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Two Sides of the Same Coin? The Relations between Prosocial and Physically Aggressive Behaviors

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Abstract: The direct and indirect relations between six types of prosocial behavior and physical aggression were examined. Data were gathered from 252 college students (M age = 21.67 years; 184 women) who completed measures of sympathy, prosocial behavior, and physical aggression. Structural equation modeling revealed that sympathy fully mediated the relations between compliant prosocial behaviors and physical aggression, and partially mediated the relations between altruism and physical aggression and public prosocial behaviors and physical aggression. The findings suggest that the relations between prosocial behaviors and aggression are complex and that prosocial behavior should not be treated as a unitary construct.

Keywords: Prosocial behaviors, Sympathy, Aggression, Adolescence, Methodology

Humans have the capacity to act both aggressively and altruistically, and sometimes can engage in both behaviors simultaneously (Feshbach and Feshbach, 1986; Zahn-Waxler *et al.*, 1986). For example, witnessing a person experience a distressing event might incite both anger at the aggressor (fueling desires to aggress, or to become hostile towards another) and sympathy for the victim (fueling helping desires; Vitaglione and Barnett, 2003). This authentic concern for another's plight, or altruism, is one motivator of prosocial behavior, which can be defined as any behavior someone engages in that benefits or helps another (Eisenberg, 2003; Zahn-Waxler *et al.*, 1986).

However, there is considerable research on whether altruism is truly motivated by selfless motives. The crux of this debate is whether prosocial behaviors are driven by egoistic motives or whether they are driven by selfless motives (Batson, 1998). In addition, some scholars have argued that some types of prosocial behaviors may be egoistically motivated and other types may be selflessly motivated (*e.g.*, Carlo and Randall, 2001). There

is considerable evidence for the existence of selflessly motivated prosocial behaviors (*e.g.*, Batson *et al.*, 2002; Eisenberg, 2003); though some support for egoistically motivated prosocial behaviors has also been presented (*e.g.*, Cialdini *et al.*, 1987). Because aggression is conceptualized as a selfishly motivated social behavior, further evidence that lends credence to the selflessly motivated argument is that some prior researchers have shown negative relations between aggression and prosocial behaviors. However, the evidence on the relations between aggression and prosocial behavior is not clear.

For example, scholars using cluster analyses have shown that in certain groups of children, high levels of prosocial behavior coexist with aggressiveness (Haapasalo *et al.*, 2000; Pulkkinen and Tremblay, 1992). Researchers examining peer relationships have additionally reported that most children exhibit at least some level of both prosocial and aggressive behaviors (Coie and Kupersmidt, 1983; Dodge, 1983). Aggressive children, moreover, do not always exhibit discernible differences in showing concern for or helping others when compared

to nonviolent peers. For example, Crick and Grotpeter (1995) reported no mean differences in peer nominations of prosocial behavior between relationally nonaggressive and aggressive children. These aggressive children sometimes display a greater concern towards strangers at younger ages because of their poorer impulse control and emotion regulation (Feshbach and Feshbach, 1986; Gill and Calkins, 2003; Hastings *et al.*, 2000). However, Miller and Eisenberg (1988) in their meta-analysis reported overall negative relations between empathy and externalizing or aggressive behavior.

Several investigators have furthermore theorized that measures of prosocial and aggressive behaviors are orthogonal (Pulkkinen, 1984). Empirical research has supported this notion. Caprara *et al.* (2001), for example, reported that the correlations between self, teacher, and peer-reported prosocial and aggressive behavior at seven different time points (from ages 7–13, inclusively) were generally nonsignificant. These constructs have emerged as separate factors after conducting exploratory factor analyses (Crick and Grotpeter, 1995; Harris *et al.*, 1996) and seem to maintain their orthogonal nature after taking into account measurement unreliability, responder bias (a tendency to acquiesce) and general level of social interaction (Krueger *et al.*, 2001; Radke-Yarrow *et al.*, 1976).

Given that the existing literature suggests that prosocial and aggressive behaviors can co-exist and have little or no direct relation with each other, it makes sense to contend they are not two sides of the same coin. However, stating that prosocial and aggressive behavior have little or no influence on one another might be a premature conclusion for two reasons. The first concerns how prosocial behavior has been defined in the literature. Unlike aggression, when studying prosocial behavior researchers have generally employed global measures (Carlo and Randall, 2002), although several scholars have recently begun to examine different types and contexts of prosocial behavior as well as the unique correlates of these measures (Boxer *et al.*, 2004; Eberly and Montemayor, 1998; Hawley, 2003a, 2003b; Iannotti, 1985; Persson, 2005). Consequently, a critical examination of different types of prosocial behavior in conjunction with aggression might help to elucidate the relations between these two behaviors.

A second reason to suggest that prosocial behavior and aggression might be interrelated is that both constructs are theoretically and empirically linked to empathy (*i.e.* understanding another's emotions and perspective) and sympathy (*i.e.*, feelings of concern or sorrow towards another; Feshbach and Feshbach, 1986; Hill, 2004; Miller and Eisenberg, 1988; Strayer and Roberts, 2004). While empathy and sympathy have been thought to be precursors to prosocial behavior, it is also plausible that being prosocial can make an individual more attentive and

sensitive to the troubles of others. In turn, this increase in feeling sorrow for another, or sympathy, might prevent the individual from engaging in aggressive behaviors (Bandura *et al.*, 2001). Several researchers have furthermore agreed that engaging in prosocial behavior is an important buffer that may protect against the development of aggressive or antisocial behavior in children as they become older (Eron and Huesmann, 1984; Kuczynski and Kochanska, 1995; Haapasalo *et al.*, 2000; Hastings *et al.*, 2000; Tremblay *et al.*, 1992; Vitaro *et al.*, 1990). The present paper will thus examine the possibility that engaging in prosocial behavior has an indirect effect on physical aggression via sympathy.

