Prejudice and inclusiveness in adolescence: The role of multiple categorization and social dominance orientation

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3   Prejudice and Inclusiveness in Adolescence: The Role of Social Dominance Orientation and

4   Multiple Categorization

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6   Flavia Albarello, Elisabetta Crocetti, & Monica Rubini

7   *Alma Mater Studiorum University of Bologna, Bologna, Italy*

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11   Correspondence concerning this paper should be addressed to

12   Flavia Albarello, Department of Psychology

13   Alma Mater Studiorum University of Bologna

14   Viale Berti Pichat 5, 40126 Bologna, Italy.

15   Phone +390547338549; e-mail: flavia.albarello@unibo.it

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1 **Abstract**

2 This study examined the relations of multiple categorization and social dominance orientation

3 with adolescents' prejudice against migrants and identification with the human group over time.

4 Participants were 304 Northern-Italian late adolescents (61.84% female, M_{age} = 17.49) involved

5 in a three-wave longitudinal study (with three months interval between waves). Results showed

6 that multiple categorization was negatively linked to prejudice at a later time, whereas social

7 dominance orientation was positively associated with it; prejudice also negatively affected

8 multiple categorization and positively affected social dominance orientation at a later time.

9 Moreover, prejudice mediated the effects of multiple categorization and social dominance

10 orientation on human identification. These findings have important implications suggesting the

11 construens effect of multiple categorization for enhancing social inclusiveness.

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13 *Keywords*: Multiple categorization; Social dominance orientation; Prejudice against migrants;

14 Human identification; Adolescence; Longitudinal.

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Prejudice and Inclusiveness in Adolescence: The Role of Multiple Categorization and

Social Dominance Orientation

Migration is rendering current societies increasingly diverse (Fiske, 2015). This can be seen as a resource, given that social and cultural diversity might lead to augmented tolerance towards others (Crisp & Turner, 2011). Nonetheless, many Western countries have witnessed an increase in ethnocentrism and nationalism, resulting in a call to establish barriers against "foreigners" and defend own nations against migrants (Annan, 2006). Anti-immigrant prejudice is, thus, a major risk factor for the establishment of harmonious intergroup relationships in modern multicultural societies.

This raises a core question: How is it possible to lessen prejudice and promote people's attitudes towards social inclusiveness? Social psychological literature showed that defining outgroup members in terms of multiple categorization, by depicting them with more than four categorical dimensions (Crisp, Hewstone, & Rubin, 2001), can reduce outgroup prejudice (Albarello, Crisp, & Rubini, 2018; Albarello & Rubini, 2012). Conversely, social dominance orientation, as an individual trait expressing support for group-based hierarchies on the basis of the belief that one's group is superior than any other group (Sidanius & Pratto, 2001), can heighten prejudice against disadvantaged groups (Pratto, Sidanius, Stallworth, & Malle, 1994; see also Bratt, Sidanius, & Sheehy-Skeffington, 2016), such as migrants. Multiple categorization and social dominance orientation can thus be conceptualized, respectively, as *construens* and *destruens* forces affecting social prejudice against migrants. However, it has not been shown how these two factors interact in explaining prejudice. It has also not been addressed whether they can affect individuals' identification with the human group as a fundamental symbolic root of social inclusiveness that captures individuals' awareness of being member of the human group, irrespectively of the differences that may characterize the large variety of social categories (Albarello & Rubini, 2012). In a novel way, this study aimed to gather knowledge on

1   how multiple categorization and social dominance orientation affect prejudice and human

2   identification by taking a longitudinal approach and focusing on late adolescents.

3   **Factors Affecting Prejudice in Adolescence**

4   Adolescence is a period in which individuals enlarge their cognitive and social

5   perspectives (e.g., Benish-Weisman, Daniel, Schiefer, Möllering, & Knafo-Noam, 2015;

6   Crocetti, 2017; Kuhn, 2009). In this phase, they become increasingly able to process multiple or

7   complex social belongingness when thinking about themselves as well as about other people

8   (Aboud, 2008; Albarello, Crocetti, & Rubini, 2018; Knifsend & Juvonen, 2014). This ability can

9   have important implications for understanding the social benefits of living in diverse societies

10   and acknowledging that the large variety of human groups have equal value and dignity.

11   Developmental literature highlighted that prejudice is already formed in early childhood,

12   reaches a peak in middle childhood, and slightly decreases in late childhood (Raabe & Beelman,

13   2011). However, evidence on the development of prejudice in adolescence is limited (cf.

14   Miklikowska, 2017), given that most studies focused on children or, even when they considered

15   adolescents, they were based on cross-sectional age comparisons (for a meta-analysis, see Raabe

16   and Beelmann, 2011). Only few longitudinal studies tapped into development of prejudice or

17   related aspects by yielding mixed findings (Hooghe, Meeusen, & Quintelier, 2013; Rekker,

18   Keijsers, Branje, & Meeus, 2015). If Rekker et al. (2015) showed that ethnocentrism, after

19   increasing in early adolescence, becomes quite stable in late adolescence and decreases in

20   adulthood, Hooghe et al. (2013) found that ethnocentrism increases from late adolescence to

21   emerging adulthood. Van Zalk and Kerr's (2014) provided longitudinal evidence that prejudice

22   against immigrants diminishes from early to late adolescence, whereas tolerance slightly

23   augment. According to these authors, their evidence suggests that prejudice and other intergroup

24   attitudes (e.g., tolerance) are not explained by the same processes and might follow different

25   growth paths: If prejudice is based on simple categorical thinking and does not reflect abstract

reasoning (cf. Degner & Wentura, 2010; Hjerm, 2009), tolerance and social inclusiveness

represent abstract ideological beliefs based on egalitarian principles and acknowledgement that

migrants and non-migrants should be treated equally (cf. Morley, 2003). Such beliefs are

facilitated by the gradual development taking place from early to late adolescence of more

abstract and complex cognitive reasoning (Aboud, 2008).

While it is difficult to draw conclusive findings regarding mean-level changes in

adolescent prejudice, extant evidence on rank-order stability provides a more consistent picture.

Rank-order stability is informative of whether the relative position of adolescents within a group

of peers become increasingly fixed (Bornstein, Putnick, & Esposito, 2017). Convergent evidence

has shown that rank-order stability of prejudice is already high in adolescence (e.g., Eckstein,

Šerek, & Noack, 2018; Hooghe et al., 2013; Miklikowska, 2017). This indicates that

interindividual differences in prejudice stabilize early and they are maintained or even increase

over time (Rekker et al., 2015).

In adolescence, the phase of late adolescence is particularly interesting, since in this

period individuals can become engaged citizens in their community (Eckstein, Noack, &

Gniewosz, 2012; Jahromi, Crocetti, & Buchanan, 2012). They develop clearer political

representations of different social objects, going beyond cognitive simplified categorical

processing which is typical of childhood (cf. Aboud, 2008; Degner & Wentura, 2010) and

building the basis of their future ideologies and conceptions of social reality at large (Rekker,

2016; Rekker et al., 2015). Rekker (2016), for instance, showed that late adolescents' attitudes

towards immigrants work as organizing principles of their political attitudes. Moreover, in late

adolescence young people approach the transition to emerging adulthood (e.g., coping with

school-to-university or school-to-work transitions; Crocetti et al., 2015), thus facing more

complex and diverse tasks (cf. Rekker et al., 2015). In this vein, late adolescence is a crucial

1   phase in which individuals' enhanced ability (cf. Aboud, 2008) to process multiple factors can

2   lead either to reinforce or to reduce social prejudice (Benish-Weisman et al., 2015).

