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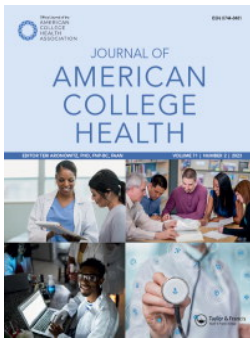
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MAJOR ARTICLE



The intervening role of anxiety symptoms in associations between Self-Regulation and prosocial behaviors in U.S. Latino/a college students

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ABSTRACT

Objective: The present study aimed to investigate the intervening role of anxiety symptoms in relations between self-regulation and multiple forms of prosocial behaviors in U.S. Latino/a college students.

Participants: The sample is based on data from a cross-sectional study on college students' health and adjustment. Participants were 249 (62% women; *M* age =20 years; 86% U.S. born) college students who self-identified as Latino/a.

Methods: College students self-reported on their self-regulation, anxiety symptoms, and types and targets of prosocial behaviors using online surveys. Path analyses were conducted to test direct and indirect associations among the study variables.

Results: Self-regulation was directly and indirectly associated with several types of prosocial behaviors via anxiety symptoms. The hypothesized associations also differed by the target of helping.

Conclusions: Our findings underscore a strengths-based view of the coping and mental health resources that predict positive well-being among U.S. Latino/a college students.

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KEYWORDS

Anxiety symptoms; Latino/a positive development; prosocial behaviors; self-regulation

Introduction

U.S. Latino/a college students are a key demographic to study in the context of positive youth adjustment due to the exponential rise in the enrollment of U.S. Latino/as in higher education.¹ Despite the growing presence of U.S. Latino/as on college campuses, research on positive development in this population is scarce, which exacerbates pathology-based views of ethnic minority development.² One positive adjustment outcome that can be studied to shift the focus from pathology-to-strength based models of ethnic minority development is prosocial behavior (defined as actions intended to help others).³ Prosocial behaviors encompass a range of behaviors in different situations (comforting someone who is emotionally distressed), motives (selfless versus selfish), and relational contexts (helping family versus strangers).^{4,5} Such helping behaviors are developmentally valuable because of their benefits for mental health, academic achievement, and social relationships.⁶ Thus, it is important to examine the psychological processes (i.e., self-regulation and anxiety symptoms) that predict prosocial development among U.S. Latino/a college students.

Multidimensionality of prosocial behaviors

Recent research has underscored the multidimensionality of prosocial behaviors according to the type and target of

helping.^{5,7} There is growing evidence for six types of prosocial tendencies based on the helping situation and personal motives surrounding helping in U.S. Latino/a samples.^{7,8} Emotional prosocial behaviors include helping in emotionally provocative situations.⁴ Compliant prosocial behaviors comprise helping in response to a request.⁴ Dire prosocial behaviors comprise helping in crisis or emergency situations.⁴ Anonymous prosocial behaviors consist of helping without the knowledge of the recipient/s of help.⁴ Altruistic prosocial behaviors are selflessly motivated prosocial behaviors displayed for little-to-no benefits to the self.⁴ Finally, public prosocial behaviors are selfishly motivated prosocial behaviors displayed for social rewards from an audience.⁴ Prosocial behaviors also differ as a function of the target or the relational context of helping. Specifically, prosocial behaviors may be targeted toward family, friends, and strangers.⁵

Self-regulation and prosocial behaviors

Self-regulation theory suggests self-regulation forms the basis of all intentional behavior.⁹ Self-regulation is theorized to be connected to an array of cognitive (e.g., attention, abstraction, and goal orientation) and moral (e.g., sympathy, perspective taking, and moral reasoning) prerequisites to

helping.^{10,11} For instance, youth are required to effortfully regulate themselves by overcoming emotional distress and allocating attentional resources in order to help others effectively.^{12,13} Youth's self-regulatory abilities are also reinforced with such opportunities for helping, leading to an increased propensity for prosocial behaviors over time.¹⁴

Empirical research from correlational, experimental, and physiological studies supports the benefits of self-regulation for youth's prosocial development.¹⁵⁻¹⁸ Researchers have found robust main effects of self-regulation on prosocial behaviors concurrently and longitudinally.^{15,18} Similarly, experimental research has suggested that depleted self-regulation reduces youth prosocial behaviors.¹⁶ Adaptive physiological regulation (e.g., respiratory sinus arrhythmia) responses are also deemed to promote prosocial behaviors due to better emotion regulation.¹⁷

Although several studies have linked self-regulation to prosocial behaviors,^{15,19} few studies have examined the multidimensionality of prosocial behaviors in non-European American samples. It is conceptually likely that self-regulation will be related to situational types of prosocial behaviors predicated upon emotional and cognitive processing but not personal motives.^{6,12} Self-regulation might foster emotional, compliant, dire, and anonymous types of helping, but not public and altruistic types of helping. In one study, self-regulation was positively related to all types of prosocial behaviors, except altruistic and public, in a U.S. Latino/a college sample.²⁰ It could take greater self-regulation to help when individuals stand to gain no relational benefits. Indeed, self-regulation has been most consistently associated with helping strangers than friends than family, respectively,⁵ whereas depleted self-regulation has been tied to reduced helping toward strangers but not family in European American samples.¹⁶

