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The Longitudinal Associations Between Discrimination, Depressive Symptoms, and Prosocial Behaviors in U.S. Latino/a Recent Immigrant Adolescents

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Abstract

The links between discrimination and adjustment in U.S. Latino/a immigrant adolescents is an important but understudied phenomenon. We aimed to investigate the longitudinal associations

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Author Contributions AND conceived the study, conducted the analyses, and was primarily responsible for writing the manuscript. GC helped with study development and assisted with writing and revising the manuscript. SJS and JBU were the principal investigators on the COPAL project and provided extensive feedback on the data analyses and manuscript drafts. BLZ, ELB, MMM, AO, and BMPW were collaborators on the COPAL team and provided feedback on the manuscript. LB was part of the COPAL research team and provided feedback on the manuscript. CS assisted with manuscript development and provided feedback throughout the process. KL and DS managed the COPAL data collection.

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(across 1 year) among discrimination, prosocial behaviors, and depressive symptoms in U.S. Latino immigrant adolescents using two competing models: associations between discrimination and prosocial behaviors via depressive symptoms (mental health strain model), and associations between discrimination and depressive symptoms via prosocial behaviors (prosociality strain model). Participants were 302 Latino/a recent immigrant adolescents (53.3 % boys, M age = 14.51 years at Time 1, $SD = .88$ years) who completed measures of discrimination, depressive symptoms, and prosocial behaviors at 6-month intervals. The results provided support for both proposed models. The discussion examines the importance of prosocial behaviors in understanding adjustment and effects of discrimination among recently immigrated U.S. Latino adolescents.

Keywords

Discrimination; Depressive symptoms; Prosocial behaviors; U.S. Latina/o youth

Introduction

Scholars have underscored the need to conduct research that focuses on factors that may influence negative adjustment in youth, especially ethnic minority youth such as U.S. Latinos. Longitudinal studies of culturally related stress experiences, such as discrimination, and their predictive effects on positive social adjustment in U.S. Latino youth are rare. Therefore, it is important to examine how Latino youth's experiences of discrimination may influence subsequent psychological and emotional adjustment. Based on conceptual models developed to better understand marginalized youth and families, U.S. Latino adolescents, particularly those who are foreign born, may be at risk for experiencing high levels of ethnic discrimination (Padilla et al. 2013). Perceived ethnic discrimination can be defined as occurring when an individual believes that s/he has experienced unfair treatment by others based on her/his ethnic background (Flores et al. 2008). Discrimination is highly relevant for recent Latino immigrants because of the process of adaptation to a new culture, and because new immigrants may be at risk for being classified and treated as "foreigners" (Portes and Rumbaut 2006). For these reasons, the present study focused on recent Latino immigrant adolescents to the United States.

Latinos are the largest and fastest-growing minority group in the U.S., representing 16 % of the total U.S. population (Ennis et al. 2011) and accounting for more than half of the country's population growth since 2000 (Passel et al. 2011). Although the majority of U.S. Latinos are U.S.-born, it is worth noting that more than 3 million Latinos entered the country legally between 2005 and 2010 (Walters and Trevelyan 2011), contributing to growth in the Latino immigrant population. Specifically, one third of U.S. Latino adolescents were born outside the U.S. (Pew Research Center 2009). Additionally, a sizable population of Latino youth is living in the U.S. without documentation. In 2010, an estimated 1 million Latino youth under age 18 were living in the U.S. as undocumented immigrants (Pew Research Center 2013). Because of isolation and social barriers, these adolescents may be particularly susceptible to discrimination and depressive symptoms. Which may ultimately result in lower levels of positive social behaviors. Latinos are also a young population, with 40 % under 20 years of age, suggesting that adolescents are an important age group on which

to focus. Given the size and rate of increase within the U.S. Latino adolescent population, including foreign-born as well as U.S.-born individuals, it is important to consider the effects of discrimination on Latino youth outcomes.

Traditionally, research on culturally-related stress (including discrimination) and youth outcomes has focused on the links between stress and negative outcomes (see Crockett et al. 2007; Hovey and King 1996). However, some scholars (e.g., Cabrera 2013) have noted the need to study both positive and negative outcomes in Latino and other minority populations. Prosocial behaviors represent one particularly important positive developmental outcome. Prosocial behaviors are defined as actions intended to benefit others, such as comforting others when they are upset, helping in emergency situations, and helping when asked (Carlo and Randall 2002). Prosocial behaviors are not only indicative of morality and care for others, but they are also an indicator of health and social well-being (Carlo 2014; see Randall and Wenner 2014).

Although there is some literature on prosocial behaviors among adolescents in general, more work is needed on prosocial behaviors among Latino adolescents specifically. Traditional Latino cultural values may foster prosocial behaviors (Calderón-Tena et al. 2011). Specifically, given the importance placed on the family unit and on collectivist cultural principles, which promote prioritizing the group over the self, Latino populations may be socialized to engage in high levels of multiple forms of helping behaviors (Calderón-Tena et al. 2011). Because prosocial behaviors are indicative of positive adjustment (Carlo 2006), it is important to consider factors that promote or inhibit these positive social behaviors among Latino immigrant adolescents (who are more likely to experience discrimination compared to their U.S.-born counterparts). Indeed, it is possible that discrimination-related experiences may be associated with prosocial behaviors among Latino adolescents (Brittian et al. 2013). The present study was designed to examine this possibility, as well as to examine a potential mechanism through which this association might operate.

Although it is important to understand the associations between discrimination and prosocial behaviors among Latino youth in order to better understand resilience among Latino populations, it is also important to understand the underlying mechanisms that account for these associations. Mental health problems, such as depressive symptoms, might play a role in these associations. Discrimination experiences may weaken coping mechanisms and contribute to depressive symptoms, which in turn might be negatively associated with individuals' ability to engage in helping behaviors. These associations, however, might function in the opposite direction. Individuals who engage in helping behaviors might actually be less likely to experience depressive symptoms because of their increased sense of purpose and positive mood. In order to better understand the associations between discrimination, depressive symptoms, and prosocial behaviors, we examined two models: the associations between discrimination and prosocial behaviors via depressive symptoms (mental health strain model) and the associations between discrimination and depressive symptoms via prosocial behaviors (prosociality strain model). Thus, examining the associations between discrimination, prosocial behaviors, and depressive symptoms may shed light on understanding positive development, as well as how discrimination might impact positive social-developmental outcomes among Latino immigrant adolescents.

Additionally, it is important to consider how discrimination experiences might be differentially associated with specific forms of prosocial behaviors.