3   Current models of prejudice development tend to include both contextual and social

4   cognitive factors. The developmental intergroup theory (Bigler & Liben, 2006, 2007) explains

5   the development of stereotypes and prejudice by considering both contextual qualities (e.g.,

6   salience of grouping criteria in the environment; labels used to define groups) and cognitive

7   processes (e.g., inferring from or generalizing attributes to social categories). In accordance with

8   this theory, studies that focused on immigrants as a main target of prejudice in adolescence

9   (Eurobarometer, 2018; see also Titzmann, Brenick, & Silbereisen, 2015) payed strong attention

10   to contextual factors, such as family and peers (e.g., Aboud & Amato, 2001; Gniewosz & Noack,

11   2015; Miklikowska, 2017, 2018; Van Zalk, Kerr, Van Zalk, & Stattin, 2013) and the school

12   context (e.g., Bayran-Özdemir, Sun, Korol, Özdemir, & Stattin, 2014). For instance, Gniewosz

13   and Noack (2015) showed that adolescents with parents (both fathers and mothers) holding

14   negative attitudes against immigrants tended to develop negative attitudes against immigrants as

15   well (for a meta-analysis see, Degner & Dalege, 2013). They also found that changes in parents'

16   self-reported attitudes led to changes in adolescents' attitudes both in the short- and in the long-

17   period. Moreover, Miklikowska (2017) highlighted that anti-immigrants attitudes of parents and

18   peers predicted changes in adolescents' prejudice especially for those without cross-ethnic

19   friendships.

20   In line with developmental intergroup theory (Bigler & Liben, 2006), research has also

21   highlighted some source of variability for developmental changes in prejudice due to

22   individuals' ideologies, such as right-wing authoritarianism (i.e., the adherence to conventional

23   norms and values, uncritical submission to authorities, and aggressive feelings towards people

24   violating the norms; Altemeyer, 1981). Various studies showed that right-wing authoritarianism

25   is a strong predictor of adolescents' prejudice (e.g., Duriez, Soenens, & Vansteenkiste, 2008) and

1 parent-adolescent similarity is responsible for intergenerational transmission of this ideology

2 (Duriez & Soenens, 2009). However, beneficial factors reducing adolescents' prejudice have

3 been highlighted too. Among these, there is plenty of evidence on the effects of adolescents'

4 empathy as inversely related to ethnic or racial prejudice (e.g., Miklikowska, 2017) and

5 positively related to development of egalitarian political attitudes and support of diversity

6 (Miklikowska, 2018). Less attention has been devoted to multiple categorization (Bigler &

7 Liben, 1992; Crisp et al., 2001) as a key factor affecting prejudice. Even its interplay with

8 individual ideologies associated with anti-immigrant prejudice, such as social dominance

9 orientation (Sidanius & Pratto, 2001), has been underexplored in late adolescence.

10   **Multiple categorization.** Social identity (Tajfel & Turner, 1979) and self-categorization

11 (Turner, Hogg, Oakes, Reicher, & Wetherell, 1987) theories assume that dichotomous ingroup

12 versus outgroup categorization leads to intergroup discrimination and prejudice: The distinction

13 between "us" and "them", which builds an intergroup barrier (Albarello & Rubini, 2015;

14 Moscatelli, Menegatti, Albarello, Pratto, & Rubini, 2019), leads to consider ingroup members in

15 a more positive fashion to establish positive intergroup distinctiveness (cf. Crocetti, Prati, &

16 Rubini, 2018). Bigler and Liben (1992) addressed the issue of whether rigid social categorization

17 can be challenged by exposing children to either expected or unexpected categorical

18 combinations. Their results showed that the negative effect of dichotomous social categorization

19 can be reduced by training children to think in terms of more flexible unexpected category

20 combinations (see also, Prati, Vasiljevic, Crisp, & Rubini, 2015).

21   Besides this, the multiple categorization approach (i.e., defining outgroups in terms of a

22 variety of not-overlapping categorical dimensions; Crisp & Hewstone, 2007; Crisp et al., 2001),

23 differently from the one relying on qualitative cognitive processes adopted by Bigler and Liben

24 (1992), implies the use of more than four categorical group memberships to define an outgroup

25 category. This leads to dismiss categorical thinking about others via decategorization (Crisp &

1　Hewstone, 2007; Prati, Crisp, Meleady, & Rubini, 2016), ending in reduction of prejudice and

2　discrimination (cf. Albarello & Rubini, 2008). The effect of multiple categorization was also

3　found on reduction of prejudice against immigrants (Albarello et al., 2018; Albarello & Rubini,

4　2012; Prati, Crisp, Pratto, & Rubini, 2016; Prati, Crisp, & Rubini, 2015; Prati, Menegatti, &

5　Rubini, 2015; Prati, Moscatelli, Pratto, & Rubini, 2018). However, most of evidence is drawn

6　from experimental manipulation of multiple categorization.

7　　　　Since classical studies on intergroup discrimination and prejudice (Tajfel, Billig, Bundy,

8　& Flament, 1971; Turner et al., 1987), various interventions (e.g., recategorization; Gaertner &

9　Dovidio, 2000; intergroup contact; Brown & Hewstone, 2005) for prejudice reduction have

10　being designed also targeting adolescents (for reviews, see Aboud et al., 2012; Beelmann &

11　Heinemann, 2014). In recent a meta-analysis, Ülger, Dette-Hagenmeyer, Reichle, and Gaertner

12　(2018) compared efficacy of intervention strategies aimed at reducing prejudice against

13　immigrants in school contexts and showed that adolescents benefited more from intervention

14　than younger children. As argued by Ülger et al., this finding is in line with social-cognitive

15　developmental theory (Aboud, 2008), according to which in early childhood, children are mostly

16　concerned about the self and ingroup identity, whereas they later begin to observe individuals'

17　characteristics and increase the ability to perceive and process similarities among members of

18　different groups. This is due to the development of more abstract cognitive thinking and to a

19　gradual decrease of simplified prejudicial representations of others (Aboud, 2008; Van Zalk &

20　Kerr, 2014). This suggests the importance of identifying strategies to countermand prejudice

21　especially in adolescence (cf. Ülger et al., 2018).

22　　　　In line with social-cognitive developmental theory (Aboud, 2008), it can thus be assumed

23　that multiple categorization might provide beneficial effects in late adolescence, due to

24　adolescents' increases in abstract and complex cognitive thinking, as well as to experiences with

25　a more various social environment (Sani & Bennet, 2004). The school context, through exposure

1   to democratic principles, can further reinforce these positive effects (Dassonneville, Quintelier,

2   Hooghe, & Claes, 2012). If multiple categorization can help reducing prejudice, other forces

3   have been highlighted in the literature as individual factors associated with prejudice.

4   **Social dominance orientation.** Prejudice and intergroup hostility are also predicted

5   upon stable and enduring personal characteristics (e.g., right-wing authoritarianism; Altemeryer,

6   1981; social dominance orientation; Pratto et al., 1994). Among these, social dominance

7   orientation has been conceptualized as an individual ideology supporting "non-egalitarian and

8   hierarchically structured relations among social groups" (Sidanius & Pratto, 2001, p. 21). It leads

9   to prejudice via perception of the world as a competitive jungle (Duckitt, 2001). In fact, people

10   high in social dominance orientation are characterized by insensitivity to moral violations and

11   the welfare of others, whereas people low in social dominance orientation are motivated by

12   egalitarianism and altruistic social concern, and prioritize fairness and harm-avoidance (Duckitt,

13   2001). In other words, social dominance theory (Sidanius & Pratto, 2001) argues that group-

14   based hierarchies reproduce themselves via individuals who endorse hierarchical structural

15   differences between ingroup and outgroup(s). Interestingly, differently from other ideologies that

16   are strongly rooted in specific political affiliations (e.g., right-wing authoritarianism; Altemeyer,

17   1981), social dominance orientation represents an indicator of an individual's worldview about

18   social hierarchies and the groups that deserve to be superior than other ones, thus it is not

19   directly related to a specific political ideology (cf. Heaven, Ciarrochi, & Leeson, 2011).