Intervening role of anxiety symptoms

Stress and coping theorists posit that when individuals experience stress, their coping resources and their adjustment outcomes are adversely affected.²¹ Self-regulation can be considered a form of proactive coping, which prepares youth for adaptive functioning.²² Overwhelmed regulatory skills, therefore, may result in maladaptive outcomes like anxiety symptoms.^{23,24} For example, Salters-Pedneault and colleagues found that self-regulatory deficits uniquely predicted anxiety symptoms after accounting for negative valence.²⁴

Additionally, anxiety symptoms are differentially related to prosocial behaviors. Anxious youth may exhibit fewer prosocial behaviors.^{25,26} This negative association between anxiety symptoms and prosocial behaviors may be especially strong for altruistic helping because of the mental resources necessary to engage in high-cost prosocial behaviors. For instance, Davis and colleagues found that higher internalizing symptoms predicted lower altruistic prosocial behaviors over time in recently immigrated Latino/as.²⁷ Despite the taxing nature of mental health problems, youth who experience anxiety can be excessively concerned with others' perceptions of them.²⁸ Not all anxiety is detrimental to adaptive

functioning. Sub-clinical levels of anxiety are conducive to adaptive outcomes such as academic, motivational, and prosocial outcomes.^{29,30} Anxious young adults may engage in a wide range of low-cost and care-based prosocial behaviors, including emotional, compliant, dire, anonymous, and public, to gain social approval. There is preliminary research evidence that stressed and depressed U.S. Latino/a youth display higher levels of emotional, compliant, dire, anonymous, and public prosocial behaviors.^{8,27} Anxious individuals could display greater prosocial behaviors, excepting altruistic prosocial behaviors, to help navigate their social environments. Anxiety is also expected to play a key intervening role in certain relational contexts but not others. Given the culturally-normative scripts surrounding family assistance,³¹ U.S. Latino/a young adults may be expected to help family, irrespective of whether they are anxious or not. However, helping strangers may be particularly daunting for anxious youth due to increased physiological arousal, temperamental limitations, and social challenges in novel settings.³² Helping friends might fall somewhere in between novel and familiar contexts and involve abating anxiety at a moderate level.

Study hypotheses

Building on self-regulation and stress-coping theories,^{9,21} the primary goal of the study was to examine whether anxiety symptoms served as an intervening mechanism in the associations between self-regulation and specific forms of prosocial behaviors among U.S. Latino/a college students. We hypothesized that self-regulation will be negatively related to anxiety symptoms, which will in turn be positively related to emotional, compliant, dire, anonymous, and public helping and negatively related to altruistic helping. There will be a pattern of more consistent and significant relations in prosocial behaviors toward strangers, then to friends, then to family, respectively. Anxiety will be positively linked to emotional, dire, compliant, anonymous, and public, but negatively linked to altruistic, prosocial behaviors. Self-regulation will be directly and positively associated with emotional, compliant, dire, and anonymous, but not public and altruistic, types of prosocial behaviors.

Method

Participants

Participants of this study included 249 U.S. Latino/a college students (62.2% women; M age = 20.01 years, SD age = 1.91). A majority of participants (49.8%) were of Mexican descent, while the rest had roots in Puerto Rico (26.5%), Dominican Republic (6.4%), Cuba (3.6%), and other South American (13.7%) and Central American (5.6%) countries. Most participants (85.5%) were born in the United States, whereas about half of their parents (54.6% fathers, 50.2% mothers) were born outside of the United States. Much of the sample (67.1%) considered English to be their native language. Less than half of the participants reported that their parents (32.5% fathers, 33.7% mothers) had received

college degrees. Participants also predominantly (68.3%) reported growing up in married and living together two-parent households.

Procedure

The present study is based on data from a larger study aimed at examining college students' health and adjustment. The sample of this study was restricted to Latino/as in the age range of 18–25 years. The sample was recruited from public universities (45%) and Amazon Mechanical Turk (MTurk; 55%). Given that MTurk samples tend to be more demographically diverse than American college samples, MTurk is an increasingly used integrative tool in the study of ethnic minority youth.³³

Undergraduate college students were recruited using fliers and in-class announcements at three large, public universities in the Midwest, Southwest, and Northeast regions of the United States, respectively. Campus-recruited participants completed an online survey on the Qualtrics platform, for which they received course credit and entry into a prize drawing for one of forty \$20 Amazon gift cards. Participants recruited from MTurk responded to an advertisement targeted at college students at four-year U.S. universities, who identified as Latino/a. MTurk participants completed the same online survey using the Qualtrics platform as the students recruited from three public universities, and they were compensated \$5. Participants generally took about 1 to 2 hours to complete the survey in both the college and MTurk samples. The study received Institutional Review Board (IRB) approval (University of Missouri, IRB Protocols 2008774 and 2004208).