Multidimensionality of Prosocial Behaviors

Prosocial behaviors are complex and multidimensional and should be measured as a multifaceted construct. For example, Carlo and Randall (2002) identified multiple forms of prosocial behaviors that are common among adolescents. These forms include public and altruistic prosocial behaviors. Public prosocial behaviors are carried out in the presence of others. Altruistic prosocial behaviors, in contrast, are helping behaviors carried out with little or no expectation of reward to the self (Carlo and Randall 2002). Public prosocial behaviors are thought to be motivated by a desire to maintain a positive social image or to gain the approval of others, and are therefore more selfishly motivated, whereas altruistic prosocial behaviors are primarily oriented towards benefitting others and are deemed to be selflessly motivated (Carlo and Randall 2002). Conceptually, one might expect that chronic exposure to discrimination experiences may lead to a greater tendency to focus on the self (e.g., public) rather than on the needs of others (e.g., altruistic) as a way of coping with one's troubles. Furthermore, such experiences could result in lower levels of helping others when there is a cost involved or when there is relatively little perceived benefits to one's self to help others (i.e., altruistic). On the other hand, helping others when there may be a benefit to one's self to do so (i.e., public helping) may be more likely when an adolescent is exposed to discrimination experiences. Therefore, an additional purpose of the present study was to examine whether discrimination experiences are differentially associated with these two distinct forms of prosocial behaviors across time.

To better understand how discrimination might be associated with both prosocial behaviors and depressive symptoms, two competing models were examined in the current paper. The first model (mental health strain model) includes the associations between discrimination and prosocial behaviors, with depressive symptoms as a mediator over time (see Fig. 1a). It may be that discrimination predicts depressive symptoms, which in turn predict selfless helping behaviors. Alternatively, the second model includes prosocial behaviors as the mediating variable in the associations between discrimination and depressive symptoms (prosociality strain model; see Fig. 1b). It may be that discrimination experiences are directly associated with helping behaviors, which in turn are associated with depressive symptoms. Examining these two models will illustrate a clearer understanding of how depressive symptoms are associated with both positive helping behaviors as well as depressive symptoms—as well as the directionality of potential mediated effects.

Discrimination and Prosocial Behaviors

Because discrimination experiences are relatively common among Latino immigrants (e.g., Pérez et al. 2008), it is important to examine how perceived discrimination is associated with prosocial behaviors in order to promote healthy social behaviors. Given prior research suggesting links between other culturally related stressors (e.g., acculturative stress) and prosocial behaviors, the present study contributes to further understanding stress-related outcomes (e.g., McGinley et al. 2010). Discrimination may be particularly detrimental vis-à-vis adolescent prosocial behavior because such experiences may represent a form of social

exclusion (Major and O'Brien 2005). In turn, social exclusion may contribute to isolation and social withdrawal among adolescents (Smart et al. 2009). Socially excluded adolescents may be less prone to act prosocially in an attempt to protect or buffer themselves from further exclusion. Latino adolescents have reported high levels of discrimination, such as perceived institutional bias in school, suggesting that social exclusion may be a salient factor in adolescents' experiences with discrimination (Fisher et al. 2000). Adolescents who are experiencing discrimination may also be drained of the cognitive and emotional resources that are necessary to engage in prosocial behaviors (see Batson and Powell 2003; Lazarus and Folkman 1984). These processes may lead to reduced levels of prosocial behaviors toward others, especially forms of helping primarily intended to benefit others with no expected benefit to the self.

Thus far, research on the associations between discrimination and prosocial behaviors has been relatively limited, and findings have been mixed. Although some studies have examined how stressful experiences (e.g., exposure to violence) are associated with prosocial behaviors, only a small number of studies have directly linked perceived discrimination to prosocial behaviors among Latino adolescents. In one study, Brittan et al. (2013) examined the associations between discrimination and prosocial behaviors in Mexican American adolescents. Results indicated that discrimination experiences in grade 5 negatively predicted multiple forms of prosocial behaviors (including altruistic behaviors) in grade 10. However, discrimination experiences in grade 5 *positively* predicted public prosocial behaviors in grade 10—suggesting that public prosocial behaviors may be qualitatively different from altruistic forms of prosocial behaviors. Similarly, in a cross-sectional study of Mexican American college students, McGinley et al. (2010) found that acculturative stress (which can include discrimination experiences and social stress associated with adapting to a new culture; Kulis et al. 2009; Rudmin 2009) was positively associated with multiple forms of prosocial behaviors but was negatively associated with altruistic prosocial behaviors. Importantly, previous research on discrimination and prosocial behavior has focused exclusively on Mexican American populations. Although Mexican Americans represent the majority of Latino immigrant families (Pew Research Center 2015), it is important to extend this research to other Latino subgroups as well. The current study examines the associations between discrimination and prosocial behaviors in a diverse sample of recent Latino adolescent immigrants.

It is possible that discrimination contributes to feelings of social isolation and marginalization, which over time might contribute to depressive symptoms (see Torres and Ong 2010). Thus, examining the links between discrimination and prosocial behaviors via depressive symptoms may shed light on understanding positive development among Latino adolescents, and how such positive development is potentially influenced by cultural stress. However, discrimination may be directly associated with prosocial behaviors, which may serve as a protective factor against depressive symptoms. Therefore, the current study aims to disentangle the associations between discrimination, prosocial behaviors, and depressive symptoms by examining two models: the associations between discrimination and prosocial behaviors via depressive symptoms (mental health strain model) and the associations between discrimination and depressive symptoms via prosocial behaviors (prosociality strain model).

Discrimination and Depressive Symptoms

As previously mentioned, discrimination has been associated with a wide range of deleterious outcomes, including depressive symptoms (Schwartz et al. 2015a, b). Stress and coping perspectives suggest that individuals who are experiencing stress may become overwhelmed, leading to a depletion of cognitive and emotional resources. Ultimately, the stress may lead to depressive symptoms, particularly if the individual is unable to cope with the stressor effectively (Lazarus and Folkman 1984; see Lorenzo-Blanco and Unger 2015). Discrimination is a salient form of stress for many U.S. Latino adolescents and may negatively impact their mental health (Rosenbloom and Way 2004). Depressive symptoms are also important to examine during adolescence. During adolescence, depressive symptoms tend to increase, particularly for girls (Ge et al. 1994). Indeed, there is empirical support for the positive associations between discrimination and depressive symptoms among U.S. Latino adolescents (Lorenzo-Blanco et al. 2011; Potochnick and Perreira 2010). For example, among U.S. Latino adolescents, experiencing discrimination has been positively linked to depressive symptoms (Lorenzo-Blanco et al. 2011; Potochnick and Perreira 2010; Potochnick et al. 2012). Similarly, Szalacha et al. (2003), in a study of Puerto Rican adolescents, found that discrimination experiences were positively linked with depressive symptoms. Although there is evidence for an association between discrimination and depressive symptoms, the majority of this research is cross-sectional. The current study extends this work by considering associations over time with a sample of Latino immigrant adolescents.