Defining types of prosocial behavior

Many studies examining prosocial behavior implement global assessments to capture this construct. Global assessments measure the likelihood of engaging in a prosocial behavior across situations and personal motivations. At times, these global measures can include aspects of a broader construct that subsumes prosocial behavior, namely social competence. However, the usefulness of global measures might be limited as subtypes of prosocial behaviors have unique correlates that are otherwise masked when implementing such measures. Instead, it might be beneficial to categorize prosocial behaviors as either a product of the situation or personal motives (Carlo and Randall, 2001). For example, Persson (2005) observed three types of aggression and two motives of observed prosocial behavior: altruistic and "acting out" altruism, sometimes with an egocentric intention, over the course of three years. While the measures of the altruistic motive were significantly and negatively related to measures of reactive and proactive hostile aggression, the more egocentric or "acting out" prosocial measures were positively related to measures of reactive and proactive instrumental aggression (all correlations were controlled for level of sociability). A situational measure, prosocial helping at the request of others, was generally not related to any measures of aggression.

Carlo and his colleagues (Carlo *et al.*, 2003; Carlo and Randall, 2001, 2002) have identified six types of prosocial behaviors based on either the situation or personal motives: altruism (selfless helping, usually motivated by sympathy), public (helping in front of an audience, usually motivated by wanting to gain approval, respect from others, and self-worth), compliant (helping because it has been requested by another), emotional (helping under emotionally evocative circumstances), dire (helping in emergency situations), and anonymous (helping without the receiver knowing the identity of the helper).

The importance of identifying these different prosocial behaviors is demonstrated by the fact that each behavior is characterized by its unique relations with oth-

er variables. Altruistic prosocial behaviors, for example, have been found to be significantly and positively related to perspective taking, sympathy, and internalized moral reasoning, whereas public prosocial behaviors have been found to be significantly and negatively correlated with these same measures (Carlo *et al.*, 2003). Aggression has also been found to be negatively related to altruistic prosocial behaviors and positively related to prosocial behaviors that benefit the self (Carlo *et al.*, 2003; Persson, 2005). Compliant helping is another prosocial behavior that is positively related to perspective taking, sympathy, and internalized moral reasoning and negatively related to aggression, but these relations with aggression have been less conclusive. This might be because, in contrast to altruism, compliant helping is not motivated completely by selfless motives and instead by the demands of the social situation (Eisenberg and Miller, 1987). Thus, there might be different motives for compliant prosocial behavior as compared to other forms of prosocial behaviors.

Sympathy and prosocial behavior

As previously mentioned, mechanisms that can help explicate the relation between prosocial and aggressive behavior are empathy and sympathy (Feshbach and Feshbach, 1986). In its most nascent form, empathy occurs when one experiences and understands another's affective and cognitive state. Once the self becomes differentiated from others, empathy can manifest itself through either personal distress or sympathetic distress (hereafter referred to as sympathy). Personal distress is characterized by a focus on relieving distress within the self (egocentric responding) due to the negative emotions one is vicariously experiencing with another. Sympathy, conversely, arises when one feels a true concern, pity, or sorrow for another's plight. Resulting from this compassion is a shift in the focus of relieving distress from the self to the victim. It is then sympathy that is the more proximal precursor of altruistic tendencies (Carlo and Randall, 2002; Hill, 2004; Hoffman, 1987). In addition to sympathy, perspective taking has been regarded as another key component of prosocial responding; the cognitive ability to understand another's affect, thoughts, and even visual perspective has been positively related to helping behaviors (Eisenberg and Fabes, 1998). Elaborated role taking has been hypothesized to lead to a deeper processing of empathic emotions which can result in sympathetic or personal distress, depending on person characteristics (*e.g.*, ability to cope with emotions) as well as situational characteristics (*e.g.* feelings towards the other person; Eisenberg *et al.*, 1991).

While many theorists have conceptualized and validated sympathy to be an important precursor of prosocial behaviors (Eisenberg and Fabes, 1998; Hoffman, 1987; Staub, 1986), it is conceivable to hypothesize

that these relations are bidirectional in nature. In other words, being prosocial might very well increase one's tendency to be sympathetic. Successfully helping another person, for example, can show someone that he or she can be effective in relieving another's distress. This realization might consequently shift focus away from the self and instead towards others' feelings and emotional experiences. A shift in focus from the self to others has also been linked to less aggression (Manning and Bear, 2002; Mussen and Eisenberg, 2001). Prosocial behavior has been demonstrated in the past to affect cognitive components associated with aggression. For example, Bandura *et al.* (2001) reported that prosocial behavior in adolescent girls led to avoiding ruminating about events which incite anger, and less ruminating in turn was predictive of engaging in fewer transgressive behaviors.