Measures

Self-regulation

An adapted version of the short-term regulation scale of the Adolescent Self-Regulatory Inventory (ASRI) was used to measure self-regulation.³⁴ Participants rated the extent to which each statement described their personalities or views of themselves on a five-point scale (1 = *not at all true of me* to 5 = *really true of me*) with higher scores indicating higher self-regulation. A sample of items of this measure is “I am good at keeping track of lots of things going on around me, even when I'm feeling stressed”. The ASRI has shown construct and concurrent validity in relation to prosocial behaviors and anxiety symptoms in past work.³⁴ Confirmatory factor analyses yielded a one-factor structure with seven items and demonstrated acceptable reliability, $\alpha = .87$, in the current U.S. Latino/a sample.

Anxiety symptoms

The anxiety scale of the Depression Anxiety Stress Scales (DASS) was used to assess anxiety symptoms.³⁵ Participants rated the degree to which each statement applied to them over the past week on a four-point scale (0 = *did not apply to me at all* to 3 = *applied to me most of the time*) with

higher scores denoting greater anxiety symptoms. A sample of items of this scale includes “I was worried about situations in which I might panic and make a fool of myself” (7 items). The DASS has demonstrated ethnic measurement equivalence and construct validity in prior research with U.S. Latino/a college students,^{36,37} and showed acceptable reliability, $\alpha = .89$, in the current sample.

Prosocial behaviors

An adaptation of the Prosocial Tendencies Measure (PTM) was used to measure six types of prosocial behavioral tendencies – emotional, altruistic, public, dire, compliant, and anonymous – directed toward the targets of family, friends, and strangers, respectively.⁴ Participants rated the degree to which each statement applied to family members, friends and strangers on a five-point scale (1 = *does not describe you at all* to 5 = *describes you very well*) with higher scores suggesting greater prosocial behaviors. Sample items of the six scales of the PTM are listed below.

Emotional prosocial behavior: “It is most fulfilling to me when I can comfort someone (i.e., family/friends/strangers) who is very distressed” (4 items; α family = .78, α friends = .81, α strangers = .88). Altruistic prosocial behavior: “I think that one of the best things about helping others (i.e., family/friends/strangers) is that it makes me look good” (3 reverse scored items; α family = .69, α friends = .74, α strangers = .81). Public prosocial behavior: “I can help others (i.e., family/friends/strangers) best when people are watching me” (4 items; α family = .90, α friends = .92, α strangers = .90). Dire prosocial behavior: “I tend to help people (i.e., family/friends/strangers) who are hurt badly” (3 items; α family = .78, α friends = .80, α strangers = .86). Compliant prosocial behavior: “When people (i.e., family/friends/strangers) ask me to help them, I do not hesitate” (2 items; α family = .79, α friends = .85, α strangers = .83). Anonymous prosocial behavior: “I tend to help needy others (i.e., family/friends/strangers) most when they do not know who helped them” (3 items; α family = .83, α friends = .87, α strangers = .89). All the scales demonstrated acceptable reliabilities across type and target of prosocial behavior. Ethnic measurement equivalence and construct validity of the PTM has been supported in previous work with U.S. Latino/as.^{7,8}

Covariates

Demographic information on gender (0 = male, 1 = female) and nativity (1 = U.S. born, 2 = foreign-born) was used to assess covariates. Previous research has established gender and nativity as demographic covariates in the study of prosocial development in U.S. Latino/a samples.^{20,38}

Analytic plan

Path analyses were conducted using maximum likelihood robust (MLR) estimation in Mplus version 8.0.³⁹ The conceptual model was specified with self-regulation as the exogenous variable, anxiety symptoms as the mediator, emotional, compliant, dire, public, altruistic, and anonymous