20   Given the clear-cut distinction between ingroup and outgroup(s), the predictions of

21   social dominance (Sidanius & Pratto, 2001) and social identity (Tajfel & Turner, 1979) theories

22   are similar to each other in terms of intergroup discrimination and prejudice (e.g., Pratto,

23   Sidanius, & Levin, 2006; Sibley & Duckitt, 2008; Sidanius & Pratto, 2001). Various studies

24   highlighted that social dominance orientation unfolds in daily life (e.g., Kteily, Sidanius, &

25   Levin, 2011; Pratto et al., 1994). In this respect, the role of social dominance orientation on

1   prejudice towards immigrants has been consistently addressed in adulthood (e.g., Craig &

2   Richerson, 2013; Duckitt & Sibley, 2010). Besides this, research also supports the notion that

3   social dominance orientation is a stable early emerging trait (Bratt et al., 2016) and some studies

4   considered its effect on prejudice even in children (e.g., Tagar, Hetherington, Shulman, &

5   Koening, 2017).

6   ***Social dominance orientation from a developmental perspective.*** As for the

7   developmental origins of social dominance orientation, Duckitt (2001) proposed that social

8   dominance orientation is rooted in an absence of childhood affection, which creates insensitivity

9   to others and striving for superiority. Such argumentation was supported by retrospective

10   accounts of respondents' childrearing. Interestingly, Tagar et al. (2017) highlighted that even

11   young children display differences in individual behavioral sensitivity to intergroup inequality

12   (assumed as a component of social dominance orientation) and that such differences were

13   associated with parents' social dominance orientation. That is, children of parents with low

14   social dominance orientation were more fairness-oriented towards outgroupers, whereas those of

15   parents high in social dominance orientation favored the ingroup. In addition, parenting styles

16   have been found to affect social dominance orientation of adolescents; that is, parents'

17   responsiveness was negatively related to middle and late adolescents' social dominance

18   orientation (Cross & Fletcher, 2011).

19   Besides parental influences, also the role of peers in affecting individual's social

20   dominance orientation has been underlined. Cross and Fletcher (2011) showed that higher levels

21   of adolescents' social dominance orientation were positively associated with membership of

22   high-status groups. Similarly, Mayeux (2014) found that social dominance orientation was

23   positively associated with adolescents' popularity in peer groups.

24   Overall, such evidence highlights that social dominance orientation is an early emerging

25   trait strongly rooted in family and peer relationships. It is of outmost importance to further

1   examine how social dominance orientation influences late adolescents' attitudes towards

2   minorities in a period in which majority/minority relationships become important anchors for

3   late adolescents' social identity (Sani & Bennet, 2004) and political views (Rekker, 2016). This

4   would help understanding their attitudes towards others in increasingly diverse multicultural

5   societies.

6   ***Social dominance orientation's malleability.*** There has been a debate as to whether

7   social dominance orientation is a relatively stable cause of prejudice against outgroups (e.g.,

8   Sibley, Wilson, & Duckitt, 2007) or "it simply reflects" intergroup attitudes and behaviors (cf.

9   Kteily et al., 2011, p. 543). In other words, does social dominance orientation affect prejudice

10   over time or does prejudice affect social dominance orientation? So far, longitudinal studies have

11   not provided a conclusive answer to this question: some studies found that social dominance

12   orientation increased prejudice over time (Asbrock, Sibley, & Duckitt, 2010), whereas other

13   studies found that prejudice or related ideologies augmented social dominance (Sibley et al.,

14   2007). There is also evidence of bidirectional influence between social dominance orientation

15   and prejudice, and it is not clear whether social dominance orientation or prejudice has the

16   stronger effect on the other (cf. Bratt et al., 2016; Dhont, Van Hiel, & Hewstone, 2014; Sibley &

17   Liu, 2010).

18   Convergent evidence on the malleability of social dominance orientation in response to

19   several influences (cf. Pratto et al., 2006) comes from studies by Dhont et al. (2014), which

20   showed that interventions based on increasing positive intergroup contact reduced majority

21   members' social dominance orientation. To clarify the inconsistencies in the available literature,

22   it would be important to analyze how social dominance orientation unfolds in daily life. It is

23   reasonable to expect that social dominance orientation affects prejudice as well as it is malleable

24   and it can be influenced by prejudice itself. This assumption is coherent with recent evidence

1   from Rekker (2016) showing that attitudes towards immigrants shape political ideologies of

2   adolescents.

3   **From Prejudice to Social Inclusiveness**

4   Prejudice, as a negative judgement on outgroups, can form a hindering factor of social

5   inclusiveness. At the individual cognitive level, social inclusiveness can rely on the extent to

6   which people identify themselves with the most inclusive ingroup of human beings (cf. Albarello

7   et al., 2018; Albarello & Rubini, 2012), irrespectively of the specific characteristics of the

8   variety of social groups encompassed in the human group. This is coherent with the self-

9   categorization theory that poses the superordinate human level of self-categorization as the most

10   inclusive one encompassing all other subordinate levels (Turner et al., 1987). Self-categorization

11   at the human level is, thus, assumed to challenge the cognitive bases of prejudice that rely on the

12   intermediate level of ingroup versus outgroup categorizations. However, empirical evidence is

13   not consistent in supporting this assumption, given that common (human) identity does not

14   always work as a panacea to hindering social prejudice (e.g., Hornsey & Hogg, 2000; Morton &

15   Postmes, 2011).

16   Besides this, and drawing from Turner et al. (1987)'s conceptualization of human

17   identity, an individual's identification with the human group represents a symbolic, cognitive

18   tool of social inclusiveness since it allows to consider the self, as well as ingroup and outgroup

19   members, as all belonging to the common ingroup of human beings. However, no study, so far,

20   has addressed the factors that can affect identification with the most inclusive common ingroup.

21   Nevertheless, it can be argued that it might be affected by a variety of factors: multiple

22   categorization may lead to the awareness that the human group is not represented by a single

23   unique exemplar, but by a large variety of exemplars (as many as the categorical dimensions at

24   the bases of social groups and all their possible combinations). This would lead to the idea that

25   identifying with the human group encompasses acceptance of all human beings despite the

1   variety of their characteristics. Thus, multiple categorization might enhance human

2   identification. On the other hand, people who are high in social dominance orientation (Sidanius

3   & Pratto, 2001) might display lower human identification, since they endorse social disparities

4   among majority and minority social groups. In addition, social prejudice against migrants can be

5   an obstacle to identify with the inclusive group of human beings: individuals might refrain from

6   identifying with the human group when they have high prejudice against some specific group

7   encompassed in this category. That is, they might show lower human identification due to

8   rejection of other negatively perceived exemplars of this category (e.g., migrants, etc.). In this

9   vein, it is possible that the beneficial and detrimental effects of, respectively, multiple

10 categorization and social dominance orientation on human identification are not simply direct,

11 but they are affected by the attitudes that late adolescents hold towards negatively perceived

12 exemplars or stigmatized social groups that perceivers want to keep outside the human group,

13 such as migrants. Thus, prejudice can function as a mediating factor that can capture the

14 mechanism through which multiple categorization and social dominance orientation affect social

15 inclusiveness in terms of identification with the human group.