Empirical evidence supporting that prosocial behavior affects sympathy (and perspective taking) stems from a study conducted by Eisenberg *et al.* (1999) Using a longitudinal design, it was found that spontaneous sharing behavior observed at preschool age (4–5 years) was significantly correlated with self-reported sympathy at ages 13–14, 15–16, 17–18, and 19–20, significantly correlated with self-reported sympathy and friend-reported sympathy at ages 21–22, and nearly significantly correlated with friend-reported sympathy at ages 23–24. It is notable that no other observed behavior (spontaneous helping, compliant sharing and compliant helping) had any associations with sympathy. While the criteria for spontaneous helping included acting without the request of another, this definition of helping involved offering something without any physical "cost" to the child. Spontaneous sharing, conversely, was defined by giving an item in one's possession to another due to the child's own desire to share. Thus, only observations of spontaneous sharing might have tapped into the selfless nature of these preschoolers.

Sympathy and aggression

A tendency to feel sorry for someone else's situation might moreover attenuate the likelihood that one will respond to a situation in an aggressive or antisocial manner. Feshbach and Feshbach (1986) theorize that the more affectively sympathetic an observer or instigator of an aggressive act is, the more likely this person will vicariously experience the painful consequences of this aggressive act. This vicarious experience will in turn deter this person from engaging in the same aggressive act in the future. In regards to the cognitive components of sympathy, the more advanced one is in perspective-taking, the less likely this person will find him/herself in aggressive conflicts stemming from misunderstandings.

Many researchers have reported negative relations between sympathy and physical, verbal, and indirect aggression and antisocial behavior (Carlo *et al.*, 1998;

Hughes *et al.*, 2000; Kaukianen *et al.*, 1999; Strayer and Roberts, 2004). Research on intervention studies which promote sympathy provides evidence that these techniques are effective in decreasing aggressive behavior. For example, college-aged men, after watching videotaped testimonials of other men who have committed rape, were more sympathetic and less relationally aggressive following the treatment (O'Donohue *et al.*, 2003). Programs using methods to teach children how to be aware of other people's feelings have also decreased aggressive behavior in the home and in school (Frey *et al.*, 2000; Webster-Stratton and Reid, 2003).

Gender and age

Gender socialization theorists have noted that, due to gender specific socialization and experience, gender differences in prosocial and aggressive behaviors consolidate and emerge by adolescence (Maccoby and Jacklin, 1974). Scholars examining prosocial behaviors and aggression have also reported many gender differences in these behaviors. Females tend to engage in more prosocial behaviors, show more perspective taking and be more empathic, sympathetic, and nurturing than males, whereas males have been found to be more physically aggressive and engage more risky and instrumental forms of prosocial behaviors (Eagly and Crowley, 1986; Eisenberg, 2003; Carlo *et al.*, 1999; Carlo and Randall, 2002; Knight *et al.*, 1996; Ostrov and Keating, 2004). Gender differences in aggression may be especially pronounced in emotionally evocative situations (Knight *et al.*, 2002). However, it has also been suggested the reasons for these differences in aggression may be a result of gender differences in empathy, perspective taking and sympathy. Sympathy, for example, has been found to mediate the relationship between gender and aggression (Carlo *et al.*, 1999). The present study examined gender differences in six types of prosocial behaviors, sympathy, and physical aggression in addition to examining whether or not the proposed model explaining the relation among these measures would differ for men and women.

Cognitive developmental theorists have posited that increases in adolescents' moral reasoning, prosocial behaviors, and sympathy can be attributed to growths in sociocognitive skills such as attentional processes and perspective taking (Eisenberg and Fabes, 1998). Moreover, with age comes increased opportunities to engage in prosocial acts, as well as life experience that may provide one with the tools and abilities to help others. Scholars have accordingly found positive relations among age and prosocial behavior, especially among early to middle adolescents (but not into young adulthood) and there are reported age increases in sympathy through young adulthood (Carlo *et al.*, 1992; Eisenberg and Fabes, 1998; Fabes *et al.*, 1999). These sociocognitive advancements may help explain a trend towards

less aggression into young adulthood (Coie and Dodge, 1998; Lahey *et al.*, 2000). The present study also explored whether age is significantly related to prosocial behavior, sympathy, and physical aggression in a sample of young adults.

Hypotheses

This study had two main goals: to examine how different types of prosocial behaviors were related to physical aggression, and to examine whether or not the relations between prosocial behaviors and physical aggression were mediated by sympathy. Based on prior research, altruism was expected to be significantly and negatively related to physical aggression, and public prosocial behavior was expected to be significantly and positively related to physical aggression. Because prior research has been mixed in regards to the relation between compliant prosocial behavior and physical aggression, it is unknown whether or not these two behaviors will be related. Furthermore, due to lack of prior research, no a priori hypotheses were made on the relations between direct, emotional, and anonymous prosocial behaviors and physical aggression.

Based on theory and empirical research, it was also hypothesized that altruism and compliant, direct, emotional, and anonymous prosocial behaviors will be significantly and positively related to sympathy. In contrast, since public prosocial behaviors are focused on benefiting the self, these behaviors were expected to be significantly and negatively related to sympathy. Additionally, sympathy will be significantly and negatively related to physical aggression.

To directly examine the mediating role of sympathy on the relations between prosocial behaviors and physical aggression, structural equation modeling analyses were conducted. Because sympathy and selfish motives define altruism and public prosocial behaviors, respectively, it was expected that a direct path between both altruism and public prosocial behaviors and physical aggression would exist. Additionally, an indirect path via sympathy is also expected to be found. However, due to lack of prior research, mediation analyses for compliant, direct, emotional, and anonymous prosocial behaviors would be conducted only if these prosocial behaviors were significantly related to physical aggression and sympathy.

