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Cognitive reappraisal and need to belong predict prosociality in Mexican-origin adolescents

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Abstract

This 2-year longitudinal study examined Mexican-origin adolescents' need to belong and cognitive reappraisal as predictors of multiple forms of prosocial behavior (i.e., general, emotional, and public prosocial behaviors). Prosocial behaviors, which are actions intended to benefit others, are hallmarks of social proficiency in adolescence and are influenced by intrapersonal abilities and motivations that typically develop during adolescence. Yet, few studies of Mexican-origin or other U.S. Latinx youths have examined whether such individual difference characteristics, specifically social motivation and emotion regulation skills, support prosocial behavior. In a sample of 229 Mexican-origin youth ($M_{\text{age}} = 17.18$ years, $SD = .42$, 110 girls), need to belong, cognitive reappraisal, and general prosocial behaviors were assessed at ages 17 and 19. Emotional and public forms of prosociality also were assessed at age 19. Cognitive reappraisal was positively associated with concurrent general prosociality at age 17, whereas need to belong was positively associated with concurrent public prosociality at age 19. Moderation analyses revealed that general and emotional types of prosocial behaviors at age 19 were lowest for youth with both lower need to belong and less use of

cognitive reappraisal at 19 years. Greater cognitive reappraisal skills and need to belong may reflect distinct motivations for engaging in varying forms of prosocial behavior in late adolescence.

KEYWORDS

adolescence, cognitive reappraisal, Mexican-origin, need to belong, prosocial behavior

1 | INTRODUCTION

Engaging in prosocial behavior, defined as voluntary actions intended to benefit others, is a positive indicator of social proficiency that develops over adolescence (Pakaslahti et al., 2002; Wentzel et al., 2007). Greater prosociality in adolescence has been associated with, and may contribute to, fewer problem behaviors, greater acceptance from peers, and improved self-esteem, self-efficacy, well-being, and life satisfaction (Caprara et al., 2014; Fu et al., 2017). These developmental benefits of prosociality have been documented in Mexican-origin youth (Carlo & de Guzman, 2009; Knight & Carlo, 2012). To date, research on the factors supporting prosocial development in Mexican-origin and other U.S. Latinx (i.e., used as a gender-neutral and nonbinary alternative to Latino or Latina) youth have focused on cultural and socialization processes (Carlo & Padilla-Walker, 2020). Individual differences in normative intrapersonal social and emotional changes that occur during adolescence may also influence the degree to which adolescents behave prosocially. Adolescents have a strong need to belong and feel accepted by their peers (Nelson et al., 2016), which may facilitate behaving prosocially with peers (Ciranka & van den Bos, 2019). In addition, gradual maturation in cognitive abilities throughout adolescence increase the capacity to engage in more conscious, top-down forms of emotion regulation, such as cognitive reappraisal (Silvers et al., 2012). Both social motivation and emotion regulation have been positively associated with greater prosocial behavior by adolescents in several cultural and national communities (Gómez-Ortiz et al., 2019; Laghi et al., 2018; Moreira et al., 2020), although rarely in Mexican-origin or other U.S. Latinx samples.

Adolescents' need to belong and cognitive reappraisal skills may differentially promote distinct forms of prosocial behavior (Carlo & Padilla-Walker, 2020). However, such specific associations have rarely been examined in studies of adolescent development. Further, although these individual difference characteristics have been examined independently, it is plausible that cognitive reappraisal and need to belong may function conjointly to shape prosocial tendencies. Therefore, the current study aimed to test the extent to which Mexican-origin adolescents' need to belong and cognitive reappraisal were associated with their engagement in general prosocial behavior, as well as, two distinct forms of prosociality: emotional and public actions.

1.1 | Development of prosocial behavior in Mexican-origin and other adolescents

Typical adolescent socioemotional and cognitive development confer improved abilities and opportunities for perspective taking, introspection, and social problem solving (Eisenberg et al., 2016; Steinberg, 2005). Consequently, as adolescents age, youth develop greater abilities to empathize with the needs of others and to handle challenging situations, both of which could facilitate greater likelihood of general prosocial behavior (Laghi et al., 2018; Van der Graaff et al., 2018). Indeed, on average, youths engage in more prosocial behaviors as they mature from early to late adolescence (Lee et al., 2021; Padilla-Walker et al., 2018).

Prosocial behaviors constitute one aspect of positive functioning that has been studied relatively often in Mexican-origin and other U.S. Latinx youth (Carlo & Padilla-Walker, 2020; Gómez-Ortiz et al., 2019). Cross-sectional and longitudinal studies indicate that prosocial behavior increases from early to late adolescence for Latinx youth (Carlo et al., 2003; Davis et al., 2018a). Studies of contributors to prosocial development in Mexican-origin adolescents have focused predominantly on the influence of Latinx ethnic identity, cultural values, and parental socialization practices (Calderón-Tena et al., 2011; Knight & Carlo, 2012). For example, several Latinx cultural values, including *familismo* (i.e., support, duty, and affinity with family) and *respeto* (i.e., respect for authority and others), are positively associated with prosocial behavior in adolescents (Calderón-Tena et al., 2011; Carlo & de Guzman, 2009; Carlo & Padilla-Walker, 2020). Similarly, U.S. Latinx youth who experience more ethnic socialization (enculturation) display greater propensities to share resources and cooperate more with others (Knight & Carlo, 2012). Yet, these cultural and relational processes are unlikely to be the only factors that support prosocial development in Mexican-origin adolescents.

While much of the existing literature has assessed the influence of traditional cultural values on Latinx adolescents' prosocial responding, social development theory and research suggest that individual differences in adolescents' emotional functioning (e.g., cognitive reappraisal) and motivation (e.g., need to belong) are vital for adolescent positive development (Steinberg, 2005; Wentzel et al., 2007). Yet, this theory and research has been based almost exclusively on WEIRD (Western, Educated, Industrialized, Rich and Democratic; Henrich et al., 2010) samples. Whether intrapersonal processes such as cognitive reappraisal and need to belong promote prosocial development in Mexican-origin adolescents is unknown. A more comprehensive understanding of the individual differences that may influence development of all youths requires challenging the assumption that core psychological processes function similarly across communities (Rad et al., 2018). Further work assessing basic psychological capacities in diverse communities, independent of cultural values and socialization practices, is needed for the developmental literature to be more representative of the greater adolescent population and the phenomena under study.

1.2 | Forms of prosocial behaviors

The majority of studies exploring the development of prosocial behavior in adolescence have assessed prosociality as a global, univariate construct that is evinced similarly across contexts and motives (Eisenberg et al., 2016; Wentzel et al., 2007). However, Carlo and colleagues have posited that it is important to consider multidimensional aspects of prosociality in order to better decipher the motivations, contexts, experiences, and interpersonal relationships that are associated with the ways in which youth enact prosocial behavior (Calderón-Tena et al., 2011; Carlo & Padilla-Walker, 2020; Carlo et al., 2012, 2011). Two of the forms of prosocial behavior identified by Carlo and Randall (2002) are public (i.e., open and identifiable displays of helping behaviors enacted in the presence of others) and emotional (i.e., enacted under emotionally evocative situations) prosocial behaviors. These two forms of prosociality are particularly salient for adolescents given the strong need for social acceptance and heightened emotionality during this age period (Nelson et al., 2016; Silvers et al., 2012).

Further, public and emotional prosocial behaviors could be understood as reflecting the enactment of the two different dimensions of motivation (i.e., self- and other-oriented) proposed by Eisenberg and colleagues (2016) as contributing to prosocial behavior. According to this theoretical framework, youths may engage in prosocial behaviors to fulfill either sympathetic (i.e., other-oriented) or egoistic (i.e., self-oriented) goals on a spectrum of altruistic intention. Public prosocial behavior may serve self-oriented goals of garnering acceptance, praise, or positive regard from others (Carlo & Randall, 2002), whereas emotional prosocial behavior may be more likely to reflect more other-oriented engagement prompted by feelings of empathic concern for others' experiences or needs (Eberly-Lewis & Coetzee, 2015). For adolescents, emotional prosocial behaviors may manifest in attempts to reduce a friend's anxiety about an upcoming exam, moderate peer group arguments, or console friends following the end of a relationship.