16   **The Present Study**

17   In the light of the literature reviewed above, the first aim of this study was to examine

18 how multiple categorization and social dominance orientation are related to late adolescents'

19 prejudice over time. We, thus, expected that the extent to which adolescents rely on multiple

20 categorizations to describe migrants—by disrupting the dichotomous ingroup versus outgroup

21 categorization (Crisp & Hewstone, 2007)—would reduce prejudice over time (*hypothesis 1*). By

22 contrast, we expected social dominance orientation to be positively and longitudinally associated

23 with prejudice against migrants (cf. Bratt et al., 2016), that is, the higher the social dominance

24 orientation, the greater the adolescents' prejudice against migrants over time (*hypothesis 2*). We

25 also examined the effects in the reverse direction, i.e., from prejudice to multiple categorization

and to social dominance orientation. In this way, we aimed to shed light on the bidirectional

influence between social dominance orientation and prejudice (*hypothesis 3*) (e.g., Bratt et al.,

2016) and we examined if such mutual influence can also capture the longitudinal associations

between prejudice and multiple categorization.

Second, the study aimed to examine how multiple categorization and social dominance

orientation affect human identification over time. It can be assumed that the more late

adolescents rely on multiple categories defining migrants, the less they display prejudice against

them, and the more they identify with the human group. In contrast, the more adolescents hold a

social dominance orientation, the more prejudiced they are, and the less they identify with the

human group. In summary, we expected that the positive effect of multiple categorization and

the negative effect of social dominance orientation on individual's identification with the human

group would be mediated by prejudice (*hypothesis 4*).

Method

Participants

Participants were 304 adolescents (61.84% female; $M_{age} = 17.49$, $SD_{age} = 0.79$) attending

the last two years (i.e., 11th and 12th grades) of secondary high school in the North-East of Italy

(i.e., in the region of Emilia-Romagna). A large school complex consisting of two main tracks

(six classrooms from a lyceum and eight classrooms from a technical school) was selected for

participation. Most of the participants were Italian (95.06%) and, among the non-Italian

participants, the majority (4.29%) came from Eastern European countries. These data are

consistent with official national data from the Italian Ministry of Education (MIUR, 2018)

relative to year 2016/2017 indicating that in 11th and 12th grades non-Italian students were the

6% and 5.40% of the total student population, respectively, and the most represented groups

were Romanians and Albanians. With reference to family structure, 75.08% came from two-

1 parents families, 18.61% reported that their parents were separated or divorced, and 6.31%

2 reported other family situations (e.g., one deceased parent). Most adolescents (97.35%) were

3 living with one or both parents, while 2.65% were living with other relatives (e.g., grandparents).

4 The educational level of the adolescents' fathers was low (i.e., less than high school diploma) for

5 46.47%, medium (i.e., high school diploma) for 43.43%, and high (i.e., university degree) for

6 10.10%. The educational level of the participants' mothers was low for 34.00%, medium for

7 53.33%, and high for 12.67%.

8   Sample attrition was 0.98% across the three waves. The results of Little's (1988) Missing

9 Completely at Random (MCAR) test were not statistically significant, suggesting that data were

10 missing at random, χ^2 (109) = 118.924, p = .243 (χ^2/df = 1.09). Therefore, all participants were

11 included in the analyses and missing data were handled with the Full Information Maximum

12 Likelihood procedure available in M*plu*s 8.1 (Kelloway, 2015).

13 **Procedure**

14   The study was approved by the Ethics Committee of the University of Bologna. Prior to

15 initiating the study, we obtained permission from the school principal to administer a

16 questionnaire during class time. Then, we contacted all adolescents attending the 11th and 12th

17 grades to present the study and ask for their active consent to participate. They received oral and

18 written information about the study and were asked to sign the informed consent form. Almost

19 all (99.35%) approached students agreed to participate in the study. For minors (n = 168;

20 55.26%), parental consent was also obtained (all contacted parents provided their active consent

21 by signing the forms).

22   The data were collected throughout one academic year, with an interval of three months

23 between measurements (i.e., first week of November 2016; first week of February 2017; first

24 week of May 2017), by the researchers. All participants were interviewed with the exact same

1   time lag. This time frame was chosen since the academic year is a meaningful period in the life

2   of adolescents (Pop, Negru-Subtirica, Crocetti, Opre, & Meeus, 2016) and recent studies

3   highlighted that multiple assessments conducted with high school students within one year (e.g.,

4   in the first part, in the middle part, in the last part of the academic year) are useful to capture

5   developmental processes unraveling in this phase (e.g., Albarello et al., 2018; Negru-Subtirica,

6   Pop, & Crocetti, 2015, 2017).

7   At each point, the adolescents completed the same paper-and-pencil questionnaire in their

8   classrooms, during school hours. All teachers were informed by the school (through a written

9   and a digital circular) about the project and the scheduled time of data collection. They could

10   then decide whether to remain in or leave the classroom during the questionnaire administration.

11   Each participant generated a unique code with five digits (i.e., third letter of participant's name;

12   day of birth of the respondent; first letter of mother's name; day of birth of participant's mother;

13   first letter of father's name) to link his/her responses across the three waves while ensuring

14   confidentiality. Participation in the study was voluntary. At each wave, students could choose

15   not to fill in the questionnaires and do other school activities instead.

16   **Measures**

17   Participants completed a questionnaire including socio-demographic questions and

18   measures of multiple categorization, social dominance orientation, prejudice against migrants

19   (i.e., people who came to Italy to find a place to live in), and human identification. The complete

20   list of items is available in the supplementary material (Appendix 2).

21   **Multiple categorization**. Participants rated the extent to which four descriptions of

22   migrants in terms of multiple categorization were applicable to the target group on a 5-point

23   Likert type scale from 1 (*not at all*) to 5 (*very much*). Each description consisted in a string of

24   five categorical dimensions (e.g., "Migrants, males, fathers, old people, workers"). Cronbach's

1 Alphas were .89, .94, and .93 at T1, T2, and T3, respectively. This novel measure was pretested

2 before conducting the research by administering the questionnaire to a small sample of late

3 adolescents ($N = 36$; female 60%; $M_{age} = 17.50$, $SD_{age} = 0.91$). The results of this pilot study

4 indicated that the scale had good reliability (Cronbach's Alpha = .88) and was found to be

5 unidimensional.

6   **Social dominance orientation.** This construct was assessed with the Short Social

7 Dominance Orientation scale (SSDO; see Pratto et al., 2013 for the validation of the scale in

8 several languages including Italian). This instrument consists of four items rated on 5-point

9 Likert type scale from 1 (*completely false*) to 5 (*completely true*). A sample item is "We should

10 not push for group equality". Cronbach's Alphas were .68, .68, and .73 at T1, T2, and T3,

11 respectively. These values are comparable to those reported in the original validation study, in

12 which the scale was tested in 15 languages and 20 countries (Pratto et al., 2013).

13   **Prejudice.** Prejudice against the group of migrants was assessed employing the overt

14 subscale of the Classical and Modern Racial Prejudice Scale (CMRPS; Akrami, Ekehammar, &

15 Araya, 2000; Italian validation by Gattino, Miglietta, & Testa, 2011). This subscale consists of

16 seven items rated on a 5-point Likert scale from 1 (*completely false*) to 5 (*completely true*). A

17 sample item is: "Migrants are generally not very intelligent". Cronbach's Alphas were .82, .85,

18 and .85 at T1, T2, and T3, respectively.