Depressive Symptoms and Prosocial Behaviors

Although this link has rarely been studied, adolescents' depressive symptoms may also be associated with prosocial behaviors (see Wentzel et al. 2007). Examining the role of prosocial behaviors in predicting depressive symptoms may suggest an additional protective mechanism for youth. As noted earlier, adolescents who experience depressive symptoms may become withdrawn, depleted of cognitive and emotional resources, and less able to focus on the needs of others (see Wentzel et al. 2007). However, scholars have also suggested that adolescents experiencing depressive symptoms may be concerned about how others view them and may be motivated to seek positive affect (see Batson et al. 1987). Therefore, adolescents experiencing depressive symptoms may be more likely to engage in public prosocial behaviors as a means of promoting positive affect, and less likely to engage in altruistic prosocial behaviors that are costly to the self (see Batson et al. 1987).

While the research is limited, some researchers have examined the negative links between depressive symptoms and prosocial behaviors among adolescents. There is evidence that these associations might be reciprocal. One longitudinal study, conducted with primarily European American adolescents, suggested that depressive symptoms were negatively associated with prosocial behaviors directed at family members (Padilla-Walker et al. 2015). Results have also yielded evidence that depressive symptoms are negatively associated with global indicators of prosocial behavior (Chen et al. 2000; Wentzel and McNamara 1999). For example, in a study of Latino and African American youth, depressive symptoms were negatively correlated with prosocial behaviors (Storch et al. 2003). There is also some evidence that positive mood is associated with engagement in prosocial behaviors (Gueguen

and De Gail 2003). It therefore stands to reason that negative mood may be inversely associated with engagement in prosocial behaviors. It should be mentioned that the majority of research on prosocial behavior and depressive symptoms has been cross-sectional (see Storch et al. 2003) and has been conducted with Asian American and European American samples (see Chen et al. 2000; Wentzel and McNamara 1999). Therefore, longitudinal work is necessary to extend this literature and test these hypothesized relationships in a sample of Latino youth. The current study examined the association between discrimination and prosocial behaviors via depressive symptoms (mental health strain model).

Although there is research suggesting that depressive symptoms predict prosocial behaviors (Chen et al. 2000), these associations might also function in the opposite direction; prosocial behaviors may negatively predict depressive symptoms. Engaging in helping behaviors might induce positive mood in the helper (Gueguen and De Gail 2003), which might combat negative emotional states such as depressive symptoms. The negative-state relief hypothesis states that individuals may engage in prosocial behaviors as a way of reducing negative emotions and feelings of distress, particularly in non-clinical samples (Cialdini et al. 1973). Adolescents who are experiencing depressive symptoms, particularly those who are not clinically depressed, may be drawn towards specific forms of prosocial behaviors that may make them feel good about themselves. Consistent with these suggestions, in one study with a clinical sample of adults (Schwartz and Sendor 1999), helping behaviors were negatively associated with depressive symptoms.

Although there is some research on the links between depressive symptoms and prosocial behaviors, to our knowledge there is no research examining prosocial behaviors predicting depressive symptoms among Latino adolescents. Research examining these hypothesized relationships in a U.S Latino sample may shed understanding on the protective role of prosocial behaviors in mitigating the negative consequences of discrimination on Latino youth psychological adjustment. Moreover, because the majority of previous research on depressive symptoms and prosocial behaviors is cross-sectional, it is important to examine the directionality of such associations using longitudinal data. Thus, the current study will examine an alternative model in which discrimination is associated with depressive symptoms via prosocial behaviors (prosociality strain model).

Potential Gender Differences

In addition to examining the associations between discrimination, depressive symptoms, and prosocial behaviors, it is important to consider potential moderating variables in these associations. Previous research has demonstrated gender differences in depressive symptoms and prosocial behaviors. Specifically, women may be more likely to report depressive symptoms compared to men (see Nolen-Hoeksema et al. 1999). Developmental research has suggested that gender differences in prosocial behaviors and mental health symptoms emerge in early adolescence and remain stable throughout high school (Ge et al. 2001). Adolescent girls are particularly likely to experience increases in depressive symptoms (Ge et al. 1994; see Horowitz and Garber 2006). Therefore, gender differences in adolescents' depressive symptoms may mediate the effect of discrimination on experiences of depressive symptoms, as well as the effect of depressive symptoms on prosocial behaviors. Gender

differences in prosocial behaviors have also been documented. Specifically, in previous research, girls were more likely to report engaging in selfless and emotional forms of prosocial behaviors, whereas boys reported engaging in more public forms of prosocial behaviors (Carlo et al. 2003). Not only have gender differences been documented in the frequency and common forms of prosocial behaviors, but also in the associations between stress and prosocial behaviors. Stress theories suggest that boys may be more likely to “fight or flight” in times of stress, which may lead to avoidance of positive social interactions, including opportunities to help others. Girls, however, tend to seek out emotional support and closeness with others (Taylor et al. 2000). Therefore, girls may be more likely to engage in helping behaviors in times of stress. Because boys and girls may differ in their tendencies to help in specific ways, gender differences were examined in the proposed associations.

Hypotheses

We aimed to assess how experiences of discrimination among recently immigrated Latino adolescents are associated with two important indicators of adjustment: prosocial behaviors and depressive symptoms (see Models 1a and 1b for conceptual models). We hypothesized two models: the mental health strain model and the prosociality strain model. The hypotheses for the mental health strain model are as follows. Discrimination experiences at Time 1 would be positively associated with depressive symptoms at Time 2 (6–8 months later; H1). Depressive symptoms would negatively predict altruistic prosocial behaviors and would positively predict public prosocial behaviors at Time 3 (1 year after Time 1; H2). We expected discrimination experiences at Time 1 to directly and negatively predict altruistic prosocial behaviors, and directly and positively predict public prosocial behaviors at Time 3 (H3). That is, we anticipated that depressive symptoms would serve as a partial mediator in the effect of discrimination on prosocial behavior.