In several studies, adolescents' self-reported emotional and public prosocial behaviors have displayed weak to moderate positive associations (Carlo & Randall, 2002; Carlo et al., 2003; Patrick et al., 2018), which is consistent with a

multidimensional framework of prosocial behaviors (Carlo & Padilla-Walker, 2020). Thus, youth who engage in one of these forms of prosocial behavior do not necessarily engage in the other. These differing expressions of prosociality might be supported or influenced by distinct intrapersonal factors (Carlo & Padilla-Walker, 2020). Yet, to date, there has been little work examining whether general or specific forms of prosocial behavior (e.g., emotional, public) are associated with shared or distinct individual characteristics in adolescents.

1.3 | Cognitive reappraisal and prosocial behavior in adolescence

During adolescence, there is considerable development of cognitive control abilities for the self-regulation of emotions (Silvers et al., 2012). Emotion regulation may be best understood as the processes responsible for monitoring, evaluating, and modifying emotional reactions (Cole et al., 2004). For adolescents, increasingly intricate peer relationships call for sophisticated forms of emotion regulation to more effectively navigate social demands (Steinberg, 2005). With concurrent brain maturation and changing psychosocial contexts, adolescents progressively engage in more conscious and deliberate forms of emotion regulation (Allen & Nelson, 2018; Silvers et al., 2012). This cognitive regulation of emotion has important implications for adolescent positive development, considering the characteristic increases in adolescent emotional reactivity to social stimuli (Silvers et al., 2012).

Cognitive reappraisal is an effective regulatory strategy that alters the trajectory of an emotional response through a reinterpretation of the meaning of the emotional stimulus. Cognitive reappraisal gradually matures across adolescence (Silvers et al., 2012), although to our knowledge, while the use of cognitive appraisal has been found to predict decreases in anhedonia over time among Mexican-origin adolescents (Young et al., 2022), the development of cognitive reappraisal has yet to be examined in Mexican-origin adolescents. Cognitive reappraisal may be particularly important for adolescents' abilities to respond prosocially in emotionally evocative situations, such as when someone is hurt or upset. Witnessing another person in need often elicits personal distress responses in individuals, such that personal feelings resonate with the perceived emotions of others (i.e., an emotional contagion response; Eisenberg et al., 2015). This personal distress response can trigger self-protective withdrawal responses instead of positive approach responses to help the individual in need (Eisenberg et al., 2016). Therefore, effective regulation of vicariously evoked emotions may be necessary to overcome personal distress responses and allocate energy and attention to meeting the other's needs (Eisenberg et al., 2016). Indeed, cognitive reappraisal has been associated with greater concurrent general prosocial behaviors in samples of Portuguese (Moreira et al., 2020), Spanish, Columbian, and Irish (Gómez-Ortiz et al., 2019) adolescents. In U.S. Latinx emerging adults, reappraisal was concurrently associated with emotional, but not public, prosocial behaviors (Davis et al., 2018b). Furthermore, in Italian adolescents, cognitive reappraisal was indirectly associated with general prosocial behaviors via empathic concern (Laghi et al., 2018), consistent with Eisenberg and colleagues' (2016) model of other-oriented prosocial behavior. Therefore, we expected U.S. Latinx adolescents with greater cognitive reappraisal skills to engage in greater general and emotional forms of prosocial behaviors.

1.4 | Need to belong and prosocial behavior in adolescence

Social motivation reflects the extent to which individuals have a drive to connect with others in a social group (Baumeister et al., 2011). One form of social motivation that is particularly salient in adolescence is the need to belong, which derives from the desire to form and maintain lasting, positive, and significant relationships (Deci & Ryan, 2000; Eisenberg et al., 2016). While the need to belong is regarded as a fundamental human motivation, the characteristic social reorientation of adolescence makes it a unique period in which to study individual differences in the motivation for wanting to belong (Inguglia et al., 2015; Nelson et al., 2016). According to Blackhart and colleagues (2006),

prosocial behavior is one type of social-affiliative response that serves the need to belong with others by promoting social acceptance from others.

However, the associations between the need to belong and prosocial behavior development have yet to be directly examined empirically. As adolescents learn more about the world around them and gain a better understanding of social hierarchies, greater need to belong is often reflected in greater desires to increase one's social status (Cranka & van den Bos, 2019). Thus, greater attention and energy dedicated to maintaining and improving one's social status may indirectly indicate adolescents' need to belong. In early adolescence, the prioritization of increasing one's social status has been associated with less engagement in prosocial behaviors (Ryan & Shim, 2008; van Den Broek et al., 2016). However, from middle to late adolescence, youths who are considered to be more popular by their peers engage in more prosocial behaviors (Pakaslahti et al., 2002; van Den Broek et al., 2016). Less is known about the association between prioritization of social status and prosocial behavior in late adolescence, although late adolescents who engage in more public prosocial behaviors also have greater egoistic, approval-oriented moral reasoning (Carlo et al., 2003). These findings indicate that public prosocial behavior may serve more self-oriented goals of attaining social acceptance and status, which is concordant with having a greater need to belong.

School belongingness has been shown to develop similarly over the high school years in U.S. Latinx, Asian and European youth (Neel & Fuligni, 2013), which may suggest that need to belong would be a similarly relevant social motivation across these communities. Several traditional cultural values, such as familism and collectivism, promote greater communal orientations for behavior, which might strengthen the association between the need to belong and prosocial behaviors in U.S. Latinx youth (Carlo & de Guzman, 2009). Therefore, we expected Mexican-origin youths with greater need to belong to engage in more general and public prosocial behaviors, reflecting the egoistic motivation to attain approval and status from peers.

1.5 | Cognitive reappraisal, need to belong, and prosocial behavior

Although emotional prosocial behaviors can align more closely with other-oriented than egoistic prosocial motivation (Eisenberg et al., 2016), it is important to note that general and emotional prosocial behavior also have the potential to fulfill the self-oriented motivation of reputation enhancement and social acceptance. For youths who infrequently use cognitive reappraisal to regulate their emotions, the need to belong may promote an ability to overcome empathic discomfort when seeing others in distress, in order to receive others' approval for any efforts to help. Therefore, engagement in general and emotional prosocial behaviors may be supported either through cognitive reappraisal or need to belong. Conversely, engagement in general and emotional prosocial behaviors would be lowest for youths with both low engagement in cognitive reappraisal and less need to belong, as these youth lack not only an ability to self-regulate their emotions during times of others' distress, but also the social motivation to overcome their self-focused emotional arousal. To our knowledge, this hypothesis has not been tested in prior studies.

On the other hand, engaging in public forms of prosocial behavior would be expected to be less contingent on effective cognitive reappraisal. Public prosocial behavior reflects a desire to attain social approval by having others witness one's attempts to provide help (Carlo & Randall, 2002; Findley-Van Nostrand & Ojanen, 2018; Van der Graaff et al., 2018). This aligns closely with the salience of social motivation in adolescence, such that stronger need to belong should motivate more engagement in public prosocial behavior, regardless of use of cognitive reappraisal.

1.6 | Gender differences in adolescent prosocial behavior

Gender-specific socialization practices are widely considered to foster stronger tendencies to engage in general prosocial behavior in girls than boys (Hastings et al., 2015). In regard to specific forms of prosocial behaviors, WEIRD samples of girls have been shown to engage in more supportive or sympathetic forms of prosociality, like comforting,

whereas boys display greater agentic prosocial actions, like public helping (Carlo & Randall, 2002; Findley-Van Nostrand & Ojanen, 2018; van der Graaff et al., 2018). Similarly, Latinx female youth have been found to engage in more emotional prosocial behavior, and Latinx male youth in more public prosocial behavior (Carlo et al., 2010; Xiao et al., 2019). Thus, we expected to observe parallel differences, with female Mexican-origin youth engaging in more general and emotional forms of prosocial behavior, and male Mexican-origin youth engaging in more public prosocial behavior.

1.7 | The current study

To better understand the development of prosocial behavior in Mexican-origin adolescents, we examined whether the conjoint influences of youth's cognitive reappraisal and need to belong contributed to the amount and kinds of prosocial behaviors they displayed at both 17 and 19 years. The findings from this study are intended to extend the existing adolescent prosocial development theoretical frameworks, by identifying individual difference characteristics that promote prosocial behaviors in Mexican-origin adolescents. Moreover, this study aims to further the current understanding of how prosocial motivational sources influence both general and distinct forms of prosocial behaviors in late adolescence.