Because of theory and prior empirical evidence, gender differences were also anticipated. Women were expected to engage in more altruism and compliant, direct, emotional and anonymous prosocial behaviors and be more sympathetic than men, while men were expected to be more physically aggressive and engage in more public prosocial behaviors than women. However, while gender disparities were expected on these measures, the path models proposed examining these three constructs may be gender-invariant given that sympathy has been found to mediate the relationship between gender and

aggression in previous studies. Finally, based on the prior empirical evidence, older individuals were expected to report more sympathy than younger individuals; however, given the lack of prior evidence, no *a priori* hypotheses were made regarding age differences in the different types of prosocial behaviors and physical aggression in young adulthood.

Methods

Participants and procedure

Participants were 252 college students (68 males, 184 females; M age=21.67 years, $SD = 3.35$) who were recruited from the subject pool at a Pacific-coast state university. All were enrolled in Introductory Psychology courses. A slight majority of the sample was White (37%), while 35% was Asian/Middle Eastern, 18% was Hispanic, 3% was Black, and 8% was classified as "other." Mothers' educational status included elementary/junior high (10%), high school (13%), some college/2-year college (30%), 4-year college (25%), and postgraduate studies (23%). Fathers' educational status included elementary/junior high (6.5%), high school (13%), some college/2 year college (24%), 4-year college (22%), and postgraduate studies (34%). A survey packet including the Davis Interpersonal Reactivity Index, the Prosocial Tendencies Measure, the Suppression of Aggression subscale of the Weinberger Adjustment Inventory, and three behavioral fighting items was administered by the researchers to the participants in a large classroom. The participants took approximately 45 minutes to complete the survey packet. Upon completion, the participants were given course credit, debriefed, and thanked for their participation.

Measures

Sympathy

Students completed the empathic concern and perspective taking subscales from the Interpersonal Reactivity Index (Davis, 1983). Both the empathic concern subscale (Cronbach's $\alpha = .76$; sample item: "I often have tender, concerned feelings for people less fortunate than me") and the perspective taking scale (Cronbach's $\alpha = .78$; sample item: "I sometimes find it difficult to see things from the 'other person's' point of view") consisted of seven items. Items were rated on a five-point scale ranging from "does not describe me" to "describes me very well." Adequate reliability and validity for this measure has been reported elsewhere (e.g. Davis and Franzoi, 1991; Laible *et al.*, 2000). Because perspective taking and empathic concern are theoretically and empirically related (Davis, 1983; Eisenberg, 1986) and because preliminary analysis indicated that the two scales were significantly correlated, $r(250) = .53, p < .001$, the

two scales were averaged to form an overall sympathy scale (14 items; Cronbach's $\alpha = .85$).

Prosocial Tendencies Measure (PTM)

Additionally, students completed a 22-item version (one item was inadvertently left off) of the PTM, composed of 6 subscales: altruism (4 items, Cronbach's $\alpha = .60$), public (4 items, Cronbach's $\alpha = .87$), emotional (4 items, Cronbach's $\alpha = .81$), dire (3 items, Cronbach's $\alpha = .70$), anonymous (5 items, Cronbach's $\alpha = .82$) and compliant (2 items, Cronbach's $\alpha = .81$). Participants were asked to rate the extent to which statements (sample items: "I tend to help people who are hurt badly", "Helping others when I am in the spotlight is when I work best") described themselves on a 5-point scale ranging from 1 (does not describe me at all) to 5 (describes me greatly). Although the reliability of the subscales is moderate to strong, the PTM has been found to have adequate reliability and validity in prior samples (Carlo and Randall, 2002; Carlo *et al.*, 2003; Hardy and Carlo, 2005).

Physical aggression

To assess both trait and state physical aggression, participants completed the Suppression of Aggression subscale of the Weinberger Adjustment Inventory (Weinberger, 1991) and three behavioral fighting items (one fighting item was later dropped due to extremely low variability). The Suppression of Aggression subscale of the Weinberger Adjustment Inventory was a five-item scale designed to assess aggressive behaviors (sample item "If someone tries to hurt me, I make sure I get even with them") on a five point scale (1 = does not describe me well through 5 = describe me very well). The behavioral items included: "During the past year, how many times were you in a physical fight in which no weapons were present?" ($M = 1.13, SD = .51$, ordered categories with a range from 1 to 4) and "During the past year, how many times did you provoke a physical fight?" ($M = 1.11, SD = .43$, ordered categories with a range from 1 to 5). Both the Suppression of Aggression scale (Cronbach's $\alpha = .82$) and the two fighting items (Cronbach's $\alpha = .88$) were converted to *z*-scores and averaged to form a seven-item index of physical aggression (Cronbach's $\alpha = .79$). Weinberger and colleagues have reported adequate validity and reliability for the Suppression of Aggression subscale in college samples (Weinberger, 1995; Weinberger and Gomes, 1995).