19   **Human identification.** To assess human identification, the four-items human

20 identification scale (Albarello & Rubini, 2012) was employed. This scale was originally

21 developed in Italian language. The items measure the extent to which an individual identifies

22 with, is proud of belonging to the human group, and feels strong ties with all human beings

23 irrespectively of their differences. In this vein, this scale taps social inclusiveness at a cognitive

24 level in terms of the extent to which an individual identifies with the ingroup of human beings,

25 irrespectively of the variety of social groups encompassed in it. A sample item is: "I am like all

1   human beings, irrespectively of ethnic, political, religious, social or ideological differences".

2   Adolescents rated the items on a 5-point Likert type scale from 1 (*completely false*) to 5

3   (*completely true*). Cronbach's Alphas were .80, .81, and .84 at T1, T2, and T3, respectively.

4   **Results**

5   **Preliminary Analyses**

6   Means and standard deviations and correlations among study variables are reported in

7   Table 1. As a preliminary step, we examined longitudinal measurement invariance (Van de

8   Schoot, Lugtig, & Hox, 2012). We conducted analyses in M*plus* 8.1 (Muthén & Muthén, 1998-

9   2018), using the Maximum Likelihood Robust (MLR) estimator (Satorra & Bentler, 2001). First,

10 we tested for each construct (i.e., multiple categorization, social dominance orientation,

11 prejudice, and human identification) a measurement model with three latent variables (one for

12 each measurement wave), with single items as observed indicators. This model represents the

13 configural (baseline) model (M1). Second, we compared the configural model with the metric

14 model (M2), in which factor loadings are constrained to be equal across time. To evaluate the

15 model fit we considered the Comparative Fit Index (CFI) and the Tucker-Lewis Index (TLI),

16 with values higher than .90 indicative of an acceptable fit and values higher than .95 suggesting

17 an excellent fit, and the Standardized Root Mean Square Residual (SRMR) and the Root Mean

18 Square Error of Approximation (RMSEA), with values below .08 indicative of an acceptable fit

19 and values less than .05 representing a very good fit (Byrne, 2012). In addition, we examined the

20 90% confidence interval (CI) of the RMSEA: when the upper bound of this confidence interval

21 is ≤.10 the model fit can be considered acceptable (Chen, Curran, Bollen, Kirby, & Paxton,

22 2008).

23   To compare nested models corresponding to different hierarchical levels of invariance,

24 we considered both the chi–square difference test as well as changes in fit indices (e.g., Cheung

1 & Rensvold, 2002). Thus, for establishing differences between models, at least two out of the

2 three criteria reported below had to be matched: $\Delta\chi_{SB}^2$ significant at $p < .05$ (Satorra & Bentler,

3 2001), ΔCFI $\geq -.010$, and ΔRMSEA $\geq .015$ (Chen, 2007). Findings indicated that metric

4 invariance could be established for each construct as well as for the total measurement model

5 including all variables (detailed results of model testing and comparisons are reported in

6 Appendix 1 and factor loadings for all items are reported in Appendix 2). Based on results of

7 these measurement invariance tests, we could reliably proceed with analyses aimed at

8 disentangling over time associations among all study variables (Little, 2013).

9 **Cross-Lagged Analyses**

10   To achieve the goal of examining the longitudinal associations among multiple

11 categorization, social dominance orientation, prejudice, and human identification, we conducted

12 cross-lagged analyses in M*plus* 8.1 with the MLR estimator. To keep a proper balance between

13 the sample size and the number of parameters in the model (Bentler & Chou, 1987; Kelloway,

14 2015) and basing on the preliminary results showing metric invariance, we tested the model

15 using observed variables. Specifically, we estimated (a) cross-lagged paths controlling for (b)

16 stability paths (T1→T2, T2→T3, and T1→T3); (c) within-time correlations among all variables

17 (at T1, and correlated changes at T2 and T3); and (d) the effects of the following covariates:

18 participants' gender (0 = males, 1 = females), nationality (0 = Italian, 1 = non-Italian), type of

19 education (0 = lyceum, 1 = technical school), and paternal and maternal educational background

20 (0 = low, 1 = medium, and 2 = high). Since participants were nested within classrooms, we used

21 the "type = complex" command in M*plus* 8.1 (Muthén & Muthén, 1998-2018), indicating the

22 classroom as a cluster variable, to adjust the standard errors.

23   To model the longitudinal associations as parsimoniously as possible, we tested for time-

24 invariance of (a) adjacent stability paths (T1→T2, T2→T3); (b) cross-lagged effects (T1→T2,

25 T2→T3); (c) correlated changes (within-time correlations at T2 and T3); and covariates' effects

1   (T1→T2, T1→T3). Following the same procedure used for the measurement invariance

2   analyses, differences between models were established when two out of these three criteria were

3   matched: $\Delta\chi_{SB}^2$ significant at $p < .05$ (Satorra & Bentler, 2001), ΔCFI $\geq$ -.010, and ΔRMSEA $\geq$

4   .015 (Chen, 2007).

5   The results (see Table 2) confirmed that time-invariance could be established for stability

6   paths (except for stability of multiple categorization for which partial, instead of full, invariance

7   was established), cross-lagged effects, correlated changes, and covariates' effects. Thus, the

8   more parsimonious model (M5) including all time-invariance constraints could be retained as the

9   final one. The fit of this model was very good (Table 2). Complete model results are available in

10   Table 3.

11   The significant *cross-lagged effects* are reported in Figure 1. As can be seen, a

12   bidirectional influence between multiple categorization and social dominance orientation on the

13   one side, and prejudice on the other side, could be detected. More specifically, and in line with

14   expectations (*hypothesis 1* and *hypothesis 2*), multiple categorization and social dominance

15   orientation were related to relatively lower and higher levels of prejudice over time, respectively.

16   In turn, prejudice was related to lower levels of multiple categorization and higher levels of

17   social dominance orientation (*hypothesis 3*) over time. Whereas the effect sizes of the

18   bidirectional influence between multiple categorization and prejudice were comparable (Wald

19   test = 1.453, df = 1, $p = .228$), the effect of prejudice on social dominance orientation was

20   stronger than the reverse one, that is, the effect of social dominance orientation on prejudice

21   (Wald test = 16.894, df = 1, $p = .000$). In addition to these results, prejudice was also negatively

22   related over time to human identification.

23   In regard to *within-time correlations* (see Table 3), the findings highlighted that within

24   each wave multiple categorization was positively associated with human identification. Social

25   dominance orientation was positively related to prejudice and negatively related to human

1   identification. Prejudice and human identification were negatively linked. In addition, at T2 and

2   T3 (correlated changes), a significant negative link between multiple categorization and social

3   dominance orientation was detected.