We tested several hypotheses in this study. First, we hypothesized that cognitive reappraisal and need to belong would positively predict H1a) concurrent and H1b) prospective general prosocial behaviors. We further hypothesized that cognitive reappraisal and the need to belong would conjointly predict prosocial behaviors (H2). Specifically, we predicted that youth with both less need to belong and less endorsement of cognitive reappraisal would H2a) concurrently and H2b) prospectively report the least general prosocial behavior at ages 17 and 19. Regarding gender effects on prosocial behaviors, we predicted that girls would display more general prosocial behaviors at ages 17 and 19 than boys (H3).

Greater use of cognitive reappraisal skills were also predicted to H4a) concurrently and H4b) prospectively predict more emotional prosocial behaviors at age 19. Moreover, greater need to belong was expected to H5a) concurrently and H5b) prospectively predict greater public prosocial behaviors. Parallel to the effect on general prosocial behaviors, we anticipated that youths with both less cognitive reappraisal skills and less need to belong would H6a) concurrently and H6b) prospectively endorse the least emotional prosocial behaviors. Regarding the effects of gender on forms of prosocial behaviors, girls were expected to display greater emotional prosocial behaviors (H7a), whereas boys were expected to display greater public prosocial behaviors than girls at age 19 (H7b).

2 | METHOD

2.1 | Participants

Participants were 229 Mexican-origin adolescents (Time 1, T1; $M_{age} = 17.18$ years, $SD = .42$, 110 female) enrolled in a sub-study of the California Families Project (CFP), a prospective, longitudinal study from 2013–2015. The sub-study was designed to examine neurobiological mechanisms of depression, and therefore oversampled youth with elevated risk for depressive symptoms from the CFP, based on counts of adolescents' self-reported symptoms in ninth grade (age 14) on the Diagnostic Interview Schedule for Children-IV (DISC; Shaffer et al., 2000) and indicators of elevated severity from the Anhedonic Depression and General Distress subscales of the Mood and Anxiety Symptom Questionnaire (Watson & Clark, 1991). The sample consisted of adolescents whose symptom scores were above the median on all three measures of depression ($N = 43$), on two measures ($N = 64$), on one measure ($N = 68$), and at or below the median on all three measures ($N = 54$), ensuring variability in symptoms. As such, a dichotomous recruitment status variable (1 = scored above the median on any recruitment measure, 0 = scored below the median on all measures) was included as a covariate in the current analyses. Gender was coded as a dichotomous variable (0 = girl, 1 = boy)

and was included as a covariate in the current analyses. Participants ($N = 182$; 90 female) completed a second lab visit approximately 2 years later ($M_{\text{interval}} = 2.03$ years, $SD = .14$) in young adulthood ($M_{\text{age}} = 19.12$ years, $SD = .46$).

2.2 | Measures

2.2.1 | Cognitive reappraisal

The Emotion Regulation Questionnaire (ERQ) is a 10-item scale that assesses individual differences in the habitual use of two emotion regulation strategies: cognitive reappraisal and expressive suppression (Gross & John, 2003). Cognitive reappraisal is measured by 6 items (e.g., "When I want to feel more positive emotion, I change the way I'm thinking about the situation"). Participants reported the extent to which the statements relate to their emotional experiences and expressions on a 7-point Likert scale (1 = *Strongly disagree*, 4 = *Neutral*, 7 = *Strongly agree*), with higher scores indicating greater use of cognitive reappraisal strategies. Cronbach's alpha (α) reliability coefficients for cognitive reappraisal were .80 (T1) and .83 (T2).

2.2.2 | Need to belong

The Need to Belong Scale (Leary et al., 2013) is a 10-item measure that assesses an individual's desire for acceptance and belonging (e.g., "I want other people to accept me"). Participants reported the degree to which each statement is true or characteristic of them on a 5-point scale (1 = *not at all*, 2 = *slightly*, 3 = *moderately*, 4 = *very*, 5 = *extremely*). One item ("I seldom worry about whether other people care about me") was removed from the measure as it did not load well with the other items for this sample. For this measure, scores on the remaining 9 items were averaged, with higher values indicating greater need to belong with others; $\alpha = .76$ at both T1 and T2.

2.2.3 | Prosocial behaviors

The Strengths and Difficulties Questionnaire (SDQ) is a 25-item measure that assesses social, emotional, and behavioral strengths and difficulties (Goodman, 1997). For each item, participants reported whether the item was "Not True," "Somewhat True," or "Certainly True" for themselves in the past 6 months. The Prosocial Behaviors subscale (five items, e.g., "I often offer to help others [parents, teachers, children].") See supplemental materials for a list of all items.) was used as a measure of general prosocial behaviors in adolescents at T1 and T2, with higher scores indicating greater engagement in general prosocial behaviors; $\alpha = .63$ at T1 and .72 at T2.

The Prosocial Tendencies Measure-Revised (PTM-R) was used to further assess discrete dimensions of prosocial behavior at T2. The 25 items in this measure assess six types of prosocial behaviors (public, anonymous, dire, emotional, compliant, and altruistic; Carlo & Randall, 2002). The two tendencies examined in this study included emotional and public prosocial behavior scales. Emotional prosocial behaviors are behaviors intended to benefit others enacted under emotionally evocative situations (five items; "I respond to helping others best when the situation is highly emotional"). Public prosocial behaviors are helping behaviors enacted in the presence of others (four items; "I get the most out of helping others when it is done in front of others." Please see the online supplemental materials for all items on the emotional and public subscales.). Adolescents rated the items using a 5-point scale ranging from 1 (*does not describe me at all*) to 5 (*describes me greatly*). Higher scores on each scale indicate a stronger tendency to engage in those behaviors; $\alpha = .77$ for both emotional and public.

The altruistic behavior scale of the PTM-R could be seen as another facet of Eisenberg and colleagues' (2016) other-focused or altruistically motivated prosocial behavior. One salient distinction between the items on the emotional

scale and those on the altruistic scale is that the latter items lack information on the emotional states of the recipients of altruistic behavior (Carlo & Randall, 2002), such that these altruistic behaviors might not be influenced by emotion regulation strategies like cognitive reappraisal (Davis et al., 2018b). In order to test whether such specificity of associations between individual difference characteristics and types of prosocial behavior were evident in this sample, analyses of altruistic prosocial behavior are included in the online supplemental materials.

2.3 | Procedures

At T1 and T2, participants visited a medical research facility in Northern California with a parent, where procedures included obtaining their informed consent and assent, assessment of multiple aspects of neurobiological functioning, and questionnaire completion (about 3 h). At the first visit, adolescents completed the SDQ, ERQ, and Need to Belong measures. At the second visit, adolescents again completed these three measures as well as the PTM-R. Each adolescent and their parent were compensated monetarily for their participation at each visit.

2.4 | Analytic approach

Outliers were considered scores on any measure exceeding 3 standard deviations from the sample mean. The data were examined for univariate outliers, and bivariate outliers were examined using scatterplots of all pairs of variables of interest. No outliers were found in the data. A Missing Values Analysis using Little's Missing Completely at Random (MCAR) test was not significant, $\chi^2(26) = 22.31, p = .05$. Therefore, the data were treated as MCAR.

Two structural equation models were conducted to assess the associations among the need to belong, cognitive reappraisal, and prosocial behaviors at T1 and T2. Within both models, all possible path coefficients were unconstrained to assess for all possible associations between variables. Model 1 assessed concurrent and prospective associations among need to belong, cognitive reappraisal, and general prosocial behaviors at T1 and T2. In the event of significant interaction effects, simple slopes analyses were conducted to explore the conditional effects of need to belong with general prosocial behaviors at lower (-1 SD) versus higher ($+1$ SD) levels of cognitive reappraisal. Model 2 assessed the concurrent and prospective associations of need to belong and cognitive reappraisal at T1 and T2 with emotional and public prosocial behaviors at T2. Significant interaction effects were probed in the same way as Model 1.