Results

Preliminary confirmatory factor analyses

A preliminary confirmatory factor analysis was conducted to examine the psychometric properties of the PTM. All factor loadings and path coefficients presented are

Table 1 Standardized solutions by confirmatory factor analysis for the six factors of the PTM

Item keyword	Altruism	Compliant	Dire	Emotional	Anonymous	Public
Recognition	.27					
Resume	.74					
Tax	.62					
Future	.55					
Hesitate		.87				
Ask for		.78				
Crisis			.70			
Hurt			.66			
Dire			.62			
Very distressed				.64		
Distressed				.70		
Highly				.76		
Emotional				.78		
Donate money					.64	
Needy others					.87	
Help others					.81	
Situation					.61	
Donations					.57	
Watching						.72
Other						.84
Front						.85
Spotlight						.77

standardized values. To determine if model parameters were statistically significant, significance levels of .05 were used. Prior to all other analyses, a CFA was conducted in order to determine the factorial validity of the six PTM latent variables. This model fit well according to descriptive fit indices, $\chi^2(194, N = 252) = 344.64, p < .01$, CFI = .93, SRMR = .06 (Hu and Bentler, 1999). The factor loadings for all six factors and item names can be found in Table 1. These loadings, with the exception of one item that weakly loaded onto the altruism factor (recognition), were large and positive.

Univariate statistics and correlations

Means, standard deviations, and correlations among sympathy, physical aggression, and the six factors of the PTM (created by using factor loadings obtained from the preliminary CFA of these factors) can be found in Table 2. Sympathy was significantly and positively correlated to altruism and compliant, emotional, dire, and anonymous prosocial behaviors and significantly and negatively correlated to public prosocial behaviors and physical aggression. Physical aggression was significantly and positively correlated to public prosocial behaviors and significantly and negatively correlated to altruism and compliant prosocial behaviors. Altruism was significantly and positively correlated with compliant prosocial behaviors and significantly and negatively correlated with the public prosocial behaviors. Compliant, emotional, dire, and anonymous prosocial behaviors were all significantly and positively correlated with one another.

Tests of gender and age differences in social behaviors

To examine anticipated gender differences, *t*-tests were conducted. Results (using a Bonferonni correction) showed that there were significant gender differences among the variables. Men had a lower mean sympathy score than women (men $M = 3.44, SD = .46$, women $M = 3.87, SD = .86$), $t(250) = -5.44, p < .001$. Additionally, men had a higher physical aggression score than women (men $M = .40, SD = .86$, women $M = -.14, SD = .51$), $t(250) = 6.07, p < .001$. Gender differences were found for three types of prosocial behaviors. Men had a higher mean score than women for public prosocial behaviors (men $M = 7.63, SD = 3.05$, women $M = 6.25, SD = 2.62$), $t(246) = 3.54, p < .001$. Men had a lower mean score than women on altruism (men $M = 8.26, SD = 1.69$, female $M = 8.91, SD = 1.70$), $t(244) = -2.655, p < .01$, and compliant prosocial behaviors (men $M = 5.53, SD = 1.43$, female $M = 6.33, SD = 1.64$), $t(249) = -3.529, p < .01$. Men tended to have lower mean scores than women on emotional prosocial behaviors (men $M = 10.53, SD = 2.35$, female $M = 11.51, SD = 2.75$), but this difference was marginally significant, $t(246) = -2.58, p < .05$. Zero-order correlations were also conducted in order to examine the relations among age and the six types of prosocial behavior, sympathy, and physical aggression. Age was not significantly correlated with any of these social behaviors.

Table 2 Means, standard deviations, correlations for sympathy, physical aggression, and the six factors of the PTM

	Sympathy	Aggression	Altruism	Public	Emotional	Dire	Anonymous	Compliant
Sympathy	–							
Aggression	-.44**	–						
Altruism	.31**	-.35**	–					
Public	-.33**	.28**	-.65**	–				
Emotional	.52**	-.08	.14	-.07	–			
Dire	.36**	.08	.09	.00	.75**	–		
Anonymous	.30**	-.01	-.11	.14*	.30**	.43**	–	
Compliant	.47**	-.15*	.32**	-.06	.61**	.59**	.21*	–
Mean	3.76	.01	2.18	1.66	2.81	2.33	1.95	3.06
SD	.58	.67	.43	.70	.67	.61	.67	.81
Range	2.00–4.93	-.75–2.86	.66–2.86	.81–3.85	.94–3.87	.71–3.55	.77–3.87	.85–4.27

Note. Means for the six PTM factors were average weighted scores.

* $p < .05$.

** $p < .01$.

Structural equation modeling analyses

Once the six latent variables were established, a model examining the mediation of sympathy between each latent prosocial variable that was significantly correlated with sympathy and physical aggression (altruism, compliant, public) and the observed physical aggression variable was tested by constructing direct paths from (a) each prosocial behavior to the observed sympathy variable and (b) from the observed sympathy variable to the observed physical aggression variable.

The altruism model (see Fig. 1) had adequate fit, $\chi^2(8, N = 252) = 10.55, p = .23, CFI = .99, SRMR = .03$. This model had a significant and positive path from altruism to sympathy ($R^2 = .163$) and a significant and negative path from sympathy to physical aggression. Additionally, the direct path from altruism to physical aggression ($R^2 = .272$) was significant and negative. The compliant model (see Fig. 2) had adequate fit, $\chi^2(1, N = 252) = .04, p = .84, CFI = 1.00, SRMR < .01$. Similar to the altruism model, this model had a significant and positive path from compliant prosocial behavior to sympathy ($R^2 = .270$) and a significant and negative path from sympathy to physical aggression. However, the direct path between the compliant prosocial behavior and physical aggression ($R^2 = .202$) was nonsignificant. Finally, the public model (see Fig. 3) also had adequate fit, $\chi^2(8, N = 252) = 23.92, p < .05, CFI = .97, SRMR = .03$. Unlike first two models, this model had a significant and negative path from public prosocial behavior to sympathy ($R^2 = .112$) in addition to a significant and negative path from sympathy to physical aggression. The direct path from public prosocial behavior to physical aggression ($R^2 = .215$) was significant and positive.