Table 1. Correlations among self-regulation, anxiety symptoms, and prosocial behaviors by type and target.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. Self-Regulation	—																			
2. Anxiety Symptoms	-.27**	—																		
3. Emotional PB: Family	.24**	.05	—																	
4. Altruistic PB: Family	.04	-.16*	-.03	—																
5. Public PB: Family	-.05	.14*	.08	-.73**	—															
6. Dire PB: Family	.35**	-.14*	.72**	.06	-.12	—														
7. Compliant PB: Family	.34**	-.18**	.59**	.15*	-.16*	.70**	—													
8. Anonymous PB: Family	.27**	.01	.48**	-.06	.21**	.38**	.33**	—												
9. Emotional PB: Friends	.20**	.05	.79**	.09	.00	.57**	.50**	.43**	—											
10. Altruistic PB: Friends	-.13*	-.23**	.04	-.67**	.83**	.10	.17**	-.06	-.03	—										
11. Public PB: Friends	.26**	-.06	.65**	.20**	-.13*	.70**	.61**	.35**	.75**	.15*	—									
12. Dire PB: Friends	.23**	-.07	.55**	.24**	-.14*	.58**	.65**	.28**	.64**	.16*	.74**	—								
13. Compliant PB: Friends	.18**	.10	.41**	-.11	.23**	.28**	.22**	.80**	.44**	-.07	.25**	.28**	—							
14. Anonymous PB: Strangers	.11	.14*	.58**	-.02	.11	.39**	.34**	.37**	.59**	-.07	.13*	.43**	.40**	—						
15. Emotional PB: Strangers	.09	-.19**	-.06	.59**	-.66**	.07	.19**	-.05	.01	.67**	.16*	.15*	-.14*	-.23**	—					
16. Altruistic PB: Strangers	-.04	.22**	.06	-.57**	.75**	-.10	-.15*	.14*	.03	-.61**	.12	.09	.19**	.24**	-.76**	—				
17. Public PB: Strangers	.16*	.08	.50**	.02	.04	.48**	.37**	.29**	.49**	-.01	.04	.48**	.36**	.29**	.81**	.13*	—			
18. Dire PB: Strangers	.15*	.14*	.44**	.00	.11	.38**	.34**	.29**	.46**	.01	.12	.43**	.41**	.29**	.78**	.19**	.72**	—		
19. Compliant PB: Strangers	.07	.24**	.38**	-.06	.21**	.24**	.19**	.53**	.41**	-.11	.23**	.27**	.22**	.56**	.69**	.25**	.32**	.58**	—	
20. Anonymous PB: Strangers	3.45	.40	3.57	3.80	1.86	3.88	3.90	3.07	3.74	3.69	1.85	3.97	3.99	3.04	2.88	4.06	1.86	3.15	2.88	2.73
Mean	(.84)	(.59)	(.86)	(.94)	(1.01)	(.87)	(.96)	(1.03)	(.84)	(.99)	(1.08)	(.83)	(.89)	(1.10)	(1.07)	(1.01)	(1.01)	(1.08)	(1.14)	(1.14)
SD																				

Note: PB denotes prosocial behavior. ** $p < .01$, * $p < .05$.

prosocial behaviors as endogenous variables, and gender and nativity as covariates. All direct paths from self-regulation to anxiety and types of prosocial behaviors and from anxiety to types of prosocial behaviors were specified. The error variances of the six types of prosocial behaviors were allowed to covary with each other. Given the moderate-to-strong correlations between prosocial behaviors across targets, three separate models were estimated for family, friends, and strangers, respectively. Separating the models by target of helping minimizes multicollinearity errors and maximizes model parsimony.⁴⁰ In path analyses, model fit is considered good if the chi-square test of model fit is non-significant, the Comparative Fit Index (CFI) is .95 and above, the Root Mean Squared Error of Approximation (RMSEA) is less than or equal to .06, and the Standardized Root Mean Squared Residual (SRMR) is less than or equal to .06.^{41,42}

Results

Preliminary analyses

Descriptive statistics and bivariate correlations were estimated for the main study variables (see Table 1). All study variables were approximately normally distributed. Self-regulation was negatively associated with anxiety symptoms ($r = -.27, p < .01$). Self-regulation was positively associated with emotional, compliant, and dire prosocial behaviors toward family, friends, and strangers ($r = .15$ to $.35, p < .05$; except emotional prosocial behaviors toward strangers). Self-regulation was positively associated with anonymous prosocial behaviors toward family ($r = .27, p < .01$) and friends ($r = .18, p < .01$). Self-regulation was negatively associated with public prosocial behaviors targeted at friends ($r = -.13, p < .05$). Anxiety symptoms were negatively related to altruistic prosocial behaviors ($r = -.16$ to $-.23, p < .05$) and positively related to public prosocial behaviors ($r = .14$ to $.23, p < .05$) across targets. Anxiety symptoms were negatively related to dire ($r = -.14, p < .05$) and compliant ($r = -.18, p < .01$) prosocial behaviors toward family but positively related to emotional ($r = .14, p < .05$), compliant ($r = .14, p < .05$), and anonymous ($r = .24, p < .01$) prosocial behaviors toward strangers. There were also several, significant interrelations among prosocial behaviors by type and target. For example, emotional, compliant, dire, and anonymous prosocial behaviors were positively intercorrelated across targets ($r = .38$ to $.79, p < .01$). The final sample size for path analyses was 239. Ten cases were excluded due to missing data.