Analyses were conducted in Mplus 8.3 with full information maximum likelihood estimation to account for missing data. Model fit was considered good if the comparative fit index (CFI) was greater than or equal to .95 (.90 for adequate fit), the root mean square error of approximation (RMSEA) was less than or equal to .06 (.08 for adequate fit), and the standardized root mean square residual (SRMR) was less than or equal to .08 (.10 for adequate fit).

3 | RESULTS

3.1 | Preliminary analyses

Table 1 presents the means, standard deviations, and zero-order correlations of target variables and demographic characteristics. From T1 to T2, there were significant increases in cognitive reappraisal skills, $t(170) = -3.34, p < .001$, and general prosocial behaviors, $t(169) = -35.70, p < .001$, but not need to belong, $t(172) = .69, p > .05$. At T2, youths who reported a greater need to belong also reported more emotional and public prosocial behaviors, and youth with greater cognitive reappraisal reported more concurrent engagement in both general and emotional prosocial behaviors. General prosocial behaviors at T1 and T2 were significantly and positively associated with emotional prosocial behaviors. Youths reporting greater emotional prosocial behaviors also reported greater public prosocial behaviors.

TABLE 1 Descriptive statistics and zero-order correlations among demographics, cognitive reappraisal, need to belong, general prosocial behaviors, and emotional and public prosocial behaviors

	M (SD)	Gender	T1Age	T2Age	Dep	T1NTB	T1CR	T1PRO	T2NTB	T2CR	T2PRO	T2EMO
T1 age	17.18 (.42)	-.01	1									
T2 age	19.12 (.46)	-.13	.95***	1								
Dep	.76 (.43)	-.17**	-.07	.09	1							
T1NTB	2.73 (.64)	-.17**	.05	-	.15*	1						
T1CR	4.87 (1.09)	.01	.04	-	-.14*	-.03	1					
T1PRO	1.48 (.38)	-.25***	.14*	-	-.07	.04	.08	1				
T2NTB	2.72 (.67)	-.13	-	-.15	.04	.53***	-.03	.04	1			
T2CR	5.16 (1.09)	-.03	-	-.04	-.09	-.14	.43***	.17*	-.08	1		
T2PRO	1.54 (.40)	-.22**	-	.17*	-.08	.04	.21**	.50***	.07	.22**	1	
T2EMO	3.47 (.85)	-.31***	-	.08	-.08	.22*	.16	.34***	.19*	.22**	.50***	1
T2PUB	2.03 (.88)	.05	-	.04	.00	.01	-.16*	.01	.24***	.00	-.09	.20**

Note: N = 229 (T1; 110 girls), 182 (T2; 90 girls). Gender was coded for girls = 0 and boys = 1.

Abbreviations: CR, cognitive reappraisal (T1 Min = 1.00, T1 Max = 7; T2 Min = 2.17, T2 Max = 7); Dep, depression recruitment status; EMO, emotional prosocial behaviors (Min = 1.00, Max = 5.00); NTB, need to belong (T1 Min = 1.00, T1 Max = 4.33; T2 Min = 1.00, T2 Max = 4.67); PRO, general prosocial behaviors (T1 Min = .00, T1 Max = 2.00; T2 Min = .00, T2 Max = 2.00); PUB, public prosocial behaviors (Min = 1.00, Max = 5.00); T1, time 1; T2, time 2.

*p < .05; **p < .01; ***p < .001.

TABLE 2 Direct effects among demographics, cognitive reappraisal, need to belong, and prosocial behaviors

	Model 1				Model 2			
	T1 general prosocial behaviors		T2 general prosocial behaviors		T2 emotional prosocial behaviors		T2 public prosocial behaviors	
	β	<i>p</i>	β	<i>p</i>	β	<i>p</i>	β	<i>p</i>
T1 age	.20	.007	.04	.856	.28	.213	.07	.797
T2 age	–	–	.04	.840	–.18	.438	.07	.770
Depression risk	–.07	.341	–.07	.320	–.16	.032	.02	.776
Gender	–.25	.001	–.12	.093	–.31	.000	.16	.057
T1 general prosocial behaviors	–	–	.48	.000	–	–	–	–
T1 cognitive reappraisal	.27	.000	.05	.517	.13	.104	–.03	.718
T1 need to belong	–.04	.603	.02	.843	.15	.086	.06	.538
T1 CR X NTB	.03	.334	–.05	.136	–.11	.157	–.03	.742
T2 cognitive reappraisal	–	–	.12	.099	.15	.065	.08	.397
T2 need to belong	–	–	.10	.196	.12	.165	.20	.037
T2 CR X NTB	–	–	–.07	.034	–.24	.002	–.02	.801

Note: Significant effects are in bold. For gender, 0 = girls, 1 = boys.

Abbreviations: CR, cognitive reappraisal; NTB, need to belong; T1, time 1; T2, time 2.

Cognitive reappraisal at T1 was positively associated with T2 general prosocial behaviors and negatively associated with public prosocial behaviors. Moreover, need to belong, cognitive reappraisal, and general prosocial behaviors were stable from T1 to T2. Age and depression recruitment status were correlated significantly with one or more of the target variables; therefore, these were included as covariates in all models. Gender was regressed onto all variables of interest to explore the effect of significant gender differences.

3.2 | Prediction of general prosocial behaviors

Table 2 and Figure 1 present the model testing the concurrent and prospective associations between youth's need to belong and cognitive reappraisal and their general prosocial behaviors at T1 and T2; all direct and interactive associations are included in Table 2, whereas Figure 1 includes only the significant path coefficients. Interactions between cognitive reappraisal and need to belong at both measurement occasions were included to test the moderation hypotheses regarding their combined association with general prosocial behaviors. The model demonstrated good fit, $\chi^2(8) = 2.49, p = .78, CFI = 1.00, RMSEA = .00(.00-.08), SRMR = .01$ when controlling for the effects of age, gender, and depression recruitment status.

Contrary to Hypothesis 1, need to belong was not significantly and directly associated with general prosocial behaviors at T1 nor T2. However, in line with Hypothesis 1a, at T1 there was a significant positive association between cognitive reappraisal and general prosocial behaviors; youth who reported greater cognitive reappraisal skills also reported more concurrent general prosocial behaviors. Regarding Hypothesis 1b, cognitive reappraisal at T1 did not predict general prosocial behaviors at T2, after accounting for stability of measures.

In line with Hypothesis 2, the concurrent interaction of need to belong with cognitive reappraisal at T2 significantly moderated general prosocial behaviors, yet the T1 interaction was neither concurrently nor longitudinally associated with general prosocial behaviors (see Figure 2). Examination of simple slopes showed that need to belong was positively associated with general prosocial behaviors when cognitive reappraisal was lower ($\beta = .22, p < .01$), but not

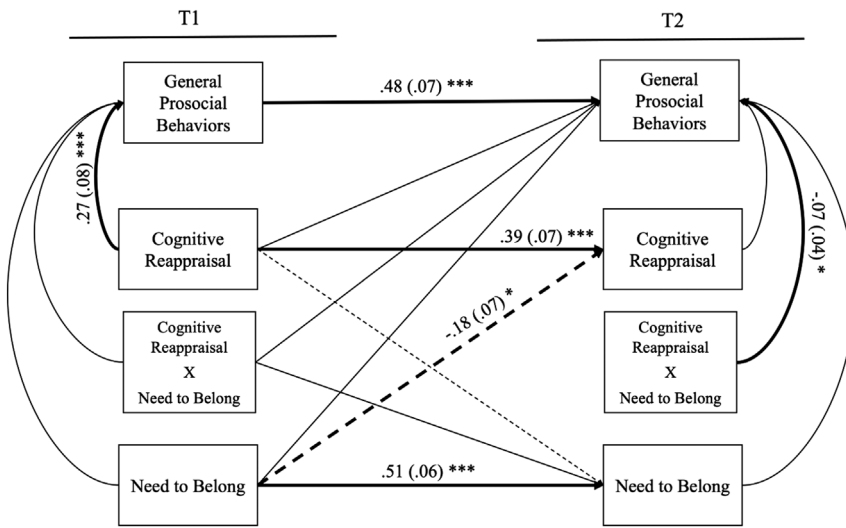


FIGURE 1 Prediction of general prosocial behaviors by need to belong and cognitive reappraisal at ages 17 and 19 years. Structural equation model including significant paths with standardized path coefficients (standard error in parenthesis). Note: Covariates included age, gender, and depression recruitment status; paths for covariates are not presented for clarity of the figure. $N = 229$. $*p < .05$, $**p < .01$, and $***p < .001$