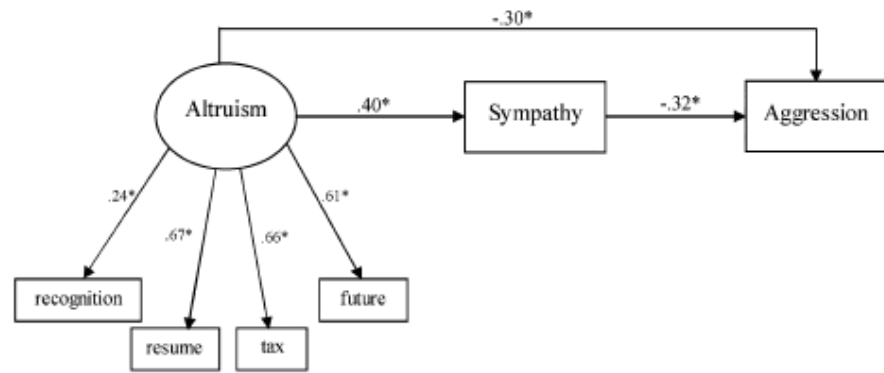
Multigroup analyses

Multigroup analyses for gender were performed to examine whether or not constraining the three regression coefficients would yield a significant drop in χ^2 in each of the three models (altruism, compliant, public) tested. A significant drop in χ^2 from the full to the reduced model would suggest significantly worse fit for the reduced model, or the model where the regression coefficients have been constrained to be equal for men and women. The multigroup results for altruism model ($\Delta\chi^2(3) = 7.60, p = .06$), the compliant model ($\Delta\chi^2(3) = 5.85, p = .12$), and the public model ($\Delta\chi^2(3) = 7.11, p = .07$) showed that the χ^2 difference test approached, but did not reach significance. Since the regression coefficients for all three models were found to be invariant for males and females, mediation tests were performed only on the full-group models.

Tests of mediation

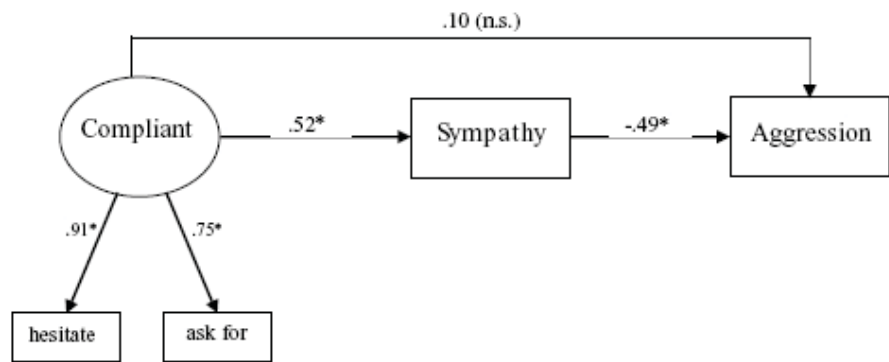
Standard errors for all significance tests of indirect effects were computed using the bootstrap procedure implemented in Mplus 3.10 (MacKinnon *et al.*, 2002). Results showed that the 95% confidence intervals for the standard error estimates of the indirect effects fell outside of zero for the altruism ($-.133, -.039$), compliant ($-.258, -.108$), and public ($.032, .143$) models. Since each confidence interval fell outside of zero, sympathy was therefore a significant mediator of the relation between prosocial behavior and physical aggression for all three models tested.

Fig. 1 Full path model of sympathy as a mediator between altruism and physical aggression



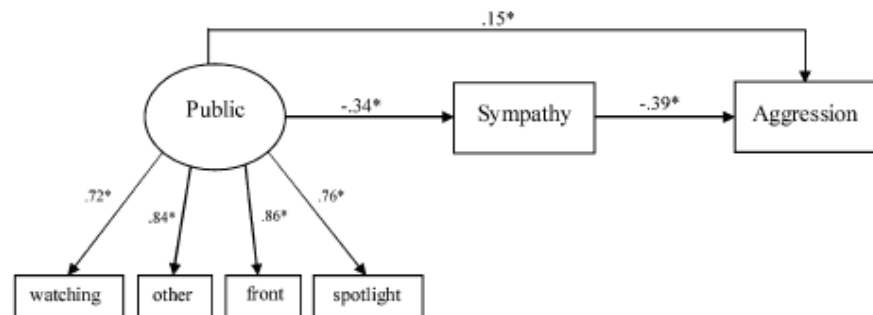
* = $p < .05$

Fig. 2 Full path model of sympathy as a mediator between compliant prosocial behaviors and physical aggression



* = $p < .05$

Fig. 3 Full path model of sympathy as a mediator between public prosocial behaviors and physical aggression



* = $p < .05$

In order to statistically control for social desirability, a shortened ten-item version of a measure of social desirability (Crowne and Marlowe, 1964; Cronbach's alpha was .59 after deleting one low loading item) was also administered. When social desirability was included as a covariate in the mediation analyses, the results were virtually identical in all three models except the direct path between public prosocial behavior and physical aggression became nonsignificant in the public model. Sympathy remained a significant mediator for all three models tested.