Path analyses

Family target model

The family target model demonstrated adequate model fit: $\chi^2(2) = 1.68, p = .43, CFI = 1.00, RMSEA(90\% CI) = .00(.00, .12), SRMR = .01$. Results demonstrated that self-regulation was directly and positively linked to emotional, dire, compliant, and anonymous prosocial behaviors toward family. Self-regulation was negatively linked to anxiety symptoms, and anxiety symptoms were negatively linked to altruistic

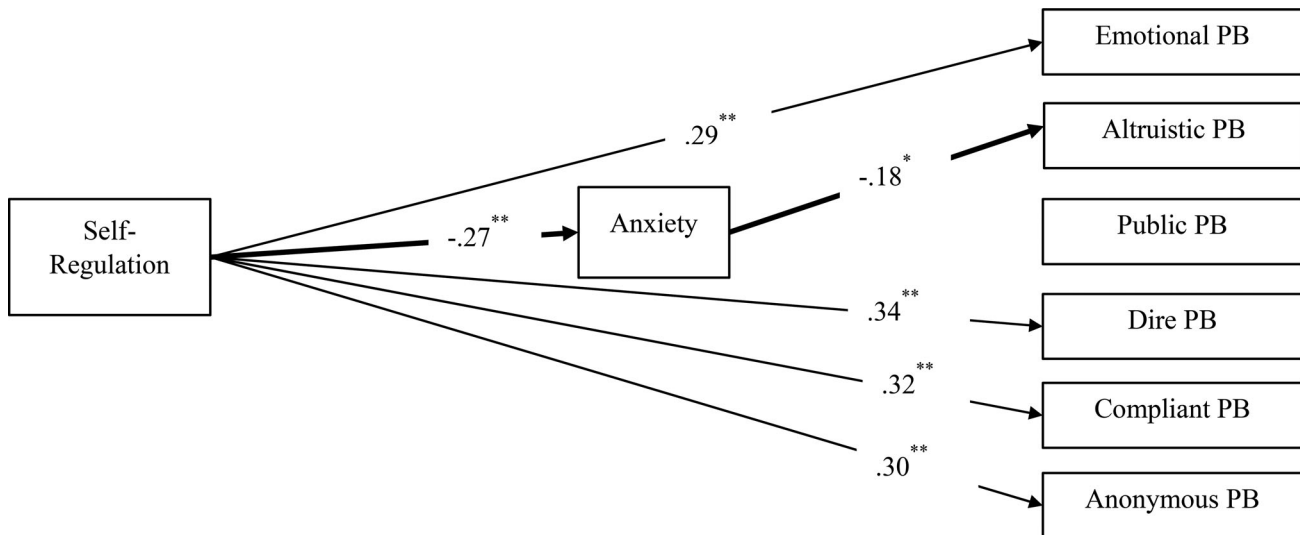


Figure 1. Family target model.

Note. Standardized path coefficients were denoted for relations among self-regulation, anxiety symptoms, and prosocial behaviors. Non-significant paths were omitted from the figure. Gender and nativity were controlled for but not depicted in the figure. The covariances between prosocial behaviors were also estimated but not shown in the figure for parsimony. Significant indirect effects were bolded. Model fit was good: $\chi^2(2) = 1.68, p = .43, CFI = 1.00, RMSEA(90\% CI) = .00(.00, .12), SRMR = .01$. PB denotes prosocial behavior. ** $p < .01, *p < .05$.

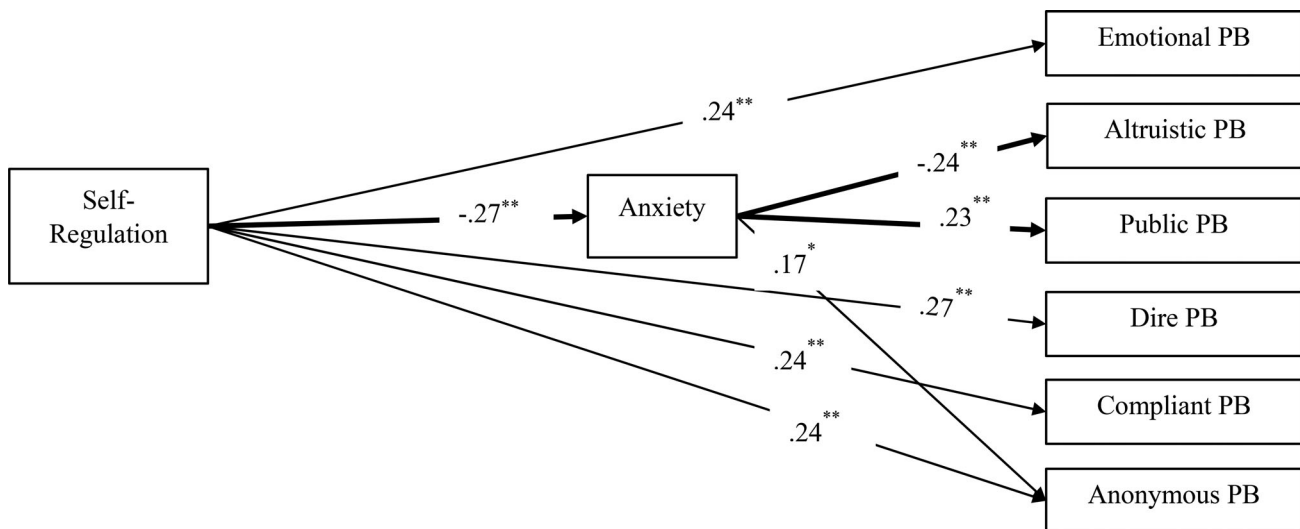


Figure 2. Friends target model.