The hypotheses for the prosociality strain model are as follows. Discrimination at Time 1 would positively predict public prosocial behaviors and would negatively predict altruistic prosocial behaviors at Time 2 (H1). Altruistic prosocial behaviors at Time 2 would negatively predict depressive symptoms at Time 3 (H2), whereas public prosocial behaviors at Time 2 would positively predict depressive symptoms at Time 3 (H3).

Methods

Participants

The present study was conducted using data from a longitudinal project entitled *Construyendo Oportunidades Para los Adolescentes Latinos* [COPAL (Building Opportunities for Latino Adolescents); Schwartz et al. 2015a, b]. The goal of this longitudinal project was to examine cultural changes and health behaviors among recently immigrated Latino adolescents and their families (see Forster et al. 2014). Only adolescent data were used for the present study.

Participants were 302 adolescents, 53.3 % male, and the average age was 14.51 years old (range 13–17). Data were collected from adolescents in two US cities: Los Angeles ($n = 150$) and Miami ($n = 152$). Participants from Los Angeles were predominantly from

Mexico (70 %), El Salvador (9 %), Guatemala (6 %), and other countries (15 %), and the participants from Miami were predominantly from Cuba (61 %), Dominican Republic (8 %), Nicaragua (7 %), Honduras (6 %), Colombia (6 %), and other countries (12 %). The primary caregiver also reported on their education (Los Angeles sample mean = 8.84 years, $SD = 4.72$ years; Miami sample mean = 11.23 years, $SD = 3.67$ years). 71 % of adolescents were from two-parent homes, while 29 % were from single-family homes. These two cities were selected because they are both home to large numbers of Latino adolescents. Per inclusion criteria, each target school was at least 75 % Latino. We targeted densely Latino areas because many recent Latino immigrants tend to settle in ethnic enclaves (Portes and Rumbaut 2006). For the current study, we used only the first three time points (Baseline, 6–8 months post-baseline, and 1 year post-baseline). Therefore, the current study examines associations between discrimination, depressive symptoms, and prosocial behaviors across 1 year of high school. Since experiences of discrimination may fluctuate over time, we were interested in how this particular aspect of stress is associated with behavioral outcomes over a relatively short period of time. Retention rates through Time 3 were 92 % in Miami and 77 % in Los Angeles.

Procedures

Adolescents were recruited from 13 schools in Los Angeles County and 10 schools in Miami-Dade County. Latino students were eligible to participate in the study if they had lived in the U.S. for 5 years or less and were entering or finishing the ninth grade at baseline. Data collection occurred at the schools, at the research centers, or at other locations convenient to families. Incentives were provided to parents (Time 1 = \$40, Time 2 = \$45, and Time 3 = \$50). Additionally, the youth received a movie ticket at each timepoint. Parents and adolescents were assessed in separate rooms. Surveys were administered via audio computer-assisted software. Participants indicated their responses on the computer. A button was provided for each response, and no prior computer experience was necessary.

Measures

Discrimination—At Time 1, participants completed a measure assessing their perceptions of discrimination (Phinney et al. 1998). The measure consisted of seven items that asked about discrimination experiences in school, with peers, and in society generally ($\alpha = .89$). Sample items include: “How often do teachers treat you unfairly or negatively because of your ethnic background?” “How often do people your age treat you unfairly or negatively because of your ethnic background?” “To what extent do you feel that you are not wanted in American society?” Participants rated each item on a scale from 0 = *Not at all* to 4 = *Almost always*. This scale and items from this scale have demonstrated convergent and divergent validity, as well as good reliability in studies with Latino youth (Phinney et al. 1998; Szalacha et al. 2003).

Depressive Symptoms—At Times 1, 2, and 3, participants completed the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff 1991). This 20-item scale assesses physical and emotional symptoms of depression (Time 1: $\alpha = .87$; Time 2: $\alpha = .91$; Time 3: $\alpha = .93$). Sample items include: “I felt like crying this week.” “This week my friends tried to cheer me up but I didn’t feel happy.” “I was more quiet than usual this

week.” Participants rated each item on a scale from 0 = *Strongly disagree* to 4 = *Strongly agree*. The measure has demonstrated good reliability and validity with Latino adolescents (Peña et al. 2008; Roosa et al. 1997; Umaña-Taylor and Updegraff 2007).

Prosocial Behaviors—At Times 1, 2, and 3, adolescents completed a measure of their tendency to engage in public and altruistic prosocial behaviors [assessed using an adapted version of the Prosocial Tendencies Measure-Revised (PTM-R); Carlo et al. 2003]. Public prosocial behaviors (3 items; Time 1 $\alpha = .84$; Time 2 $\alpha = .84$; Time 3 $\alpha = .86$) are those carried out in the presence of others (e.g., “It is easiest for me to help needy others when other people are around,” “I get the most out of helping others when I do it in front of others”). Altruistic prosocial behaviors (3 items; Time 1: $\alpha = .69$, 3 items; Time 2 $\alpha = .76$; Time 3 $\alpha = .73$) include helping others when there is no benefit to the self (e.g., “I believe I should receive more recognition for the time and energy I spend helping others” [reverse-scored] and “If I help someone, that person should help me in the future” [reverse-scored]). All items were rated on a scale from 0 = *Does not describe me at all* to 4 = *Describes me greatly*. The measure has demonstrated good internal reliability, test–retest reliability, convergent validity, and discriminant validity with Latino youth (see Armenta et al. 2011; Calderón-Tena et al. 2011).

Analytic Strategy

Path analyses were conducted to assess the conceptual models (see Fig. 1a, b) using maximum likelihood estimation in SPSS AMOS (Byrne 2010). We also statistically controlled for participant gender and location (Miami and Los Angeles), as well as for public and altruistic prosocial behaviors at Time 1. Model fit is considered good if the Comparative Fit Index (CFI) is .95 or greater (fit is adequate at .90 or greater), and the Root Mean Square Error of Approximation (RMSEA) is less than or equal to .06 (values of .08 or less indicate adequate fit; Byrne 2010; Hu and Bentler 1999).

Results

Maximum Likelihood Estimation, Descriptives, and Correlation Analyses

We conducted preliminary *t* tests to examine differences in the main variables for participants who remained in the study and those who dropped out following the baseline assessment. After the baseline assessment, 92 % ($n = 278$) of participants were retained at the second time point. Results indicated that those who left the study reported higher levels of discrimination at Time 1 compared to those who remained in the study, $F(300) = 3.73$, $p = .02$. There were no differences in any of the other study variables. We also conducted *t* tests to examine differences in study variables for adolescents across site (Los Angeles vs Miami). Results indicated no significant differences. Next we examined missing data patterns. The missing data on each variable ranged from 0 to 15.6 %. Little’s test of Missing Completely at Random (MCAR) indicated, however, that the values were most likely missing completely at random [$\chi^2(16) = 9.17$, $p = .91$]. Maximum likelihood estimation was therefore utilized to account for missing data.

