDO_6 scale consists of two distinct factors, reflecting opposition to group-based equality (SDO-Anti-egalitarianism) and dominance (SDO-Dominance). Since the literature revealed mixed findings as to whether SDO is better represented by a one-factor or a two-factor solution, we tested these two competing models for both the long and short version of the scale.

Method

Participants and procedure

Participants were 271 Italian (i.e., with both parents being Italian), fourth- and fifth-graders (50.55% males, $n = 137$, 49.45% females, $n = 134$; M_{age} = 9.82, $SD = 0.69$), enrolled in 27 classes from eight primary schools located in Northern Italy. The target minority outgroup was represented by foreigners. This term was defined as 'children coming from a country different from Italy or children born in Italy with both foreign parents.'

The area of data collection included 11.97% of foreigners, i.e. residents without Italian citizenship (Italian average, 8.7%, ISTAT, Italian National Institute of Statistics, 2020); the percentage of foreigners in the area exam-ined increases when considering foreign students attending fourth and fifth grades in the schools located in the same area (18.30%; https://www.tuttitalia.it/lombardia/32-mantova/statistiche/popolazione-eta-scolastica-2019/).

Written informed consent was obtained from parents or legal guar-dians. The study received ethical approval from the Ethics Committee of the Department of Human Sciences (University of Verona).

Following teachers' suggestions on a pre-test (where SDO was nega-tively associated with the attribution of mental states to outgroup mem-bers), as well as teachers' additional comments, items were posed in form of questions in order to be more understandable for children. The final version of the scale is presented in (Table 1).

After receiving written information (on the first page of the question-naire) defining 'foreign children' and 'Italian children' (see Supplementary materials), participants individually completed a questionnaire during classes.

Table 1. Items of the Child SDO_6 Scale (short and long versions) and standardized factor loadings for the two-factor solution in the CFA.

Item	SDO-Dominance		SDO-Anti-egalitarianism	
	16 items (α = .73)	10 items (α = .71)	16 items (α = .82)	10 items (α = .87)
2. Are some groups of people inferior to other groups?	.52	.49	– –	
4. In getting what people want, is it sometimes necessary to use force?	.55	.60	– –	
6. Should some groups of people be kept in their place, in order to not create problems?	.37	– –	– –	
8. Should some groups of people be forbidden from doing what they want?	.27	– –	– –	
12. To get ahead in life, is it sometimes necessary 'to step' on other groups?	.70	.80	– –	
13. Should inferior groups stay in their place?	.57	.49	– –	
15. Is it fair that some groups are more worthy than others?	.58	.53	– –	
16. Is it fair that some groups have more chances in life than others?	.47	– –	– –	
1. Should all people earn the same amount of money? (R)	– –		.46	– –
3. Would it be good if all groups were equal? (R)	– –		.79	.79
5. Would we have fewer problems if we treated people more fairly? (R)	– –		.23	– –
7. Should equality between groups be increased? (R)	– –		.73	.73
9. Should all groups be able to do the same things? (R)	– –		.64	.63
10. Should no single group dictate in society? (R)	– –		.30	– –
11. Should all groups be equal? (R)	– –		.85	.85
14. Should we find a way to make the conditions between groups equal? (R)	– –		.83	.83

Note. SDO = social dominance orientation; CFA = confirmatory factor analysis. Items for the Anti-egalitarianism dimension were recoded [indicated with (R)], so that higher scores indicated higher Anti-egalitarianism. Standardized factor loadings are reported.

Measures

Unless otherwise indicated, all measures were answered on a 5-point scale (1 = *not at all*, 5 = *very much*). Measures were administered in Italian; scales (except SDO) had already been used with Italian children samples.

SDO

We used the 16 items presented in (Table 1) (αs = .71 and .83 for the SDO-Dominance and SDO-Anti-egalitarianism dimensions, respectively).

Personality

We used three scales (13 items each) of a Big Five Questionnaire child version (Barbaranelli et al., 2003), assessing agreeableness, neuroticism, openness to experience (αs = .81, .81, .83, respectively).