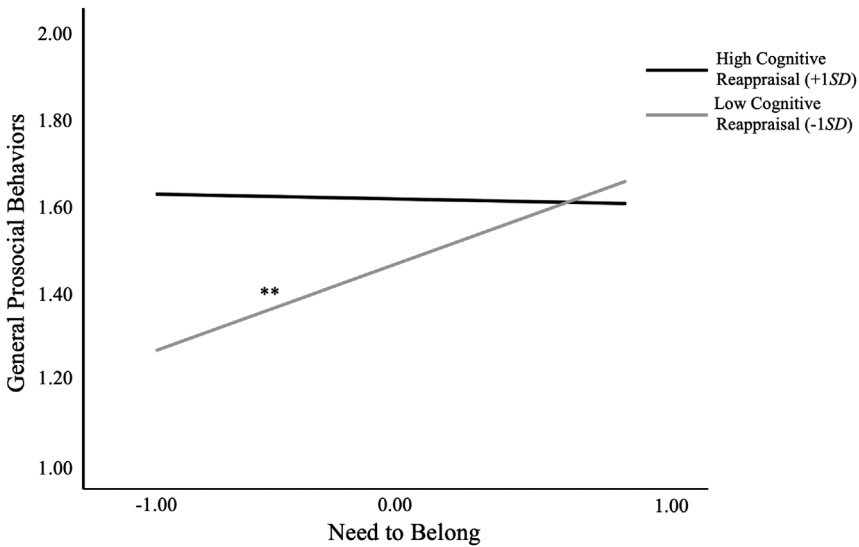


FIGURE 2 Simple slopes of the age 19 concurrent associations of need to belong in relation to general prosocial behaviors for those with low (1 SD below the mean; $\beta = .22, p < .01$) and high (1 SD above the mean; $\beta = -.01, p = .81$) levels of cognitive reappraisal

when it was higher ($\beta = -.01, p = .81$). Youth with greater need to belong and less use of cognitive reappraisal reported as much general prosocial behavior as did youth with greater use of cognitive reappraisal regardless of their need to belong; general prosocial behavior was lowest for youth with both less need to belong and less use of cognitive reappraisal. With respect to the covariates, older youth reported greater prosocial behaviors at T1. Furthermore, the model

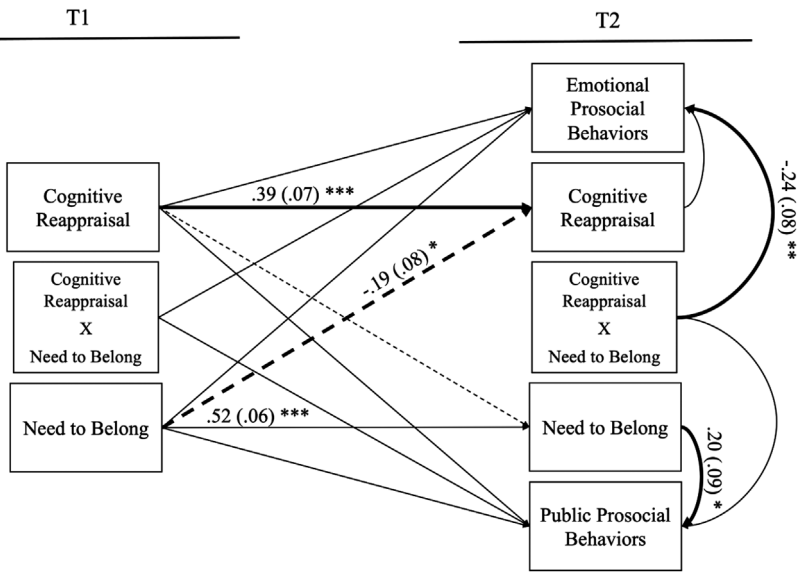


FIGURE 3 Prediction of emotional and public prosocial behaviors at 19 years from need to belong and cognitive reappraisal at 17 and 19 years. Structural equation model including significant paths with standardized path coefficients (standard error in parenthesis). Note: Covariates included age, gender, and depression recruitment status; paths for covariates are not presented for clarity of the figure. $N = 229$. * $p < .05$, ** $p < .01$, and *** $p < .001$

also demonstrated that youths who endorsed greater need to belong at T1 reported less use of cognitive reappraisal at T2.

Girls at T1 reported significantly greater need to belong ($M = 2.85$, $SD = .63$) than boys ($M = 2.63$, $SD = .64$); $t(227) = 2.64$, $p < .01$. Contrary to Hypothesis 3, there were no significant differences in general prosocial behaviors between girls ($M = .62$, $SD = .29$) and boys ($M = .47$, $SD = .32$) at T1; $t(225) = 3.81$, $p = .14$, nor between girls ($M = 1.63$, $SD = .37$) and boys ($M = 1.46$, $SD = .41$) at T2; $t(180) = 3.01$, $p = .22$.

3.3 | Prediction of emotional and public prosocial behaviors

Table 2 and Figure 3 present the model testing the prediction of emotional and public prosocial behaviors at T2 from need to belong and cognitive reappraisal at T1 and T2; all direct and interactive associations are included in Table 2. Figure 3 includes only the significant path coefficients. Interactions between cognitive reappraisal and need to belong at both measurement occasions were included to test the moderation hypotheses regarding their combined associations with emotional and public prosocial behaviors at T2. The model demonstrated good fit, $\chi^2(2) = 3.97$, $p = .10$, CFI = 1.00, RMSEA = .00 (.00–.08), SRMR = .01 when controlling for the effects of age, gender, and depression recruitment status.

Contrary to Hypotheses 4a and 5a, there were no longitudinal associations between need to belong nor cognitive reappraisal at T1 and emotional or public prosocial behaviors at T2. While concurrent cognitive reappraisal skills at T2 were not associated with emotional prosocial behaviors (Hypothesis 4b), there was a significant positive association between need to belong and public prosocial behaviors (Hypothesis 5b); those who reported greater need to belong also reported more concurrent public prosocial behaviors. Although cognitive reappraisal was not directly associated with emotional prosocial behaviors, the interaction of need to belong with cognitive reappraisal at T2 significantly moderated emotional prosocial behaviors as predicted in Hypothesis 6b (see Figure 4). Parallel to what was observed

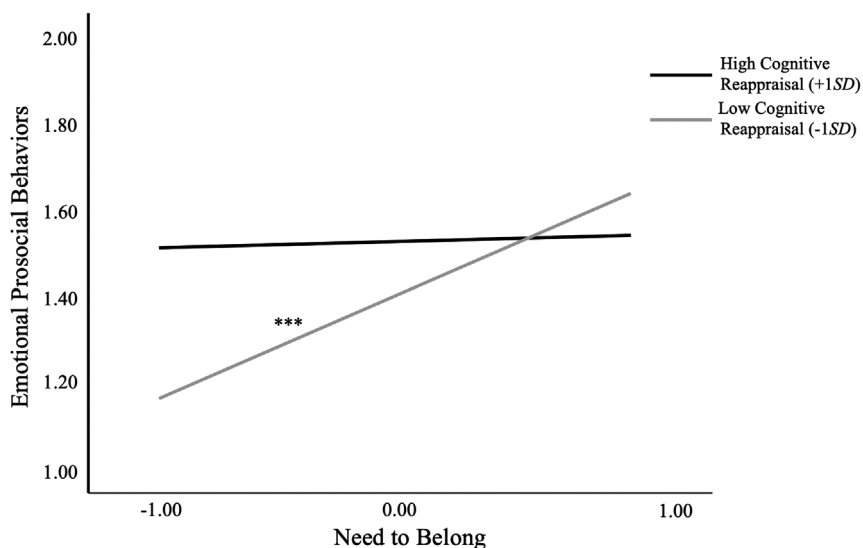


FIGURE 4 Simple slopes of need to belong predicting emotional prosocial behaviors at 19 years at 1 SD below the mean of cognitive reappraisal ($\beta = .58, p < .001$) and 1 SD above the mean of cognitive reappraisal ($\beta = .03, p = .80$). $N = 182$

for general prosocial behaviors, examination of simple slopes showed that need to belong was positively associated with emotional prosocial behaviors when cognitive reappraisal was lower ($\beta = .58, p < .001$), but not when it was higher ($\beta = .03, p = .80$). Youth with greater need to belong and less use of cognitive reappraisal reported as much emotional prosocial behavior as did youth with higher cognitive reappraisal regardless of their need to belong. Youth with both less need to belong and less use of cognitive reappraisal reported the fewest emotional prosocial behaviors.