4   The results discussed so far were obtained after controlling for stability paths (see Table

5   3). The overall explained variance was high for all study variables: multiple categorization (27%

6   and 33% at T2 and T3, respectively); social dominance orientation (39% and 51% at T2 and T3,

7   respectively); prejudice (46% and 61% at T2 and T3, respectively); human identification (40%

8   and 62% at T2 and T3, respectively). Since in cross-lagged models a substantial amount of

9   variance is explained by stability effects (Adachi & Willoughby, 2015), we also checked for the

10   amount of variance explained without autoregressive paths. Notably, values of explained

11   variance were still high for social dominance orientation (30% and 28% at T2 and T3,

12   respectively); prejudice (21% and 22% at T2 and T3, respectively); and human identification

13   (27% and 24% at T2 and T3, respectively); and moderate for multiple categorization (8% both at

14   T2 and at T3).

15   Finally, we tested indirect effects, by means of the indirect command procedure available

16   in M*plus* 8.1 (Muthén & Muthén, 1998-2018), to examine mediational mechanisms. In this way,

17   it is possible to test whether a predictor (measured at T1) influences an outcome (measured at

18   T3) via a mediator (assessed at T2). In line with expectations (*hypothesis 4*), the findings

19   indicated that two hypothesized mediations were statistically significant: Multiple categorization

20   T1→ Prejudice T2→ Human identification T3 (standardized indirect effect = .012 [.002, .021], *p*

21   = .016); Social dominance orientation T1→ Prejudice T2→ Human identification T3

22   (standardized indirect effect = -.012 [-.019, -.005], *p* = .000). Alternative indirect effects (e.g.,

23   Multiple categorization T1→ Social dominance orientation T2 → Human identification T3; or

24   Social dominance orientation T1→ Multiple categorization T2 → Human identification T3) were

25   not statistically significant. Overall, these findings highlight that social dominance orientation

1   and multiple categorization affect human identitication indirectly, through the mediation of

2   prejudice.

Discussion

4   Challenging prejudice and promoting social inclusiveness are core issues for

5   contemporary multi-ethnic societies. This contribution highlighted the role of both construens

6   and destruens factors in affecting prejudice against one of the most stigmatized outgroups—

7   migrants—as well as in promoting identification with the common ingroup of human beings (cf.

8   Gaertner & Dovidio, 2000; Turner et al., 1987). In a unique way, this study adopted a

9   longitudinal design and focused on late adolescents to address the associations among multiple

10   categorization, social dominance orientation, prejudice, and human identification. The gathered

11   evidence adds to previous literature showing that flexible thinking relying on multiple

12   categorization (cf. Crisp & Turner, 2011) is a strategy to reduce prejudice, while social

13   dominance orientation is associated with prejudice (e.g., Sibley et al., 2007). Prejudice, in turn,

14   affected multiple categorization and social dominance orientation over time (i.e., it led to lower

15   multiple categorization and higher social dominance orientation). Findings also revealed that

16   prejudice was negatively associated with later human identification: high prejudice was

17   associated with a decrease in the extent to which late adolescents identified with the human

18   group. Most importantly, prejudice mediated the effects of multiple categorization and social

19   dominance orientation on human identification.

The Opposite Effects of Multiple Categorization and Social Dominance Orientation on Adolescents' Prejudice

22   This study deepened knowledge on prejudice against migrants in late adolescence in

23   various ways. First, it highlighted processes that might help late adolescents to display inclusive

24   attitudes towards outgroups by underlining the beneficial role of multiple categorization in

1   reducing prejudice against stigmatized outgroupers. Given that the role of multiple

2   categorization on late adolescents' prejudice and human identification was underexplored, this

3   study adopted a multiple categorization measure relying on a quantitative criterium (i.e., the

4   number of categorical dimensions depicting migrants; cf. Crisp & Hewstone, 2007) rather than a

5   qualitative/counterstereotypical approach (e.g., Bigler & Liben, 1992). In view of the lack of

6   multiple categorization indicators in the available literature, we developed a measure of the

7   extent to which adolescents rely on possible multiple combinations of categorical dimensions to

8   define migrants. Findings showed that multiple categorization of migrants was negatively

9   associated to prejudice against this minority group. Prejudice also affected use of multiple

10   categorization at a later time, suggesting an ongoing bidirectional influence.

11   These findings are very important with reference to *essentialism* (cf. Gelman, 2003;

12   Haslam, Rothschild, & Ernst, 2000; Yzerbyt, Rocher, & Schadron, 2007) as the tendency to

13   consider categories as related to specific, inalterable, underlying qualities making social

14   categories inherently different (Gelman, 2003; Haslam et al., 2000; Yzerbyt et al., 2007).

15   Essentialism is an "easy default way of reasoning about categories" (Gelman, Heyman, &

16   Legare, 2007, p. 770) which has been found both in children (e.g., Diesendruck & Menahem,

17   2015; Mandalaywala, Ranger-Murdock, Amodio, & Rhodes, 2018; Pauker, Xu, Williams, &

18   Biddle, 2016) and adults (e.g., Haslam et al., 2000). However, it has also been shown that it

19   declines over childhood as the individuals become able to consider more complex factors (Ho,

20   Roberts, & Gelman, 2015). Since late adolescents can deal with multiple or complex categorical

21   thinking better than children (cf. Aboud, 2008; Gelman, 2003; Gelman et al., 2007), multiple

22   categorical thinking is at the basis of the defeat of prejudice against immigrants. In other words,

23   the combinations of multiple categorical dimensions hinder essentialization of intergroup

24   differences (cf. Haslam et al., 2000; Ho et al., 2015) by providing a complex picture of groups.

1   Besides this beneficial role of multiple categorization, the study also addressed the

2   longitudinal association between social dominance orientation and prejudicial attitudes in late

3   adolescence with the aim of clarifying previous inconsistent evidence about the bidirectionality

4   of the phenomenon (cf. Asbrock et al., 2010; Bratt et al., 2016; Dhont et al., 2014; Sibley et al.,

5   2007). Inconsistencies could rely on a variety of factors such as the developmental period

6   considered, the target of prejudice (i.e., immigrants or other stigmatized social groups), the time

7   frame (i.e., short-term versus long-term effects). In line with Bratt et al.'s (2016) argument that

8   over short time periods (e.g., varying from one week to three months), social dominance

9   orientation can be "particularly malleable in response to intergroup experiences and related

10   attitudes" (Bratt et al., 2016, p. 1619), our findings supported the claim that the relation between

11   prejudice and social dominance orientation is bidirectional (i.e., social dominance orientation

12   affected later prejudice, and also prejudice affected social dominance orientation at a later time).

13   In this vein, a major novelty of this study regards the fact that it stands on the evidence that the

14   path from prejudice to social dominance orientation was stronger than that from social

15   dominance orientation to prejudice. Using a short time frame (i.e., three months), it was possible

16   to highlight that social dominance orientation is malleable and can be affected by prejudicial

17   attitudes against stigmatized minorities such as migrants, a very salient outgroup for adolescents

18   who strongly base their political orientations on issues related to immigration (Rekker, 2016).

19   Overall, these effects highlighted a "dark chain" in which prejudice affects the extent to

20   which late adolescents endorse social dominance, showing that prejudice can work as a

21   legitimizing myth of social inequalities (cf. Tajfel, 1981). This evidence on the dynamic role of

22   prejudice in affecting late adolescents' attitudes towards others offers also a theoretical advance

23   to the literature. In fact, it provides new insights on the role of prejudice in affecting socio-

24   cognitive processes such as human identification (Turner et al., 1987) and multiple

25   categorization (Crisp et al., 2001), as well as ideologies like social dominance orientation

26   (Sidanius & Pratto, 2001).

The Role of Prejudice in Hindering Human Identification

Importantly, the findings of this study indicated that prejudice worked as a key mediator to explain the mechanism through which multiple categorization and social dominance orientation influenced late adolescents' human identification. The more adolescents showed low prejudice, the more they identified with the human group, thus considering themselves as belonging to the same group as other human beings (cf. Albarello & Rubini, 2012). This can be considered as an indicator of adolescents' handling of others' diversity given that human identification implies that individuals acknowledge their belongingness to the human group as much as they are aware of the large variety of social groups with whom they share the same belongingness. By contrast, adolescents showing prejudice against migrants were less prone to identify with the common group of human beings.