Dispositional empathy

The Italian 11-item version (Caravita et al., 2009) of the How I Feel in Different Situations questionnaire was used (Bonino et al., 1998) (α = .81).

Intergroup empathy

Five items (e.g., 'If a foreign child I know were upset, I would also feel upset') were used, adapted from Swart et al. (2011) (α = .83).

Attitudinal bias

Children rated both Italians (α = .75) and foreigners (α = .83) on six adjectives (e.g., negative), adapted from Wright, Aron, McLaughlin-Volpe, and Ropp (1997). We calculated the difference between the two indices, so that higher scores represented greater bias in favour of Italians (bias measures are commonly employed in intergroup relation studies, e.g., Birtel et al., 2019).

Stereotypical bias

We used an adapted version of the Multiple Response Racial Attitude measure (Aboud, 2003; see also Birtel et al., 2019). Participants were presented with 15 traits, 8 positive (e.g., clean) and 7 negative (e.g., dirty). For each trait, children had to decide whether to assign it to an Italian, a foreign or both children (or neither of them). After creating an ingroup and outgroup bias index by subtracting negative from positive traits for each group, a stereotypical bias index was created by subtracting outgroup from ingroup bias scores (ranging from −15 to +15), with higher scores indicating greater bias.

When bias indices are replaced with outgroup attitudes and outgroup stereotypes in the analyses, results do not change.

Results

In total, 0.88% of data were missing, ranging from 0% to 1.39% at the variable level. Full information maximum likelihood (FIML) was used to deal with missing data (Graham, 2009) using MPlus 8.3 (Muthén & Muthén, 1998–2017).

We used the Maximum Likelihood estimation with robust standard errors because of the non-normal nature of the data. In addition, we employed a sandwich estimator for standard errors in order to take into account the nested nature of the data (i.e., participants nested within classes).

Confirmatory factor analysis

The factorial structure of the 16-item version was investigated with a confirmatory factor analysis (CFA). Two competing models were tested: a) a one-factor model; b) a two-factor model with SDO-Dominance (items: 2, 4, 6, 8, 12, 13, 15, 16) and SDO-Anti-egalitarianism (items: 1, 3, 5, 7, 9, 10, 11, 14; Table 1) as latent variables. A satisfactory model fit is indicated by a nonsignificant χ^2, a RMSEA smaller than .06, a CFI higher than .95, a TLI higher than .95, and an SRMR smaller than .08 (Hu & Bentler, 1999). AIC (Akaike, 1974) and BIC (Claeskens & Hjort, 2008) indices were used to compare the two competing models; smaller values indicate a better trade-off between model fit and model complexity.

The two-factor solution presented a better model fit compared to the one-factor solution (Table 2). However, some fit indices were departing from their respective cut-off value.

To validate the short version, for each dimension we selected the five items with the highest (completely) standardized factor loadings (see Table 1). A one-factor solution was compared against a two-factor solution. The model fit for the two-factor solution was adequate (though CFI and TLI were slightly below their cut-off value) and better than the model fit for the one-factor solution (Table 2).

Table 2. Model comparison for the one-factor and the two-factor solutions (long and short versions of the scale) .

	Model	df	χ^2	RMSEA	CFI	TLI	SRMR	AIC	BIC
16 items	One-Factor	104	435.08***	.108	.658	.606	.119	14,264.22	14,437.12
	Two-Factor	103	191.39***	.056	.909	.894	.063	13,985.68	14,162.19
10 items	One-Factor	35	238.06***	.146	.716	.635	.131	8689.36	8797.42
	Two-Factor	34	70.23**	.063	.949	.933	.059	8486.36	8598.02

Note. RMSEA = Root Mean Square Error of Approximation; CFI = Comparative Fit Index; TLI = Tucker Lewis Index; SRMR = Standardized Root Mean Square Residual; AIC = Akaike Information Criterion; BIC = Bayesian Information Criterion.
** $p < .01$. *** $p < .001$.