As predicted in Hypothesis 7a, girls endorsed significantly greater emotional prosocial behaviors ($M = 3.74, SD = .67$) than boys ($M = 3.21, SD = .93$); $t(180) = 4.40, p < .001$. Contrary to Hypothesis 7b, public prosocial behaviors were not endorsed significantly greater by boys ($M = 2.07, SD = .90$) than girls ($M = 1.98, SD = .86$); $t(180) = -.67, p = .25$.

4 | DISCUSSION

Understanding the contextual and developmental demands that account for individual differences in Mexican-origin adolescents' prosocial responding is important for developing strength-based models of youth adjustment for this marginalized community. The present findings extend the past literature on culture and socialization by identifying salient individual difference characteristics that are associated with prosocial behaviors by Mexican-origin youth raised in the United States. As adolescents are highly attuned to their social surroundings, effective use of cognitive regulation of emotions and a greater drive to belong with others in the social group may confer more adaptive social functioning, including engagement in prosocial behaviors (Pakaslahti et al., 2002; Wentzel et al., 2007). Therefore, this study tested the extent to which cognitive reappraisal and need to belong were associated with both the amount and different forms of prosocial behaviors in which Mexican-origin adolescents engage.

As we first hypothesized, youths with greater use of cognitive reappraisal reported more concurrent general prosocial behavior at 17 years, which is consistent with prior work conducted in other diverse populations (Carlo et al., 2012; Gómez-Ortiz et al., 2019; Moreira et al., 2020; Padilla-Walker et al., 2018; Silvers et al., 2012). Yet, contrary to our expectations, cognitive reappraisal skills did not concurrently nor prospectively predict general prosocial behaviors at

age 19. Moreover, Mexican-origin youths' need to belong was not directly associated with general prosocial behaviors at either 17 nor 19 years. Thus, cultivating cognitive reappraisal skills during late adolescence, compared to emerging adulthood, might have a greater positive impact on Mexican-origin youths' prosociality. In addition, future research that examines the possible interplay of culture-specific mechanisms (e.g., *familismo*, ethnic identity, *respeto*) and traditional individual difference correlates of prosocial behavior might provide additional insights into understanding the associations between emotion regulation strategies and prosocial behaviors in ethnic minority youth.

In regard to different forms of prosocial behavior, results support our hypothesis that greater need to belong would be associated with greater public prosocial behaviors, yet was limited to concurrent associations at age 19. Contrary to our expectations, cognitive reappraisal was not directly associated with emotional prosocial behaviors concurrently nor prospectively. Adolescence presents novel and unique social interactions and challenges, to which youths must adjust to fulfill important social goals. Considering the enhanced salience of peer appraisal and social status during adolescence, differences in the need to belong with others may influence social adjustment during this developmental period. Moreover, need to belong can be seen as aligning with the value espoused amongst many Latinx families of fostering interdependence and collectivism (including *familismo*) and *personalismo* (i.e., intimate relationships) in their youth (Carlo et al., 2011). Hence, among Mexican-origin youth, greater need to belong being associated with public prosocial behaviors at 19 years may reflect multiple underlying processes, such as the motivation to secure social status through displays of helpfulness to gain approval from others, as has been suggested for adolescents in other communities (Carlo & Randall, 2002; Findley-Van Nostrand & Ojanen, 2018; van der Graaff et al., 2018), and a culturally socialized value of maintaining positive and harmonious relationships with others (Carlo et al., 2022; Knight & Carlo, 2012).

Two interaction effects revealed that the lowest levels of both general and emotional prosocial behaviors were found for adolescents who reported low use of cognitive reappraisal skills and low need to belong. Conversely, adolescents with greater need to belong reported similarly high general and emotional prosocial behaviors, regardless of cognitive reappraisal skills, as did adolescents with greater use of cognitive reappraisal, regardless of need to belong. These results indicate the importance of considering multiple distinct social and emotional tendencies of adolescents when seeking to understand and promote greater engagement in prosocial behavior. From early to late adolescence, normative psychosocial development entails a decrease in peer salience alongside a gradual increase in cognitive control abilities (Nelson et al., 2016). Therefore, typical motivations to engage in prosocial behaviors may become less driven by external rewards, and more by internal abilities to regulate the self to meet internalized social norms. Youth with relatively low levels of either of these external and internal motivations, however, may experience little impetus to engage in other-oriented prosocial behaviors. These findings support and extend Eisenberg and colleagues' (2016) heuristic model, by demonstrating that youths may have multiple, simultaneous motives to engage in not only general, but also distinct forms of prosocial behaviors as well.

Notably, the interaction between cognitive reappraisal and need to belong was limited to concurrent associations within emerging adulthood (age 19 years) for both general and emotional prosocial behaviors. The gradual maturation of cognitive reappraisal during the transition into emerging adulthood (Silvers et al., 2012) may explain why the interaction effect was stronger at 19 years old. Further maturation of cognitive reappraisal skills over the transition from adolescence to emerging adulthood may have been required for this aspect of emotion regulation to moderate the link between need to belong and prosocial behavior. Our observations that both cognitive reappraisal and general prosocial behaviors significantly increased from 17 to 19 years are consistent with this argument. Moreover, these two interaction effects demonstrate that general and emotional prosocial behaviors may function more similarly than public prosocial behaviors. This may indicate that for items assessing general prosocial behaviors, adolescents may be conceptualizing prosociality to be more other-oriented or altruistically driven.

Interestingly, greater endorsement of need to belong at 17 years was associated with smaller increases in cognitive reappraisal skills 2 years later. The salience of the need to belong – the drive to fit in with peers and maintain social status – diminishes across adolescence (Nelson et al., 2016), such that youth with greater need to belong in late adolescence may have had delayed development of autonomy, compared to their peers (Deci & Ryan, 2000;

Inguglia et al., 2015). Cognitive reappraisal skills require some ability to partially distance oneself from emotional instances and focus attention on regulating the self. Therefore, those Mexican-origin youth who had not adhered to the normative developmental course of autonomy may not have been able to engage in cognitive reappraisal as effectively in emerging adulthood. Conversely, youths with greater cognitive reappraisal reported more emotional prosocial behaviors regardless of their need to belong. Therefore, cognitive reappraisal may be a means of strengthening the association between need to belong and care-based helping (i.e., emotional prosocial behaviors) by increasing empathy development and concern for others.

The current study provides valuable evidence that informs understanding of how underlying psychological motivators are associated with the development of prosocial behavior in Mexican-origin adolescents. The study also presents some limitations, however. Perhaps the greatest limitation of this study was our inability to test the longitudinal development of the two dimensions of prosocial behaviors (i.e., emotional and public prosociality) alongside changes in cognitive reappraisal and need to belong across the same 2-year period. Future work involving prospective analyses of longitudinal data is needed to examine the association of late adolescents' cognitive reappraisal and need to belong with both emotional and public dimensions into emerging adulthood. Furthermore, general prosocial behaviors, cognitive reappraisal, and need to belong all displayed moderate stability between both time points, which may indicate the influence of biological (e.g., genetics) and environmental (e.g., socialization experiences) substrates on the stability of these mechanisms during development from late adolescence to emerging adulthood. A second limitation was our reliance on reports from solely the participant, which raises concerns that the findings are subject to response biases (e.g., reporter, self-presentational, and social biases). Thus, future research should incorporate multi-method approaches that do not rely only on self-reporting of prosocial behaviors (e.g., include parent- or peer-report, observable measures) to reduce the potential effects of response biases. A third limitation was our reliance on measures of prosocial behaviors that do not specify the recipient of these actions. Given the characteristic shift in spending time with parents to peers during adolescence (Steinberg, 2005), greater attention should be given to better understanding the differential effects and motivations of prosocial behaviors directed at helping peers as opposed to other social groups (e.g., family, strangers; Padilla-Walker et al., 2018; Van de Groep et al., 2020).