Note. Standardized path coefficients were denoted for relations among self-regulation, anxiety symptoms, and prosocial behaviors. Non-significant paths were omitted from the figure. Gender and nativity were controlled for but not depicted in the figure. The covariances between prosocial behaviors were also estimated but not shown in the figure for parsimony. Significant indirect effects were bolded. Model fit was good: $\chi^2(2) = 1.67, p = .43, CFI = 1.00, RMSEA(90\% CI) = .00(.00, .12), SRMR = .01$. PB denotes prosocial behavior. ** $p < .01, *p < .05$.

prosocial behaviors toward family. Of special interest to this study, indirect effects were tested with residual bootstrap resampling.⁴³ We found one significant, indirect effect from self-regulation to altruistic prosocial behavior via anxiety symptoms ($\beta = .05; SE = .02; p = .04; 95\%$ bias-corrected CI = .01 to .10) in the family target model (Figure 1).

Friends target model

The friends target model also demonstrated adequate model fit: $\chi^2(2) = 1.67, p = .43, CFI = 1.00, RMSEA(90\% CI) = .00(.00, .12), SRMR = .01$. Results showed that self-regulation was directly positively related to emotional, dire, compliant, and anonymous prosocial behaviors. Self-regulation

was negatively related to anxiety symptoms. Anxiety symptoms were also negatively linked to altruistic but positively linked to public and anonymous prosocial behaviors toward friends. We found two significant indirect effects via anxiety from self-regulation to altruistic ($\beta = .06; SE = .03; p = .02; 95\%$ bias-corrected CI = .02 to .13) and public ($\beta = -.06; SE = .03; p = .04; 95\%$ bias-corrected CI = $-.14$ to $-.02$) in the friends target model (Figure 2).

Strangers target model

The strangers target model demonstrated adequate model fit: $\chi^2(2) = 1.65, p = .44, CFI = 1.00, RMSEA(90\% CI) = .00(.00, .12), SRMR = .01$ as well. Akin to the family and

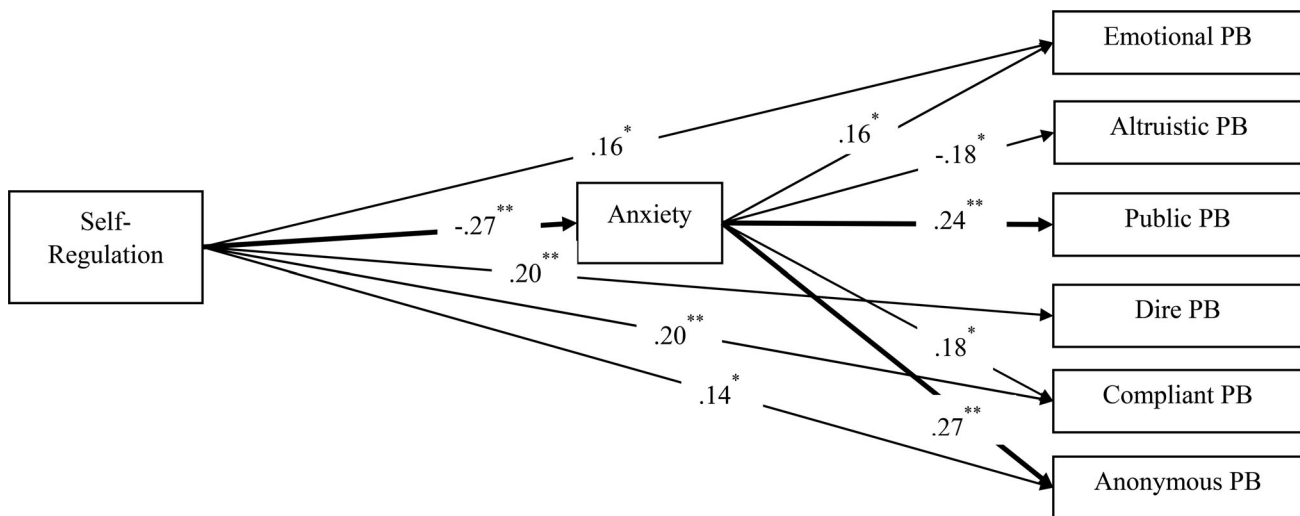


Figure 3. Strangers target model.