Discussion

This study had two main goals: to examine how different types of prosocial behaviors were related to physical aggression, and to examine whether or not the relations between prosocial behaviors and physical aggression were mediated by sympathy. Altruism and compliant and public prosocial behaviors were related to physical aggression in expected directions; altruism and compliant prosocial behaviors were negatively related to physical aggression, while the public prosocial behaviors

were positively related to physical aggression. As expected, results showed that sympathy was negatively correlated with public prosocial behaviors and positively correlated with the other five types of prosocial behaviors (altruism, compliant, dire, emotional and anonymous). In turn, sympathy was negatively correlated with physical aggression. Results from the mediation analyses conducted showed that sympathy partially mediated the relation between altruism and physical aggression, as well as between public prosocial behaviors and physical aggression. Sympathy fully mediated the relation between compliant prosocial behaviors and physical aggression.

Consistent with previous research, sympathy was positively related to altruism and compliant, dire, emotional, and anonymous prosocial behaviors and negatively related to public prosocial behaviors (Carlo and Randall, 2002; Eisenberg and Fabes, 1998; Feshbach and Feshbach, 1986; Miller and Eisenberg, 1988). Scholars have noted that sympathy is a primary motive for prosocial behavior, especially prosocial behaviors that consider the perspective of needy others and are linked to strong internalized moral principles (*e.g.* Hoffman, 1987). Because altruism and compliant, dire, emotional, and anonymous prosocial behaviors frequently evoke cues of distress and need, and because strong internalized moral principles are relevant (particularly for altruism) to these types of prosocial behaviors, it was not surprising that sympathy was related positively to these prosocial behaviors. In contrast, the negative association between sympathy and public prosocial behavior reflects the notion that public prosocial behavior might be primarily motivated by the need to gain the approval of others—a more self-enhancing motivated form of prosocial behavior (Carlo and Randall, 2002). Moreover, sympathy and physical aggression had a strong negative relation with each other, giving support to the theory that the ability to vicariously experience another's suffering reduces the likelihood to engage in aggressive acts (Feshbach and Feshbach, 1986). This finding was consistent with previous empirical findings regarding sympathy and physical aggression (Carlo *et al.*, 1998; O'Donohue *et al.*, 2003).

When the six types of prosocial behaviors of the PTM were examined, only two had significant and negative relations with physical aggression: altruism and compliant prosocial behaviors. It was expected that altruism would have a negative relation with physical aggression due to the notion that altruism is characterized by strong, selflessly-oriented motives as well as previous empirical research. However, while sympathy mediated this relationship, altruism still had a direct negative relation with aggression. This finding is consistent with the notion that altruistic acts are motivated by a prosocial personality or internalized values in addition to sympathy. Thus, it is not always necessary that a per-

son vicariously feels the pain of another or understands the perspective of a person in need for altruistic helping to occur (Eisenberg and Miller, 1987; Staub, 2005).

Contrary to the finding concerning altruism, the direct relation between the compliant prosocial behavior and physical aggression did not remain significant once sympathy was included as a mediator. Because compliant prosocial behavior was not theorized to be related to sympathy (Carlo and Randall, 2002) and that previous research has suggested that compliant prosocial behaviors are not related to sympathy (Eisenberg *et al.*, 1999), this relation between compliant prosocial behaviors and physical aggression warrants further attention. Similar to the present finding, Carlo *et al.* (2003) reported a significant and negative relation between compliant prosocial behaviors and aggression in early adolescence. However, this same relation was nonsignificant in middle adolescence. One potential reason for finding these different relations between compliant prosocial behavior and aggression over time may be the nature of the relationship the helper has with the requester. Several researchers have suggested that the nature of this relationship has an impact on helping behavior. For example, Staub (1986) theorized that the more a person engages in helpful behaviors, the more likely that person will see him or herself as prosocial, but only when the requester is not coercive. Eisenberg *et al.* (1985) reported that there was a different rationale for helping when a peer versus an adult requested help in their study of compliant behaviors with preschoolers. Helping peers was dependent on whether or not the child liked the peer, whereas helping adults was justified with the fact that the adult was an authority figure, and the child would be punished if he or she did not comply with the request. Finally, a child's willing compliance with a parent appears to be dependent on the reciprocal nature of the relationship. Characteristics of reciprocal relationships include whether the parent is responsive to a child's needs, whether the child comes to expect that his or her parent will be responsive to these needs, and whether both the parent and the child take pleasure when interacting with one another (Grusec *et al.*, 2000; Kochanska, 1997; Kochanska and Aksan, 1995; Parpal and Maccoby, 1985). One explanation for the current finding might then be that college-aged young adults increasingly help out with requests as their obligations to mentors, peers, and their own families become more important to them.

Mediation analyses also revealed that, consistent with the correlational findings, public prosocial behaviors were negatively related with sympathy, and sympathy in turn was negatively related to physical aggression. However, inspection of the direct relations between public prosocial behaviors and physical aggression revealed that the two behaviors had a significant and positive relation after taking the mediating effects of sympathy

into account. This finding is consistent with the hypothesis and the empirical work of Persson (2005) who found that selfish prosocial acts were positively related to concurrent and future measures of hostile aggressive behavior. However, given the contemporaneous nature of this study, it is not known whether (or how) helping publicly contributes to the development of physically aggressive behavior in addition to its negative relation with sympathy, or whether this type of prosocial behavior is instead the by-product of socialization that also promotes physically aggressive behavior.