The present findings advance a more nuanced understanding of prosociality and the motivations promoting distinct forms of such behaviors in Mexican-origin youth. The study yielded evidence of the importance of two individual difference variables, cognitive reappraisal and need to belong, for prosocial behaviors of Mexican-origin youth. These findings provide support for traditional models of prosocial development but also importantly extend such work to ethnic minority youth. Given prior research focused on culture-specific mechanisms associated with Mexican-origin youths' prosocial behaviors (Knight & Carlo, 2012), the current results indicate that integrating individual difference and culture-specific mechanisms within different ethnic groups can enhance our understanding of positive social development in ethnic minority youth. In accord with multidimensional models of prosocial behavior (Carlo & Padilla-Walker, 2020), the present findings demonstrated distinct associations with specific forms of prosocial behaviors and suggest the need for studies that incorporate assessments of different forms of effective emotion regulation strategies (e.g., attention diversion, mindfulness, seeking social support from others) and need to belong (e.g., restricted to just the peer group, society as a whole) to more fully understand adolescent prosociality. Such research may help to inform potential interventions or skill-building efforts utilizing the two processes of emotion regulation and social motivation that are salient in adolescence as ways in which to promote positive, helping behaviors in Mexican-origin adolescents.

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CONFLICT OF INTEREST

The authors listed certify that they have NO affiliations with or involvement in any organization or entity with any financial interest, or non-financial interest in the subject matter or materials discussed in this manuscript.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ETHICS STATEMENT

This research has been conducted in concordance with the Institutional Review Board's (IRB) guidelines of the ethics of research.

REFERENCES

- Allen, N., & Nelson, B. W. (2018). The development of emotion regulation across the transition from childhood to adolescence: Regulation of what and regulation for whom? In P. M. Cole, & T. Hollenstein (Eds.), *Emotion regulation* (pp. 140–157). Routledge.
- Baumeister, R. F. (2011). Need-to-belong theory. *Handbook of theories of social psychology* (Vol. 2, pp. 121–140). SAGE.
- Blackhart, G. C., Baumeister, R. F., & Twenge, J. M. (2006). Rejection's impact on self-defeating, prosocial, antisocial, and self-regulatory behaviors. In K. D. Vohs, & E. J. Finkel (Eds.), *Self and relationships: Connecting intrapersonal and interpersonal processes* (pp. 237–253). The Guilford Press.
- Calderón-Tena, C. O., Knight, G. P., & Carlo, G. (2011). The socialization of prosocial behavioral tendencies among Mexican American adolescents: The role of familism values. *Cultural Diversity and Ethnic Minority Psychology*, 17(1), 98–106. <https://doi.org/10.1037/a0021825>
- Caprara, G. V., Kanacri, B. P. L., Gerbino, M., Zuffianò, A., Alessandri, G., Vecchio, G., Caprara, E., Pastorelli, C., & Bridgall, B. (2014). Positive effects of promoting prosocial behavior in early adolescence: Evidence from a school-based intervention. *International Journal of Behavioral Development*, 38(4), 386–396. <https://doi.org/10.1177/0165025414531464>
- Carlo, G., & de Guzman, M. R. T. (2009). Theories and research on prosocial competencies among U.S. Latinos/as. In F. A. Villaruel, G. Carlo, J. M. Grau, M. Azmitia, N. J. Cabrera, & T. J. Chahin (Eds.), *Handbook of U.S. Latino psychology: Developmental and community-based perspectives* (pp. 191–211). Sage Publications, Inc.
- Carlo, G., Hastings, P. D., Dicus, J. L., & Ugarte, E. (2022). Development, culture, and Neurobiology of moral emotions in ethnic/racial minority children: A case study of US Latino/a children. In D. Dukes, A. Samson, & E. A. Walle (Eds.), *The oxford handbook of emotional development*. Oxford Academic. <https://doi.org/10.1093/oxfordhb/9780198855903.013.2>
- Carlo, G., Hausmann, A., Christiansen, S., & Randall, B. A. (2003). Sociocognitive and behavioral correlates of a measure of prosocial tendencies for adolescents. *The Journal of Early Adolescence*, 23(1), 107–134. <https://doi.org/10.1177/0272431602239132>
- Carlo, G., Knight, G. P., McGinley, M., & Hayes, R. (2011). The roles of parental inductions, moral emotions, and moral cognitions in prosocial tendencies among Mexican American and European American early adolescents. *The Journal of Early Adolescence*, 31(6), 757–781. <https://doi.org/10.1177/0272431610373100>
- Carlo, G., Knight, G. P., McGinley, M., Zamboanga, B. L., & Jarvis, L. H. (2010). The multidimensionality of prosocial behaviors and evidence of measurement equivalence in Mexican American and European American early adolescents. *Journal of Research on Adolescence*, 20(2), 334–358. <https://doi.org/10.1111/j.1532-7795.2010.00637.x>
- Carlo, G., Mestre, M. V., McGinley, M. M., Samper, P., Tur, A., & Sandman, D. (2012). The interplay of emotional instability, empathy, and coping on prosocial and aggressive behaviors. *Personality and Individual Differences*, 53, 675–680. <https://doi.org/10.1016/j.paid.2012.05.022>
- Carlo, G., & Padilla-Walker, L. M. (2020). Adolescents' prosocial behaviors through a multidimensional and multicultural looking glass. *Child Development Perspectives*, 14, 265–272. <https://doi.org/10.1111/cdep.12391>
- Carlo, G., & Randall, B. A. (2002). The development of a measure of prosocial behaviors for late adolescents. *Journal of Youth and Adolescence*, 31(1), 31–44. <https://doi.org/10.1023/A:1014033032440>
- Ciranka, S. K., & van den Bos, W. (2019). Social influence in adolescent decision making: A formal framework. *Frontiers in Psychology*, 10, 1915. <https://doi.org/10.3389/fpsyg.2019.01915>
- Cole, P. M., Martin, S. E., & Dennis, T. A. (2004). Emotion regulation as a scientific construct: Methodological challenges and directions for child development research. *Child Development*, 75(2), 317–333. <https://doi.org/10.1111/j.1467-8624.2004.00673.x>
- Davis, A. N., Carlo, G., Streit, C., Schwartz, S. J., Unger, J. B., Baezconde-Garbanati, L., & Szapocznik, J. (2018a). Longitudinal associations between maternal involvement, cultural orientations, and prosocial behaviors among recent immigrant latino adolescents. *Journal of Youth and Adolescence*, 47(2), 460–472. <https://doi.org/10.1007/s10964-017-0792-3>
- Davis, A. N., Carlo, G., Zamboanga, B. L., Kim, S. Y., Schwartz, S. J., Armenta, B., Opal, D., & Streit, C. (2018b). The roles of familism and emotion reappraisal in the relations between acculturative stress and prosocial behaviors in Latino/a college students. *Journal of Latina/o Psychology*, 6(3), 175–189. <https://doi.org/10.1037/lat0000092>
- Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, 11(4), 227–268. https://doi.org/10.1207/S15327965PLI1104_01