Descriptive statistics and bivariate correlations can be found in Table 1. There were significant, moderate correlations among the study variables. As expected, discrimination at Time 1 was positively correlated with depressive symptoms at all 3 time points and with public prosocial behaviors at all 3 time points. Discrimination was negatively associated with altruistic prosocial behaviors at all 3 timepoints. Also as expected, depressive symptoms were negatively associated with altruistic prosocial behaviors and positively associated with public prosocial behaviors. Consistent with previous research (Carlo et al. 2003; Carlo and Randall 2002), public and altruistic prosocial behaviors were negatively intercorrelated. While endorsement of discrimination experiences was low, there were a couple of items that were especially salient. For example, two items participants most endorsed were, “how often do teachers treat you unfairly or negatively because of your ethnic background?” and “To what extent do you feel you are not accepted by other Americans?”

Path Analyses

Mental Health Strain Results: Associations Between Discrimination and Prosocial Behaviors Via Depressive Symptoms—Results are presented in Fig. 2 (mental health strain model) and 3 (prosociality strain model). The mental health strain model included the direct (i.e., unmediated) associations between discrimination at Time 1 and prosocial behaviors at Time 3, as well as a mediated path through depressive symptoms. The error variances for public and altruistic prosocial behavior at Time 3 were allowed to intercorrelate. Additionally, discrimination at Time 1 and prosocial and altruistic prosocial behaviors at Time 1 were allowed to correlate. Fit for the overall model (see Fig. 2) was adequate, $\chi^2(9) = 30.36, p < .001$; CFI = .96; RMSEA = .09 (90 % CI .06–.13). The model accounted for 45 % of the total variance in prosocial behaviors.

Results indicated that discrimination at Time 1 positively predicted depressive symptoms at Time 2 ($\beta = .29, p < .001$). In turn, depressive symptoms at Time 2 negatively predicted altruistic prosocial behaviors at Time 3 ($\beta = -.12, p = .05$). The direct links between discrimination at Time 1 and prosocial behaviors at Time 3 were not statistically significant (see Fig. 2).

Bias-corrected bootstrap confidence intervals were used to test the significance of the mediational effects through depressive symptoms (MacKinnon et al. 2002). Partial mediation can be assumed if the confidence interval for the product of the two unstandardized paths (discrimination to depressive symptoms and depressive symptoms to prosocial behavior) does not include zero. For the mental health strain model, the mediated path from discrimination at Time 1 to public prosocial behaviors at Time 3 through depressive symptoms at Time 2 was significant (indirect effect = .06, 95 % CI .02–.11, $p = .03$). This indirect path was significant when using bootstrapping analyses. The mediated path from discrimination at Time 1 to altruistic prosocial behaviors at Time 3 was not significant (indirect effect = $-.01$, 95 % CI $-.05$ to $.01, p = .55$).

Multi-group analyses were then conducted to examine whether the model parameters were consistent across gender. The fit of a model with all path coefficients free to vary across gender was compared to the fit of a model with all path coefficients constrained equal across gender. Invariance tests were conducted to examine the difference in fit between

these models, where a significant difference in fit would indicate that the path coefficients differed across gender. Two out of the following three criteria must be met for the null hypothesis of equivalence across gender to be statistically rejected: χ^2 significant at $p < .05$; CFI $> .01$; RMSEA $> .01$ (Dimitrov, 2010). For the mental health strain model, the unconstrained model and the constrained model both fit the data well and were not significantly different from one another, $\chi^2(8) = 3.52, p = .90$; CFI = .01; RMSEA = .02. Chi-square difference tests were also conducted to examine potential differences between adolescents from the two study sites (Miami and Los Angeles). For the mental health strain model, the unconstrained model (CFI = .91; RMSEA = .11; $\chi^2(14) = 61.35, p < .001$) and the constrained model (CFI = .90; RMSEA = .09; $\chi^2(22) = 74.59, p < .001$) both fit the data well and were not significantly different from one another ($\chi^2(8) = 13.24, p = .10$; CFI = .01; RMSEA = .02). These results suggest that the model fit equivalently across the two study sites.

Prosociality Strain Results: Associations Between Discrimination and Depressive Symptoms Via Prosocial Behaviors

The prosociality strain model included the direct effects between discrimination at Time 1 and depressive symptoms at Time 3 (see Fig. 3). Public and altruistic prosocial behaviors at Time 2 were included as mediators in the effects of discrimination on prosocial behaviors. The error variances between public and altruistic prosocial behaviors at Time 2 were allowed to correlate. The error variances between discrimination and depressive symptoms at Time 1 were allowed to correlate. Model fit was good, $\chi^2(3) = 2.21, p = .53$; CFI = 1.00; RMSEA = .000, CI = .06–.13. The model accounted for 72 % of the total variance in depressive symptoms.

Results indicated that discrimination at Time 1 positively predicted public prosocial behaviors at Time 2 ($\beta = .25, p < .001$) and negatively predicted altruistic prosocial behaviors at Time 2 ($\beta = -.25, p < .001$). Altruistic prosocial behaviors at Time 2 negatively predicted depressive symptoms at Time 3 ($\beta = -.23, p = .001$). Public prosocial behaviors at Time 2 did not predict depressive symptoms at Time 3 (see Fig. 3). Bias corrected bootstrap confidence intervals were again used to examine mediation. For the prosociality strain model, the path from discrimination at Time 1 to depressive symptoms at Time 3 was marginally significant (indirect effect = .03, 95 % CIs .01–.08, $p = .07$).

Again, invariance across gender and site were examined. When examining differences across genders, the constrained and unconstrained models both fit the data well and were not significantly different from one another, $\chi^2(5) = 3.58, p = .61$; CFI $< .001$; RMSEA = .01. Therefore, the results are reported for the whole sample, collapsed across gender. The analysis examining moderation by site suggested that the unconstrained and constrained models did not fit the data significantly differently ($\chi^2(5) = 17.51, p = .10$; CFI = .04; RMSEA $< .001$). Therefore, the results are reported for the whole sample.