These findings support the contention that prejudice and social inclusiveness expressed in terms of identification with the human group are not just opposite facets of the same construct (cf. Van Zalk & Kerr, 2014), as also suggested by the size of the correlations between these factors. More specifically, prejudice represents a cognitive and affective judgement on others, whereas human identification relies on the self-awareness of belonging together with ingroupers and outgroupers to the most inclusive group, that is, the human one. The fact that prejudice affected late adolescents' human identification at later time thus adds to the, scarce, theorization on human identification (e.g., Turner et al., 1987) and suggests that it is important to address the developmental trajectories of this abstract cognition in order to understand the factors that can affect such indicator of social inclusiveness.

Strengths and Limitations of this Study and Suggestions for Future Research

This study should be considered in the light of both its strengths and shortcomings, which suggest future directions for research. With reference to the first novelty of the study, that is, the

1   analysis of the role of late adolescents' multiple categorical thinking on prejudice and human

2   identification, it should be deepened the mechanism through which multiple categorization

3   reduces prejudice. For instance, it might be important to investigate whether multiple

4   categorization countermands essentialistic thinking (Haslam et al., 2000) through

5   decategorization of outgroupers (Crisp et al., 2001).

6   Second, this contribution highlighted the bidirectional influence between social

7   dominance orientation and prejudice, which should be interpreted as related to the short time

8   frame we considered in this study. To obtain more conclusive answers to the debate about

9   whether it is mostly prejudice that affects social dominance orientation or the other way around

10   (e.g., Bratt et al., 2016), future studies should check whether social dominance orientation is

11   malleable only in short time frames, such as in this study, or also in longer time frames (e.g.,

12   considering one year between different measurements).

13   Third, in this study we focused on blatant/overt prejudice (cf. Pearson, Dovidio, &

14   Gaertner, 2009) against migrants. This choice was due to the widespread call for nationalism and

15   to the fact that right-wing parties are acquiring increasing political power in various nations (e.g.,

16   Austria, Hungary, Italy, etc.) and often depict migrants as an enemy. Thus, current findings are

17   reliable for this specific form of prejudice, but future studies are needed to test whether these

18   results are also replicated using subtle and implicit measures of prejudice (e.g., Fazio & Olson,

19   2003).

20   Another strength of this study is the focus on human identification as a specific facet of

21   social inclusiveness. This aspect was chosen as a central and a key symbolic process affecting

22   intergroup relationships (Albarello et al., 2018; Albarello & Rubini, 2012; McFarland &

23   Hornsby, 2015). Human identification indeed relies on the most inclusive view of others, it is

24   thus a strong indicator of social inclusiveness of others, far beyond the multiplicity of differences

25   between the various social groups. As stressed by Fiske (1992), "thinking is for doing": this

1   means that symbolic processes such as human identification could be predictive of late

2   adolescents' intergroup behaviors against stigmatized others. Of course, this claim has to be

3   addressed in future studies that could also consider emotional and behavioral expressions of

4   social inclusiveness of late adolescents. Future research should also tackle more thoroughly the

5   role of diversity beliefs (e.g., Civitillo, Juang, & Schachner, 2018) in affecting the extent to

6   which individuals identify with the human group, endorse egalitarian principles, and support

7   minorities' human rights (e.g., Albarello et al., 2018).

8   With respect to adolescents' human identification, the gathered evidence supported our

9   expectations that prejudice affects late adolescents' human identification. Nonetheless, literature

10   suggests that human identification with the most inclusive ingroup should affect prejudice under

11   certain conditions (cf. Albarello & Rubini, 2012; Gaertner & Dovidio, 2000). Evidence, which

12   was mainly obtained through experimental studies with adults, however is not completely

13   convergent (cf. Hornsey & Hogg, 2000; Morton & Postmes, 2011). It could be that, over time,

14   when this process of identification with the human group is developed and stabilized, it might

15   also reduce prejudice. Further longitudinal analyses with different age groups are, thus, needed

16   to confirm this contention.

17   A further strength of this investigation was its focus on late adolescence, since available

18   evidence reveals that prejudice still varies in this period (e.g., Hooghe et al., 2013) but, at the

19   same time, late adolescents' are more able to use abstract cognitive thinking (Aboud, 2008).

20   Nonetheless, it would be important to replicate findings with different age groups, for instance

21   during emerging adulthood as a phase in which prejudice becomes more stabilized (Rekker et al.,

22   2015).

23   In the current investigation, we examined associations between study variables at the

24   between-persons level, by means of traditional cross-lagged panel models. More specifically,

25   using social dominance orientation and prejudice as an example, at the between-person level we

1 found that adolescents who scored higher on social dominance orientation relative to their peers

2 also scored higher on prejudice relative to their peers at a later time. Thus, in between-person

3 models adolescents' scores are considered in relation to the average score of all adolescents.

4 Recently, increasing attention has been given to analyses at the within-person level (e.g.,

5 Miklikowska, 2018), which can be tested statistically by means of random intercept cross-lagged

6 panel model (Hamaker, Kuiper, & Grasman, 2015). Taking again social dominance orientation

7 and prejudice as an example, a within-person model could potentially inform as to whether an

8 increase in an adolescent's own score on social dominance orientation would lead to an increase

9 in the score of prejudice reported by the same adolescent. Therefore, in within-person models it

10 is examined how deviations from an adolescent's own expected average score on one variable

11 are related to changes in another variable over time (Papp, 2004). A direction for future studies

12 might involve integrating between-persons and within-person models (e.g., Mercer, Crocetti,

13 Branje, van Lier, & Meeus, 2017).

14   Finally, our study involved participants from a specific geographical area (Emilia-

15 Romagna), which is the Italian region with the highest percentage of immigrants among the

16 student population (MIUR, 2018). The attrition across waves was minimal (less than 1%) and the

17 sample size was adequate, but not very large. This affected our analytic choices (i.e., testing the

18 main models using observed instead of latent variables). Replicating these findings with a larger

19 sample including participants from different contexts where migrants' arrival can be perceived as

20 a more or a less threatening event (e.g., in the South of Italy where massive numbers of African

21 migrants arrive on boats), or in neighborhoods were immigrants are rather segregated and

22 opportunities of contact are limited, might provide stronger evidence of the detrimental role of

23 social dominance orientation in increasing prejudice and on the beneficial role of multiple

24 categorization in reducing it and promoting social inclusiveness. Future contributions should also

25 tackle other beneficial strategies of prejudice reduction such as intergroup contact (Brown &

26 Hewstone, 2005) by considering outgroups that are particularly targeted by heinous prejudice

1   such as Roma or Muslims (cf. Albarello, Foroni, Hewstone, & Rubini, 2017; Albarello &

2   Rubini, 2011).

3   **Practical Implications**

4   This contribution also provides insights for developing practical interventions to promote

5   more harmonious intergroup relationships and inclusive attitudes towards others by relying on

6   multiple categorical thinking in late adolescence, as a core phase for the establishment of future

7   ideologies and conceptions about social reality (cf. Rekker et al., 2015). This could be effectively

8   endorsed in schools since these democratic institutions (wherein each individual has equal right

9   to education) have a peculiar role in socializing young generations to principles of equity and

10   deservingness (Schachner, Noack, Van de Vijver, & Eckstein, 2016). Schools are also a

11   privileged setting for interventions since they often provide the opportunity for intergroup

12   contact experiences (cf. Ülger et al., 2018) and for implementing long-term interventions (which

13   have been proven to be more effective than one-shot ones; Ülger et al., 2015). Thus, designing

14   school programs educating youth to use cognitive strategies, like multiple categorization, to

15   reduce the prejudice developed in childhood (Bigler & Liben, 2007) might help, for instance, to

16   countermand well-established essentialistic beliefs (Gelman, 2003) about intergroup differences

17   (Yzertbyt et al., 2007). Interventions aimed to reduce prejudice in this specific phase might

18   deeply impact late adolescents' future political and ideological views about society and

19   inclusiveness.