Note. Standardized path coefficients were denoted for relations among self-regulation, anxiety symptoms, and prosocial behaviors. Non-significant paths were omitted from the figure. Gender and nativity were controlled for but not depicted in the figure. The covariances between prosocial behaviors were also estimated but not shown in the figure for parsimony. Significant indirect effects were bolded. Model fit was good: $\chi^2(2) = 1.65, p = .44, CFI = 1.00, RMSEA(90\% CI) = .00(.00, .12), SRMR = .01$. PB denotes prosocial behavior. $^{**} p < .01, ^* p < .05$.

friends target models, self-regulation was positively associated with emotional, dire, compliant, and anonymous prosocial behaviors. Self-regulation was negatively associated with anxiety symptoms. Anxiety was positively associated with emotional, public, compliant, and anonymous behaviors, and negatively associated with altruistic prosocial behavior toward strangers. Indirect effects from self-regulation to two prosocial behaviors toward strangers via anxiety symptoms were significant. The effect sizes of the indirect effects in the strangers target model were as follows: public ($\beta = -.06; SE = .03; p = .02; 95\% \text{ bias-corrected CI} = -.13 \text{ to } -.02$) and anonymous ($\beta = -.07; SE = .03; p = .03; \text{bias-corrected } 95\% \text{ CI} = -.15 \text{ to } -.02$) prosocial behaviors (Figure 3).

Discussion

The aim of this study was to investigate the intervening role of anxiety symptoms in relations between self-regulation and multiple forms of helping by type and target in U.S. Latino/a college students. Toward this aim, there was partial support for the study hypotheses with a distinctive pattern of relations among self-regulation, anxiety symptoms, and prosocial behaviors emerging based on the type and target of helping. Importantly, anxiety emerged as a salient intervening mechanism in links between self-regulation and prosocial behaviors toward strangers (i.e., public and anonymous helping), friends (i.e., altruistic and public helping), and family (i.e., altruistic helping). Anxiety symptoms were generally associated with greater low-cost prosocial behaviors (e.g., public) but fewer high-cost prosocial behaviors (e.g., altruistic) in U.S. Latino/as college students. As expected, self-regulation was linked to higher levels of all types of prosocial behaviors, except for public and altruistic, across targets of helping among U.S. Latino/a college students. The findings are generally consistent with prior

research and with theories of self-regulation and stress-coping theories.

The present findings inform prior theory and research by demonstrating that the relations differed by target of helping. For the strangers' target model, self-regulation was indirectly related to public and anonymous prosocial behaviors via anxiety symptoms. In other words, U.S. Latino/a college students' self-regulatory abilities were related to lower anxiety symptoms, which were in turn related to greater low-cost helping (i.e., public and anonymous prosocial behaviors) toward strangers. Relational contexts involving strangers might be particularly daunting for anxious U.S. Latino/a youth to self-regulate, who compensate by engaging in such low-cost helping behaviors. Anxious youth tend to be motivated to seek others' positive approval because of their sensitivity to perceptions of themselves.²⁸ U.S. Latino/a youth with anxiety might engage in various low-cost helping behaviors in order to compensate for their social deficits and to gain approval from strangers.

Anxiety symptoms were also directly positively associated with emotional, compliant, anonymous, and public forms, but negatively associated with altruistic forms of helping. Anxiety symptoms, therefore, may not always be detrimental for prosocial development, especially at sub-clinical levels.^{30,31} This is consistent with research highlighting positive links between internalizing symptoms and public prosocial behaviors in U.S. Latino/as (i.e., depressive symptoms).²⁷ We extend this positive link to include other care-based and low-cost prosocial behaviors such as emotional, compliant, dire, and anonymous prosocial behaviors. For example, anxiety symptoms might prompt U.S. Latino/a college students to help in emotionally provocative and dire situations due to their affect-laden nature. Given their personal experiences of negative affect, young adults with anxiety symptoms may be especially motivated to reduce family members' emotional distress.⁴⁴ Similarly, it could be relatively easy for U.S.

Latino/as with anxiety symptoms to comply with simple requests (i.e. compliant helping). Helping anonymously might also be relatively easy and low-cost because one does not expose one's self.⁶

Nevertheless, the physiological and social limitations experienced as a part of anxiety still make it difficult for U.S. Latino/a youth to engage in high-cost prosocial behaviors, such as altruistic helping toward strangers. For instance, the physiological arousal, temperamental inhibition, and social fears associated with anxiety can be heightened for altruistic helping toward strangers due to its doubly costly nature (i.e., selfless motivation and helping in a novel context).^{17,45} This finding is in accord with research that suggests helping strangers is more taxing for anxious youth and their regulatory capacities because of the novelty of this relational context.³²

For the friends target model, self-regulation was associated with fewer anxiety symptoms, which was further associated with higher public and lower altruistic helping. Regulated U.S. Latino/a youth might display some low-cost, but not higher cost, forms of helping toward their friends to compensate for their anxiety symptoms. Consistent with past research on gaining social approval via public helping,^{8,27} regulated U.S. Latino/a college students displayed higher public helping despite anxiety symptoms. In contrast, the selflessly motivated nature of altruistic prosocial behavior toward friends is incompatible with anxiety symptoms because of the higher-order cognitive skills demanded by this form of helping.⁶ This negative relation between anxiety symptoms and altruistic helping is supported by recent research conducted with other internalizing symptoms in U.S. Latino/a samples (e.g., depressive symptoms).²⁷ Anxiety symptoms were also directly related to greater anonymous prosocial behaviors. Anonymous helping toward friends can be a workaround to regain lacking positive affect by eliminating in-person social interaction. This pattern of findings also implies that helping friends is a relational context in between novelty and familiarity, which involves strengthening regulatory abilities and attenuating anxiety at modest levels for U.S. Latino/a youth.