- Eberly-Lewis, M. B., & Coetzee, T. M. (2015). Dimensionality in adolescent prosocial tendencies: Individual differences in serving others versus serving the self. *Personality and Individual Differences*, 82, 1–6. <https://doi.org/10.1016/j.paid.2015.02.032>
- Eisenberg, N., Spinrad, T. L., & Knafo-Noam, A. (2015). Prosocial development. In M. Lamb (Ed.) & R. M. Lerner, (Vol. Ed.), *Handbook of child psychology and developmental science: Socioemotional processes* (pp 610–656). Wiley.
- Eisenberg, N., VanSchyndel, S. K., & Spinrad, T. L. (2016). Prosocial motivation: Inferences from an opaque body of work. *Child Development*, 87(6), 1668–1678. <https://doi.org/10.1111/cdev.12638>
- Findley-Van Nostrand, D., & Ojanen, T. (2018). Forms of prosocial behaviors are differentially linked to social goals and peer status in adolescents. *The Journal of Genetic Psychology*, 179(6), 329–342. <https://doi.org/10.1080/00221325.2018.1518894>
- Fu, X., Padilla-Walker, L. M., & Brown, M. N. (2017). Longitudinal relations between adolescents' self-esteem and prosocial behavior toward strangers, friends and family. *Journal of Adolescence*, 57, 90–98. <https://doi.org/10.1016/j.adolescence.2017.04.002>
- Gómez-Ortiz, O., Romera, E. M., Ortega-Ruiz, R., Herrera, M., & Norman, J. O. H. (2019). Multidimensional social competence in research on bullying involvement: A cross-cultural study. *Behavioral Psychology/Psicologia Conductual*, 27(2), 217–238.
- Goodman, R. (1997). The strengths and difficulties questionnaire: A research note. *Journal of Child Psychology and Psychiatry*, 38(5), 581–586. <https://doi.org/10.1111/j.1469-7610.1997.tb01545.x>
- Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: Implications for affect, relationships, and well-being. *Journal of Personality and Social Psychology*, 85(2), 348. <https://doi.org/10.1037/0022-3514.85.2.348>
- Hastings, P. D., Miller, J. G., & Troxel, N. R. (2015). Making good: The socialization of children's prosocial development. In J. E. Grusec, & P. D. Hastings (Eds.), *Handbook of socialization: Theory and research* (pp. 637–660). The Guilford Press.
- Henrich, J., Heine, S. J., & Norenzayan, A. (2010). Most people are not WEIRD. *Nature*, 466(7302), 29–29. <https://doi.org/10.1038/466029a>
- Inguglia, C., Inguglia, S., Liga, F., Coco, A. L., & Cricchio, M. G. L. (2015). Autonomy and relatedness in adolescence and emerging adulthood: Relationships with parental support and psychological distress. *Journal of Adult Development*, 22(1), 1–13. <https://doi.org/10.1007/s10804-014-9196-8>
- Knight, G. P., & Carlo, G. (2012). Prosocial development among Mexican American youth. *Child Development Perspectives*, 6(3), 258–263. <https://doi.org/10.1111/j.17508606.2012.00233.x>
- Laghi, F., Lonigro, A., Pallini, S., & Baiocco, R. (2018). Emotion regulation and empathy: Which relation with social conduct? *The Journal of Genetic Psychology*, 179(2), 62–70. <https://doi.org/10.1080/00221325.2018.1424705>
- Leary, M. R., Kelly, K. M., Cottrell, C. A., & Schreindorfer, L. S. (2013). Construct validity of the need to belong scale: Mapping the nomological network. *Journal of Personality Assessment*, 95(6), 610–624. <https://doi.org/10.1080/00223891.2013.819511>
- Lee, J. Y., Chung, I. J., & Miller, D. B. (2021). The developmental trajectories of prosocial behavior in adolescence: A growth-mixture model. *Child Indicators Research*, 15(1), 1–18. <https://doi.org/10.1007/s12187-021-09858-5>
- Moreira, H., Vagos, P., Pereira, J., Fonseca, A., Canavarro, M. C., & Rijo, D. (2020). Psychometric properties of the Portuguese version of the cognitive emotion regulation questionnaire-kids version (CERQ-kids) among a sample of children and adolescents exposed to wildfires. *Current Psychology*, 41(5), 2574–2585. <https://doi.org/10.1007/s12144-020-00778-1>
- Neel, C. G. O., & Fuligni, A. (2013). A longitudinal study of school belonging and academic motivation across high school. *Child Development*, 84(2), 678–692. <https://doi.org/10.1111/j.1467-8624.2012.01862.x>
- Nelson, E. E., Jarcho, J. M., & Guyer, A. E. (2016). Social re-orientation and brain development: An expanded and updated view. *Developmental Cognitive Neuroscience*, 17, 118–127. <https://doi.org/10.1016/j.dcn.2015.12.008>
- Padilla-Walker, L. M., Carlo, G., & Memmott-Elison, M. K. (2018). Longitudinal change in adolescents' prosocial behavior toward strangers, friends, and family. *Journal of Research on Adolescence*, 28(3), 698–710. <https://doi.org/10.1111/jora.12362>
- Pakaslahti, L., Karjalainen, A., & Keltikangas-Järvinen, L. (2002). Relationships between adolescent prosocial problem-solving strategies, prosocial behaviour, and social acceptance. *International Journal of Behavioral Development*, 26(2), 137–144. <https://doi.org/10.1080/01650250042000681>
- Patrick, R. B., Bodine, A. J., Gibbs, J. C., & Basinger, K. S. (2018). What accounts for prosocial behavior? Roles of moral identity, moral judgment, and self-efficacy beliefs. *The Journal of Genetic Psychology*, 179(5), 231–245. <https://doi.org/10.1080/00221325.2018.1491472>
- Rad, M. S., Martingano, A. J., & Ginges, J. (2018). Toward a psychology of homo sapiens: Making psychological science more representative of the human population. *Proceedings of the National Academy of Sciences*, 115(45), 11401–11405. <https://doi.org/10.1073/pnas.1721165115>
- Ryan, A. M., & Shim, S. S. (2008). An exploration of young adolescents' social achievement goals and social adjustment in middle school. *Journal of Educational Psychology*, 100(3), 672.

- Shaffer, D., Fisher, P., Lucas, C. P., Dulcan, M. K., & Schwab-Stone, M. E. (2000). NIMH diagnostic interview schedule for children version IV (NIMH DISC-IV): Description, differences from previous versions, and reliability of some common diagnoses. *Journal of the American Academy of Child & Adolescent Psychiatry*, 39(1), 28–38.
- Silvers, J. A., McRae, K., Gabrieli, J. D., Gross, J. J., Remy, K. A., & Ochsner, K. N. (2012). Age-related differences in emotional reactivity, regulation, and rejection sensitivity in adolescence. *Emotion (Washington, D.C.)*, 12(6), 1235. <https://doi.org/10.1037/a0028297>
- Steinberg, L. (2005). Cognitive and affective development in adolescence. *Trends in Cognitive Sciences*, 9(2), 69–74. <https://doi.org/10.1016/j.tics.2004.12.005>
- Van de Groep, S., Zanolie, K., Green, K. H., Sweijen, S. W., & Crone, E. A. (2020). A daily diary study on adolescents' mood, empathy, and prosocial behavior during the COVID-19 pandemic. *Plos One*, 15(10), e0240349. <https://doi.org/10.1371/journal.pone.0240349>
- van Den Broek, N., Deutz, M. H., Schoneveld, E. A., Burk, W. J., & Cillessen, A. H. (2016). Behavioral correlates of prioritizing popularity in adolescence. *Journal of Youth and Adolescence*, 45(12), 2444–2454. <https://doi.org/10.1007/s10964-015-0352-7>
- Van der Graaff, J., Carlo, G., Crocetti, E., Koot, H. M., & Branje, S. (2018). Prosocial behavior in adolescence: Gender differences in development and links with empathy. *Journal of Youth and Adolescence*, 47(5), 1086–1099. <https://doi.org/10.1007/s10964-017-0786-1>
- Watson, D., & Clark, L. A. (1991). The mood and anxiety symptom questionnaire. *Unpublished manuscript*. University of Iowa, Department of Psychology.
- Wentzel, K. R., Filisetti, L., & Looney, L. (2007). Adolescent prosocial behavior: The role of self-processes and contextual cues. *Child Development*, 78(3), 895–910. <https://doi.org/10.1111/j.1467-8624.2007.01039.x>
- Xiao, S. X., Hashi, E. C., Korous, K. M., & Eisenberg, N. (2019). Gender differences across multiple types of prosocial behavior in adolescence: A meta-analysis of the prosocial tendency measure-revised (PTM-R). *Journal of Adolescence*, 77, 41–58. <https://doi.org/10.1016/j.adolescence.2019.09.003>
- Young, G. R., Karnilowicz, H. R., Mauss, I. B., Hastings, P. D., Guyer, A. E., & Robins, R. W. (2022). Prospective associations between emotion regulation and depressive symptoms among Mexican-origin adolescents. *Emotion (Washington, D.C.)*, <http://doi.org/10.1037/emo0001060>

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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