Construct validity

We examined the factorial structure of Big Five dimensions, empathy and intergroup bias measures using CFA with single items as manifest indicators. Some fit indices did not meet their cut-off value: $\chi^2(1389) = 1901.91$, $p < .001$; CFI = .872; TLI = .864; SRMR = .068; RMSEA = .037.

Nevertheless, we tested divergent (whether the factors represented different constructs) and criterion (whether the SDO dimensions were significantly associated with the other variables) validity, using CFA with parcels instead of

single items (Little et al., 2002). Item aggregation has several advantages. Compared to separated items, parcels have higher reliability, greater communality, higher ratio of common-to-unique factor variance, lower likelihood of distributional violations, tighter and more equal intervals. Models with parcels have fewer parameter estimates, lower indicator-to-sample size ratio, lower likelihood of correlated residuals, and fewer sources of sampling error (Little et al., 2013). Two CFAs were tested (one for the short and one for the long SDO scale), which included seven latent variables (SDO dimensions, Big Five dimensions, dispositional empathy, intergroup empathy, stereotypical and attitudinal bias). A different number of parcels were created for each latent construct, according to the number of items composing the measure: two for intergroup empathy, four for each Big Five dimension, three for each 16-item SDO dimension and two for each 10-item SDO dimension. For stereotypical and attitudinal bias, observed variables were used.

For the model including the 16-item SDO scale, fit indices were acceptable, $\chi^2(241) = 324.54$, $p < .001$; CFI = .967; TLI = .959; SRMR = .046; RMSEA = .036. To test divergent validity, the average variance extracted (AVE) versus shared variance method (SV) was employed (Fornell & Larcker, 1981). Since both AVEs (.41 for SDO-Dominance, and .57 for SDO-Anti-egalitarianism) are greater compared to SVs with the other constructs (.03 ≤ SV ≤ .20 for SDO-Dominance, and .02 ≤ SV ≤ .18 for SDO-Anti-egalitarianism), suggesting that the two SDO dimensions are distinct from the other variables.

Also, for the model including the 10-item SDO scale, fit indices were satisfactory: $\chi^2(196) = 240.19$, $p < .05$; CFI = .982; TLI = .977; SRMR = .036; RMSEA = .029; AVEs for dominance and anti-egalitarianism were .58 and .77, respectively, greater than the SVs with the other constructs, SVs ≤ .20 (Table 3).

For both versions of the Child SDO scale, the two dimensions were associated with the other variables in the expected direction (Table 3); correlations represented small to medium effect sizes (Cohen, 1988).

Since males are generally more socially dominant than females (Pratto et al., 2006), a further analysis with exploratory purposes was conducted to investigate potential moderator effects of gender with no a-priori prediction. Differences emerged for SDO-Dominance, with males ($M = 2.22$, $SD = 0.80$) showing higher Dominance than females ($M = 2.02$, $SD = 0.68$), $t(269) = 2.22$, $p < .05$, $d= 0.28$; no significant difference emerged for SDO-Anti-egalitarianism (males: $M = 2.71$, $SD = 1.01$; females: $M = 2.87$, $SD = 1.03$), $t(269) = 1.26$, ns, $d= 0.22$. We also compared correlations between latent factors for males and females by applying multiple group analysis using the

Table 3. Correlations between latent factors in the divergent and criterion validity analysis.

	1	2	3	4	5	6	7	8	9
1. SDO-Dominance	-	.26**	−.22**	−.29***	−.40***	.24**	−.42***	.27***	.45***
2. SDO-Anti-egalitarianism	.36***	-	−.21*	−.29***	−.31***	.13*	−.35***	.23***	.28***
3. Dispositional empathy	−.20**	−.25**	-	.73***	.49***	.11	.46***	−.19*	−.20*
4. Intergroup empathy	−.25***	−.36***	.73***	-	.47***	−.02	.36***	−.38***	−.26***
5. Agreeableness	−.34***	−.37***	.49***	.47***	-	−.29***	.56***	−.16*	−.19*
6. Neuroticism	.19*	.15*	.11	−.02	−.29***	-	−.30***	.05	.07
7. Openness to experience	−.37***	−.42***	.46***	.36***	.57***	−.30***	-	−.18***	−.09
8. Attitudinal bias	.30***	.28***	−.19**	−.38***	−.16*	.05	−.18***	-	.42***
9. Stereotypical bias	.45***	.32***	−.20**	−.25***	−.19*	.07	−.08	.42***	-