Discussion

Understanding the developmental consequences of discrimination experiences on mental health and prosocial behaviors in recently immigrated adolescents is of great importance for developing strength-based models of ethnic minority adjustment. The current study aimed

to contribute to the existing research on discrimination and youth adjustment by examining the associations between discrimination and prosocial behaviors, as well as considering the role of depressive symptoms across 1 year of high school. The present findings indicated complex relationships among discrimination, depressive symptoms, and prosocial behaviors in a sample of Latino immigrant adolescents.

Results indicated that discrimination experiences were positively associated with depressive symptoms, which were negatively associated with altruistic prosocial behaviors. These findings are consistent with previous studies that suggest detrimental psychological outcomes stemming from discrimination (e.g., Flores et al. 2010). Previous stress and coping models have asserted that stressful experiences may become overwhelming and debilitate cognitive and emotional resources (Lazarus and Folkman 1984). If adolescents become overwhelmed by culturally based stress, they may experience increased depressive symptoms that may make it difficult to engage in helping behaviors that require additional costs to the self.

There was also support for a reverse causal model such that discrimination at Time 1 was positively associated with public prosocial behaviors at Time 2 and negatively associated with altruistic prosocial behaviors at Time 2. Altruistic prosocial behaviors at Time 2 were negatively associated with depressive symptoms at Time 3. These findings suggest that altruistic helping might be associated with positive mood and serve as a protective factor against the detrimental depressive symptoms that may result from exposure to discrimination experiences (see Wilson and Musick 1999). Interestingly, as in the prosociality strain model, public prosocial behaviors were not associated with depressive symptoms. Therefore, selfless helping behaviors seem to serve as a more powerful protective factor against depressive symptoms than selfishly-oriented helping behaviors aimed at securing the approval of others. These results suggest that youth who engage in selflessly-motivated helping might reap more benefits than those who help in order to benefit themselves.

The pattern of significant reciprocal associations between depressive symptoms and altruistic prosocial behaviors was found even after controlling for previous levels of prosocial behaviors or depressive symptoms (as well as across gender and site). These findings are consistent with previous cross-sectional research that has found negative links between depressive symptoms and prosocial behaviors in studies of non-Latino samples (Chen et al. 2000; Wentzel and McNamara 1999). However, the present findings yield supportive evidence for these relationships in a sample of Latino immigrant youth. Moreover, this is the first study to demonstrate evidence for reciprocal associations between depressive symptoms and prosocial behaviors. These findings suggest a dynamic interplay between depressive symptoms and altruistic prosocial behaviors over time that may serve to strengthen Latino youth's resilience to exposure to discrimination. Depressive symptoms may debilitate cognitive and emotional resources and contribute to self-focused emotions, which might contribute to a lower likelihood of selfless helping (Eisenberg et al. 1989). However, engaging in altruistic prosocial behaviors may also be negatively associated with depressive symptoms over time, and ultimately lead to better psychological adjustment. These results illustrate the potentially protective effects of selfless helping behaviors against negative emotionality and depressive symptomatology.

Consistent with our hypotheses, discrimination in ninth grade was positively associated with depressive symptoms 6 months later. These findings are consistent with previous research, which has found a positive association between discrimination experiences and depressive symptoms among adolescents (Potochnick and Perreira 2010; Potochnick et al. 2012; Szalacha et al. 2003). The present findings, however, extend the previous research by demonstrating this association in a sample of recently immigrated Latino youth. Because recently immigrated Latino youth may have had few opportunities to develop a strong supportive network in their new communities, the link between discrimination experiences and depressive symptoms is of particular significance. The resulting higher levels of depressive symptoms may be linked to chronic feelings of sadness, social withdrawal, and social isolation. Moreover, because adolescents spend increasingly more time with peers, and peer relationships are highly important during adolescence (Rohrbeck 2003), these experiences could lead to long-term psychological maladjustment. A particular focus on discrimination experiences and their potential long-term psychological consequences in recently immigrated Latinos is an important direction for future research.

Although the present study extends our understanding of discrimination experiences and positive social behaviors and psychological adjustment in recently immigrated U.S. Latino youth, a number of limitations should be considered. First, reported levels of perceived discrimination were low in this sample, so the effects observed might have been different in a sample with higher levels of perceived discrimination. Second, youth who left the study after Time 1 reported higher levels of discrimination compared to youth who stayed in the study. These attrition effects should be considered when interpreting the results. Third, all measures were self-report; therefore, shared method variance and self-presentation biases might affect the result. Future studies should utilize multiple reporters, behavioral tasks, and independent behavioral observations to account for these potential biases. Fourth this study utilizes a longitudinal design; firmly establishing causality is not possible without utilizing an experimental design. Additionally, although we used data from two U.S. cities, the findings may not generalize to other Latino subgroups not well represented in the sample or to non-immigrant Latinos. Further, all participants were recent immigrants to the U.S., and Latino adolescents who have been living in the U.S. for longer periods may have different experiences with discrimination. Future research should continue to examine these processes in diverse samples of Latino youth. Future research should also examine the associations among discrimination, depressive symptoms, and prosocial behaviors across longer periods of time and across different developmental periods.

Conclusion

Given the sparse research on the associations among discrimination, mental health symptoms, and prosocial behaviors in immigrant U.S. Latino adolescents, the present findings contribute to the knowledge base regarding the reciprocal associations among these variables. Our findings suggest that discrimination experiences during adolescence may influence depressive symptoms and prosocial behaviors up to a year later. Because it is plausible that a portion of our sample consisted of undocumented immigrant adolescents who may be particularly at risk for experiencing negative adjustment outcomes, these results are indicative of the need to thoroughly consider social experiences and adjustment

outcomes among recent immigrant adolescents. These findings are useful for educators and policy makers because they suggest that targeting depressive symptoms may be important for fostering positive developmental behaviors during this age period. Moreover, the study yielded evidence for reciprocal associations between depressive symptoms and altruistic behaviors.

As the Latino population in the U.S. continues to increase, it is important to understand the interplay of negative social experiences, mental health processes, and positive social behaviors. This is of particular importance during adolescence, which is characterized by significant physical, psychological, and interpersonal maturation and change. The present research adds to the growing interest in developing strength- and asset-based models of development in U.S. ethnic minority groups. Furthermore, our results suggest that educators and policymakers should focus on reducing discrimination experiences to promote mental health and prosocial behaviors as a way of assisting recent-immigrant adolescents to better adjust to their new society.