For the family target model, self-regulation was linked to reduced anxiety symptoms, which was subsequently linked to decreased altruistic prosocial behaviors. This finding indicates that anxiety symptoms continue to undermine high-cost (i.e., altruistic) helping in the family context. This is consistent with the research on the higher-order cognitive and regulatory resources required to engage in altruistic helping in which anxious youth may be lacking.⁶ However, anxiety did not directly predict any other form of prosocial behavior in the context of self-regulation. It is plausible that U.S. Latino/as are culturally expected to regulate themselves and help their family members whether they are anxious or not, except for altruistic helping. This is in line with research on the culturally normative scripts of family assistance and cultural values of family obligation in U.S. Latino/a families.^{31,46}

Across the family, friends, and strangers models, self-regulation was directly related to emotional, compliant, dire,

and anonymous prosocial behaviors. The predictive power of self-regulation across targets of helping suggests self-regulation is dispositionally linked to all prosocial behaviors excluding public and altruistic prosocial behaviors. These findings help extend self-regulation and stress and coping theories to the context of multidimensional prosocial behaviors. Although prior theories posit significant relations between self-regulation and prosocial behaviors,^{9,21} the present findings extend such theories by showing that such relations are nuanced depending on specific forms of prosocial behavior. Self-regulation could be a proxy for the cognitive, emotional, and behavioral pre-requisites to low-cost helping behaviors that is stable across various relational contexts. Self-regulation acted as a form of proactive coping,²² and was interrelated with higher levels of low-cost prosocial behaviors. The benefits of self-regulation for prosociality have been well-validated in the field of moral development.^{5,12}

Self-regulation was also unrelated to public and altruistic forms of helping, irrespective of the relational context of helping. These null findings may be because public and altruistic helping represent internally motivated (e.g., principled, sympathy) rather than situationally-driven helping behaviors.⁴ In addition to self-regulation, altruistic prosocial behaviors may necessitate a selfless motivational orientation and higher-order moral reasoning skills, whereas public prosocial behaviors may necessitate a selfish motivational orientation and lower-order moral reasoning skills.⁶ At the very least, the findings suggest that self-regulation alone is inadequate in predicting public and altruistic forms of helping.

Limitations and future directions

The findings of this study should be interpreted carefully in light of the study limitations. Given the correlational and cross-sectional nature of the data, we are limited in our inferences of causality and directionality of effects. Future research should use experimental or prospective longitudinal study designs to better ascertain causal mediation. The current findings are limited to Latino/a students of predominantly Mexican descent, and to a limited extent, Puerto Rican descent, representing only a small proportion of Latino/a students in U.S. colleges and universities. Future researchers should recruit more ethnically diverse and nationally representative samples of Latino/a college students for greater external validity. While the focus of this study was on the multidimensionality of prosocial behaviors, self-regulation is a multidimensional construct as well.³⁴ Researchers should explore how behavioral, cognitive, and emotional forms or short-term versus long-term forms of self-regulation influence prosocial behaviors. The current study also focused on mild, sub-clinical anxiety symptoms as intervening mechanisms. Future research may benefit from studying clinical symptomatology as mediators between self-regulation and prosocial behaviors. Lastly, this study is based on a predominantly U.S.-born college sample. Due to greater cultural stressors experienced by foreign-born Latino/as,⁴⁷ foreign-born Latino/as may demonstrate higher anxiety symptoms

and lower prosocial behaviors. Future researchers should investigate links among self-regulation, anxiety symptoms, and prosocial behaviors in a foreign-born community sample.

Conclusion

Despite the study limitations, the current study advances existing theories and research on the direct and indirect effects of self-regulation and anxiety symptoms in the context of multidimensionality of prosocial behaviors. Our findings highlight differential relations among self-regulation, internalizing symptoms, and prosocial behaviors by type and target. These findings suggest that understanding the relations among self-regulation, anxiety and specific forms of prosocial behavior necessitates a consideration of the distinct characteristics and demands of different types and targets of prosocial behaviors. These findings also have useful implications for prosocial behavioral interventions. Extension specialists and policy makers designing programs may benefit from targeting U.S. Latino/a youth's self-regulatory capacities and reducing anxiety symptoms to promote prosocial behaviors across type and target. For example, reducing anxiety symptoms in such interventions could promote high-cost prosocial behaviors (e.g., altruistic), especially in non-kin contexts (e.g., toward strangers and friends). Such intervention efforts could ultimately result in strength-based approaches that improve the well-being of U.S. Latino/a young adults.

Conflict of interest disclosure

The authors have no conflicts of interest to report. The authors confirm that the research presented in this article met the ethical guidelines, including adherence to the legal requirements, of the United States of America and received approval from the Institutional Review Board of University of Missouri.

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