Note. SDO = social dominance orientation. Below the diagonal correlations considering the longer version of the scale (16 items) are reported; above the diagonal correlations considering the shorter version of the scale (10 items) are reported.
*p < .05. **p < .01. ***p < .001.

Wald test for parameter constraints. Gender differences were found, $\chi^2 s(1) \geq 3.56$, with stronger correlations for males than females.

Discussion

In the present study, we aimed to validate a long and a short version of the SDO$_6$ scale for children. Consistent with findings obtained with adults (Ho et al., 2012), for both the long and short version of the scale the two-factor solution consisting of two distinct dimensions – SDO-Dominance and SDO-Anti-egalitarianism – explained the data better than the one-factor solution. However, while for the short version the model fit of the two-factor solution was satisfactory (albeit CFI and TLI were slightly below their respective cut-off), for the long version the two-factor model did not provide a fully adequate fit. One reason for this imperfect fit could rely in the standardized loadings of two items (item 5 and 10), both lower than .40. Based on these findings, the use of the short version of the scale should be preferred over the long version. Furthermore, similar to the results by Imhoff and Brussino (2017), our findings concerning the two-factor solution of the short version showed that the two SDO dimensions were only weakly correlated.

The aims of this article are consistent with Abrams and Killen (2014) call for a focus on group identity and group dynamics in developmental research. The study of SDO captures these dimensions, as it closely relates to the

conceptualizations of society as composed of different groups organized in hierarchies.

In line with findings obtained with adults, both SDO dimensions were correlated with personality, empathy, and prejudice. Consistent with the meta-analysis by Sibley and Duckitt (2008), we found a medium effect size for the association between SDO and Agreeableness. Compared with the existing literature (e.g., Akrami & Ekehammar, 2006; Nicol & De France, 2016), our study also revealed a stronger effect (i.e., moderate rather than small) for the relationship between SDO and Openness to Experience. Furthermore, the effect size for the relation between SDO and Neuroticism was small. This finding is in line with the larger literature, showing small or even non-significant relations between the two variables (e.g., Perry & Sibley, 2012). Since our sample is represented by children, further research is needed in order to replicate these associations and their similarity (i.e., Agreableness and Openness to Experience) or dissimilarity (i.e., Neuroticism) with those emerged in adult samples, also to shed light on developmental paths. Regarding empathy (both dispositional and intergroup) and prejudice indexes (i.e., stereotypical and attitudinal biases), correlations are in line with the available literature, showing a general moderate relation between variables (see, e.g., Sidanius et al., 2013; Trifiletti et al., 2019) also considering child samples (see, e.g., Vezzali et al., 2018). In sum, correlations of SDO with personality and attitude measures were roughly similar, demonstrating both the relevance of personality for the emergence of SDO, and the importance of SDO as a predictor of outgroup attitudes. However, these results should be interpreted with caution, since the CFA (with singles items) including the Big Five dimensions and empathy measures did not provide a satisfactory fit.

Although we did not have a-priori predictions, we tested gender as a moderator. In line with research showing that males are more dominant than females (Pratto et al., 2006), we found that males scored higher than females on SDO-Dominance (and exhibited stronger correlations), but not on SDO-Anti-Egalitarianism. Future research should further examine gender differences in SDO in children.

We acknowledge some limitations. First, participants only belonged to the majority group (Italians). Second, we relied on a convenience sample, which sensibly reduces the generalizability of findings. Third, the specific sample used in this validation is limited to Italian fourth- and fifth-graders. Thus, to increase external validity, future research should test SDO in children from other countries and age groups.

Data availability statement

Disclosure statement

The authors declare that there is no conflict of interest.

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