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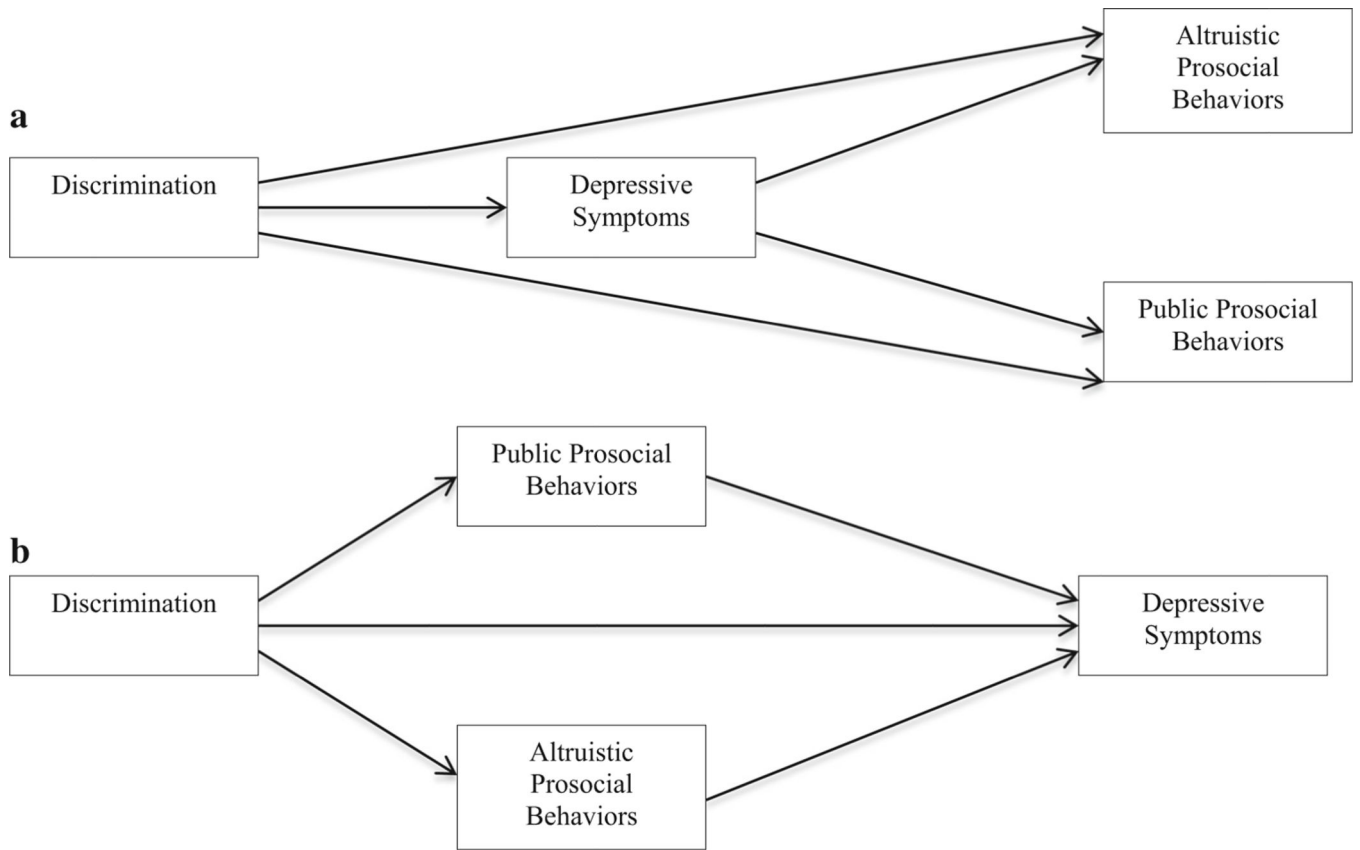


Fig. 1.
a The hypothesized model examining the longitudinal associations between discrimination and prosocial behaviors, with depressive symptoms as a mediator. **b** The hypothesized model examining the longitudinal associations between discrimination and depressive symptoms, with prosocial behaviors as a mediator