20   **Conclusions**

21   This longitudinal study clarified the interplay of multiple categorization and social

22   dominance orientation in affecting prejudice. These two factors clearly emerged as forces driving

23   changes in adolescent prejudice. Such developmental framework complements social

24   psychological perspectives by underscoring that the effects of multiple categorization and social

1   dominance orientation are not only contingent to a specific moment or to an intervention, but

2   they also unfold over time in daily life. Second, this study provided new insights into the

3   dynamic role of prejudice by showing its direct effect on multiple categorization and social

4   dominance orientation over time, and its mediating role in the interplay among multiple

5   categorization, social dominance orientation, and identification with the human group. Clarifying

6   this mechanism has important implications as it shows that the extent to which late adolescents

7   identify with the most inclusive, and also more abstract, common human group is influenced by

8   their attitudes towards specific stigmatized outgroups that can be very salient in their societies.

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Table 1. Means (*M*), Standard Deviations (*SD*), and Bivariate Correlations between Study Variables

	M	*SD*	2	3	4	5	6	7	8	9	10	11	12
1. M. categorization T1	3.328	0.943	−.150**	−.146*	.135*	.498***	−.216***	−.259***	.215***	.496***	−.248**	−.251***	.227***
2. SDO T1	2.251	0.735		.471***	−.529***	−.184**	.591***	.412**	−.403***	−.117	.587***	.395***	−.421***
3. Prejudice T1	2.831	0.636			−.432***	−.178**	.470***	.693***	−.354***	−.169**	.518***	.671***	−.392***
4. Human identification T1	3.147	0.841				.240***	−.442***	−.305***	.622***	.153*	−.420***	−.334***	.693***
5. M. categorization T2	3.230	1.042					−.200**	−.220***	.220***	.459***	−.174**	−.220***	.211***
6. SDO T2	2.291	0.754						.520***	−.546***	−.180**	.640***	.488***	−.504***
7. Prejudice T2	2.898	0.655							−.369***	−.276***	.564***	.738***	−.412***
8. Human identification T2	3.099	0.747								.182**	−.414***	−.325***	.713***
9. M. categorization T3	3.285	0.977									−.268***	−.322***	.288***
10. SDO T3	2.347	0.794										.580***	−.528***
11. Prejudice T3	2.894	0.661											−.426***
12. Human identification T3	3.048	0.885											

Note

T = time; M. categorization = multiple categorization; SDO = social dominance orientation.
* *p* < .05.
** *p* < .01.
*** *p* < .001.

Table 2. Cross-Lagged Models: Model Fit Indices and Model Comparisons

Models	Model fit indices						Model comparison					
	χ^2_{SB}	df	CFI	TLI	SRMR	RMSEA [90% CI]	Models	$\Delta\chi^2_{SB}$	Δdf	p	ΔCFI	ΔRMSEA
M1: Baseline model	59.347	32	.980	.938	.046	.054 [.032, .075]						
M2: Model with time-invariance of stability paths	78.310	36	.970	.915	.053	.063 [.044, .082]	M2-M1	20.057	4	.000	−.010	.009
M2a: Model with partial time-invariance of stability paths	68.837	35	.976	.930	.049	.057 [.037, .077]	M2a-M1	10.312	3	.016	−.004	.003
M3: Model with time-invariance of stability paths and cross-lagged paths	84.903	47	.973	.942	.057	.052 [.034, .070]	M3-M2a	16.015	12	.191	−.003	−.005
M4: Model with time-invariance of stability paths, cross-lagged paths, and T2–T3 correlations	91.258	53	.972	.948	.058	.049 [.032, .066]	M4-M3	6.781	6	.342	−.001	−.003
M5: Model with time-invariance of stability paths, cross-lagged paths, T2–T3 correlations, and covariate effects	120.757	73	.966	.953	.064	.047 [.031, .061]	M5-M4	28.874	20	.090	−.006	−.002

Note

χ^2_{SB} = Satorra–Bentler scaled chi-square; *df* = degrees of freedom; CFI = comparative fit index; TLI = Tucker–Lewis index; SRMR = standardized root mean square residual; RMSEA [90% CI] = root mean square error of approximation and 90% confidence interval; Δ = change in the parameter.

[a] In this model, the stability paths of multiple categorization were unconstrained.

Table 3. Results of the Cross-Lagged Model

Stability paths	T1 → T2	T2 → T3	T1 → T3
Multiple categorization	.460***	.287***	.283***
SDO	.376***	.322***	.244***
Prejudice	.603***	.546***	.194***
Human identification	.495***	.432***	.321***
Cross-lagged paths		T1 → T2	T2 → T3
Multiple categorization → SDO		−.067	−.066
Multiple categorization → Prejudice		−.096***	−.099***
Multiple categorization → Human identification		.065	.065
SDO → Multiple		.000	.000
SDO → Prejudice		.101*	.091*
SDO → Human identification		−.062	−.054
Prejudice → Multiple categorization		−.096*	−.103*
Prejudice → SDO		.258***	.222***
Prejudice → Human identification		−.138***	−.122***
Human identification → Multiple categorization		.086	.091

Human identification → SDO	−.083	−.071
Human identification → Prejudice	.020	.018
Covariates	**T1 → T2**	**T1 → T3**
Gender → Multiple categorization	.047	.051
Gender → SDO	−.101**	−.089**
Gender → Prejudice	−.102**	−.094**
Gender → Human identification	−.009	−.008
Type of education → Multiple categorization	−.022	−.024
Type of education → SDO	−.011	−.010
Type of education → Prejudice	.029	.027
Type of education → Human identification	.003	.003
Nationality → Multiple categorization	.016	.017
Nationality → SDO	.033	.029
Nationality → Prejudice	.007	.007
Nationality → Human identification	−.082**	−.075**
Educational level father → Multiple categorization	.017	.019
Educational level father → SDO	−.027	−.024
Educational level father → Prejudice	−.014	−.013

Educational level father → Human identification		.013	.012
Educational level mother → Multiple categorization		.064	.069
Educational level mother → SDO		.046	.041
Educational level mother → Prejudice		−.002	−.002
Educational level mother → Human identification		.009	.008
Correlations	**T1**	**T2**	**T3**
Multiple categorization ↔ SDO	−.161	−.071*	−.079*
Multiple categorization ↔ Prejudice	−.148	−.075	−.093
Multiple categorization ↔ Human identification	.148*	.094*	.123*
SDO ↔ Prejudice	.470***	.220***	.237***
SDO ↔ Human identification	−.531***	−.287***	−.327***
Prejudice ↔ Human identification	−.449***	−.137***	−.171***

T = time; SDO = social dominance orientation.

[a] Participants' gender (0 = males, 1 = females), nationality (0 = Italian, 1 = non-Italian), type of education (0 = lyceum, 1 = technical school), paternal and maternal educational background (0 = low, 1 = medium, and 2 = high).
* $p < .05$.
** $p < .01$.
*** $p < .001$.

Figure 1. Significant standardized results of the cross-lagged model. For sake of clarity, only significant cross-lagged effects are displayed. Bold arrows indicate indirect effects. *$p < .05$. ***$p < .001$.