Consistent with previous research, direct, emotional, and anonymous prosocial behaviors had no significant relations with physical aggression (Carlo *et al.*, 2003). Consequently, no mediation tests were conducted. It is possible that engaging in these behaviors is not related to physical aggression due to the unique nature of these behaviors. A person who helps under emotionally evocative circumstances or in emergency situations is not necessarily a person who is nonaggressive; the cues of distress and need are clear and strong, consequently overriding individual differences in prosocial behaviors. This explanation is consistent with Snyder and Ickes' (1985) contention that "strong" situation contexts pull for specific behaviors; thus, attenuating individual differences. With regards to anonymous helping, this behavior might not be related to physical aggression because, unlike physical aggression, this type of helping does not directly involve interacting with another person.

As expected, gender differences were found in sympathy, prosocial behaviors, and physical aggression. Consistent with prior research, women were more sympathetic and engaged in more altruistic, compliant, and emotional prosocial behaviors, whereas men were more physically aggressive and engaged in more public prosocial behaviors (Eagly and Crowley, 1986; Eisenberg, 2003; Carlo *et al.*, 1999; Carlo and Randall, 2002; Knight *et al.*, 1996; Ostrov and Keating, 2004). However, group analyses did not indicate significant differences in the model paths for men and women. Because it has been suggested that differences in aggression might be a result of gender differences in sympathy, and that sympathy has been found to mediate the relation between gender and aggression (Carlo *et al.*, 1999), this is not a surprising finding. Following this notion, it might be the case that the gender differences found in sympathy also explain the differences found between males and females on the public, altruistic, compliant, and emotional PTM subscales. It is interesting that other gender differences were not found on the direct and anonymous PTM subscales; perhaps other variables are just as important as, or are more important than sympathy when explaining why someone helps in emergency situations or helps without the knowledge of others. Fu-

ture research should keep in mind that encouraging the development of sympathy alone might not be enough to effectively increase the number of prosocial behaviors someone engages in, depending on the type of prosocial behavior being measured.

As stated earlier, strong interpretation of the results from the path analysis is not warranted, especially because the measures from this sample were collected concurrently. Because sympathy is a well-established precursor to prosocial behaviors according to many theorists (Eisenberg and Fabes, 1998; Hoffman, 1987; Staub, 1986), it is plausible that an alternative model using sympathy as a predictor of prosocial behavior, which in turn predicts physical aggression, would also explain the data. However, given that an alternative model would fit the data just as well, and that both models are supported by theory and empirical research, there is no way to discern the specific direction of causality. Understanding which model explains the data best would require future research utilizing longitudinal measures of sympathy, prosocial behavior, and aggression. Other research (Persson, 2005) suggests that such an investigation would be worthwhile. Persson found that (after controlling for level of sociability) altruistic acts in the first year of observing preschoolers were related to aggression in years two and three, and altruistic acts in year two were related to aggression in year three. Selfish helpful acts at year one were also related to year two aggression. However, only concurrent measures of compliant helpful acts and aggression at year three yielded a significant correlation, again suggesting that this construct warrants further attention.

While the focus of this paper was on distinguishing unique types of prosocial behavior from one another, only one type of aggression was studied: physical aggression. How these prosocial behaviors would differentially relate to verbal or relational aggression is a question yet to be addressed by current research. Persson (2005) did distinguish between three types of aggressive behavior in her observation of preschoolers: reactive aggression, proactive instrumental aggression, and proactive hostile aggression. Each type of aggression was unique in terms of its correlates. For example, proactive instrumental aggression was generally not related to altruism, whereas reactive and proactive hostile aggression had significant correlations with altruism. Thus, a more complete picture of how prosocial behavior and aggression relate must include different measures of aggression. Another concern is the reliance on self report measures of the constructs, making the findings prone to shared method variance. It would be desirable to replicate present findings with multiple methods and/or reporters. Finally, although the sample used in this study was heterogeneous in terms of ethnicity, it was relative-

ly limited in level of education, age, gender, and family background. Future studies should focus on examining a more diverse population in order to more fully understand the relation between aggression and prosocial behavior.

While the present study comes with several caveats, the findings suggest that the relation between prosocial behavior and physical aggression is dependent on the specific form of prosocial behavior. Consequently, it is important to consider the potential unique developmental trajectories of different forms of prosocial behaviors and the ongoing interplay between prosocial behaviors and physical aggression. For example, the results of this study suggest that program developers need to focus on how to promote altruism as its negative relation with physical aggression remained strong in light of the mediating effects of sympathy. Moreover, promoting compliant prosocial behavior might also be effective as the findings of the present study indicated that helping at the request of others does tend to promote sympathy, which in turn was related to less physical aggression. At the same time, actively discouraging young adults from participating in public prosocial behaviors may also promote more sympathy and less aggression. Finally, given that selfless forms of prosocial behavior were negatively related to physical aggression and that selfish forms of prosocial behavior were positively related to physical aggression, the present findings support the notion that not all forms of prosocial behavior are motivated by egoistical drives.

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