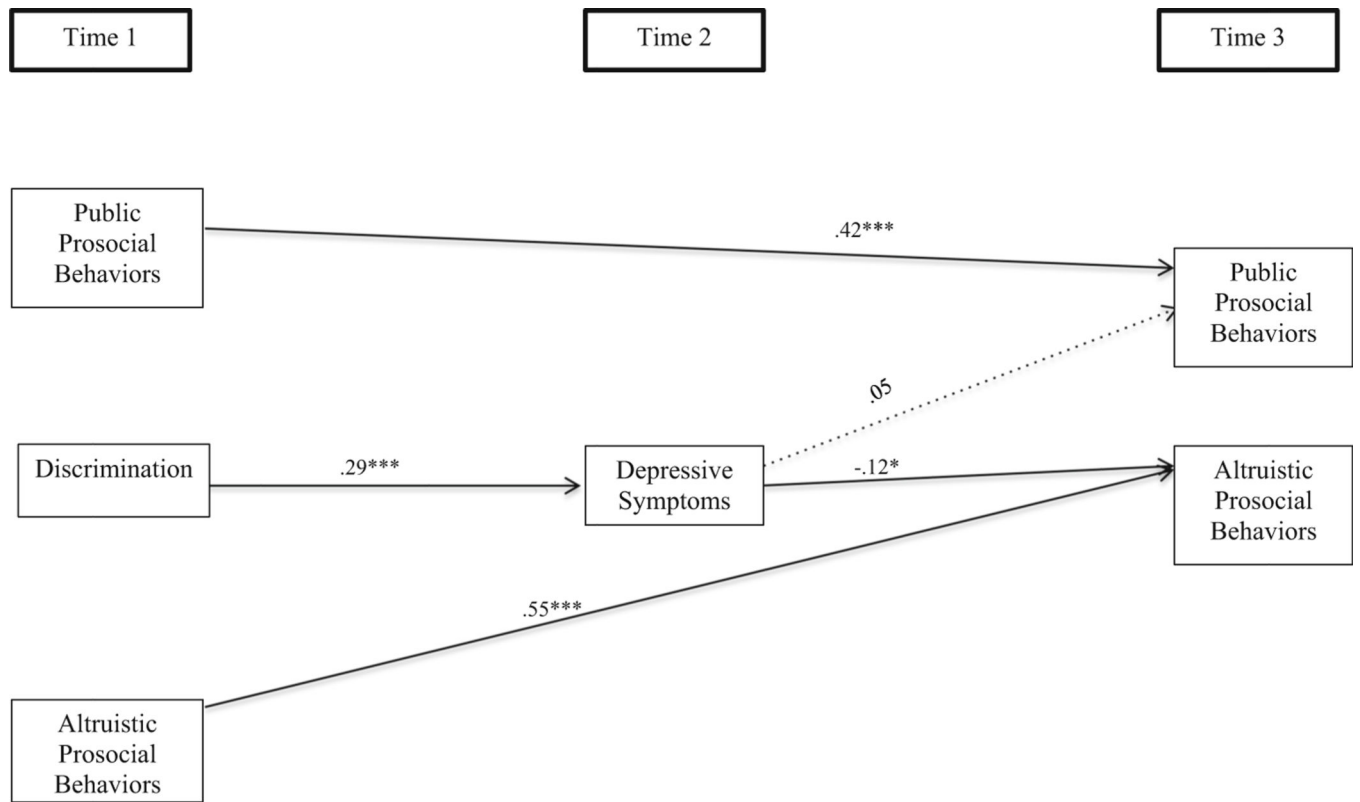


Fig. 2. Significant standardized path estimates for the associations among discrimination, depressive symptoms, and prosocial behaviors. Adolescents' gender, site, and public and altruistic prosocial behaviors at Time 1 were included as statistical controls. $*p = .05$; $**p = .01$; $***p < .001$. *Solid lines* represent statistically significant effects

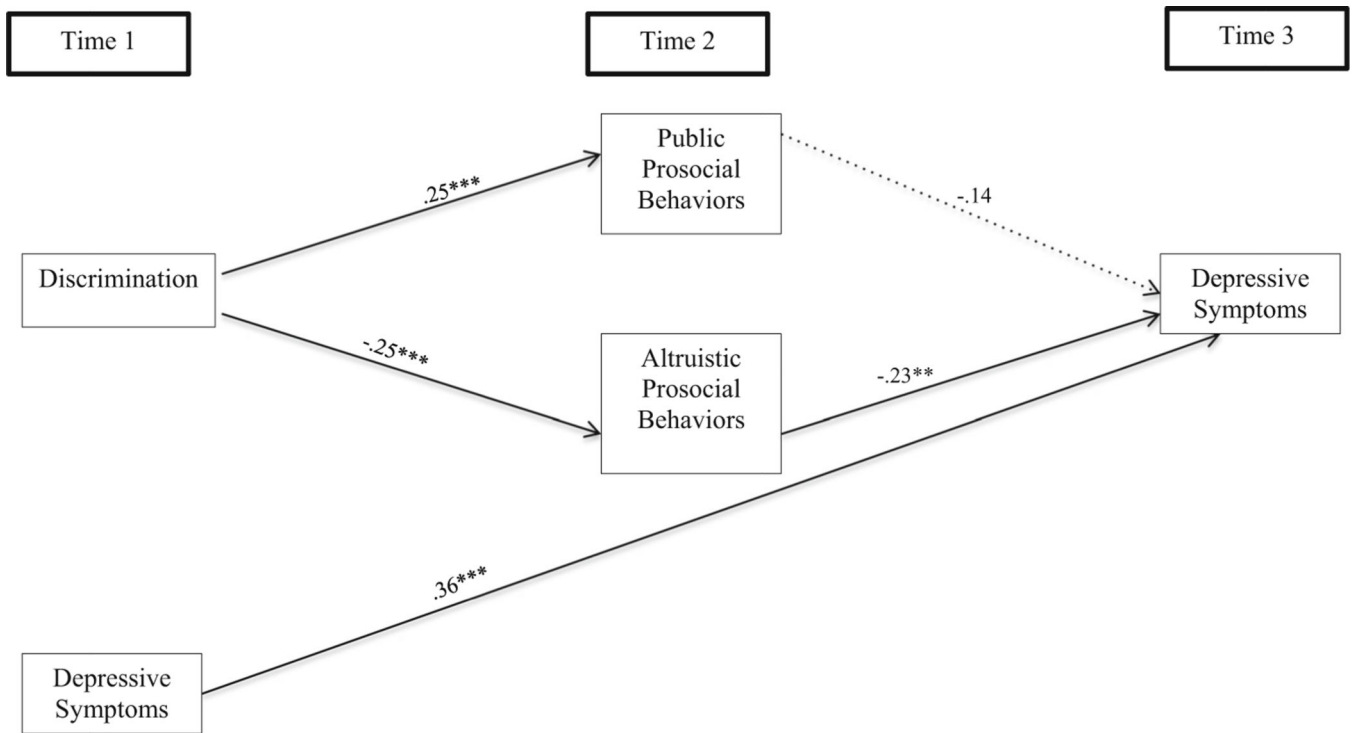


Fig. 3. Significant standardized path estimates for the associations among discrimination, prosocial behaviors, and depressive symptoms. Adolescents' gender, site, and depressive symptoms at Time 1 were included as statistical controls. * $p = .05$; ** $p = .01$; *** $p < .001$. *Solid lines* represent statistically significant effects

Table 1

Descriptives and correlation matrix for discrimination, depressive symptoms, and prosocial behaviors

	1	2	3	4	5	6	7	8	9	10
1. Discrimination T1										
2. Depressive symptoms T1	.30 ^{***}									
3. Depressive symptoms T2	.29 ^{***}	.51 ^{***}								
4. Depressive symptoms T3	.23 ^{***}	.43 ^{***}	.59 ^{***}							
5. Public prosocial behaviors T1	.14 ^{**}	.13 [*]	.13 [*]	.15 ^{**}						
6. Public prosocial behaviors T2	.24 ^{***}	.11	.12 [*]	.07	.49 ^{***}					
7. Public prosocial behaviors T3	.24 ^{***}	.11	.09	.16 ^{**}	.44 ^{***}	.54 ^{***}				
8. Altruistic prosocial behaviors T1	-.20 ^{***}	-.22 ^{***}	-.17 ^{**}	-.23 ^{***}	-.65 ^{***}	-.40 ^{***}	-.37 ^{***}			
9. Altruistic prosocial behaviors T2	-.24 ^{***}	-.25 ^{***}	-.23 ^{***}	-.25 ^{***}	-.49 ^{***}	-.69 ^{***}	-.48 ^{***}	.52 ^{***}		
10. Altruistic prosocial behaviors T3	-.15 [*]	-.11	-.16 ^{**}	-.30 ^{***}	-.45 ^{***}	-.45 ^{***}	-.71 ^{***}	.51 ^{***}	.54 ^{***}	
Mean	.78	1.49	1.54	1.48	1.64	1.46	1.32	2.73	2.74	2.83
SD	.79	.80	.72	.75	1.12	1.19	1.20	1.09	1.12	1.05

T1 = Time 1, T2 = Time 2, T3 = Time 3

* $p < .05$;

** $p < .01$;

*** $p < .001$