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Friendless Adolescents: Do Perceptions of Social Threat Account for Their Internalizing Difficulties Continued Friendlessness?

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Friendships are considered developmental necessities (Ladd, 1990; Sullivan 1953). In childhood, friends provide companionship and a critical context for learning social skills, such as cooperation and conflict resolution (Newcomb & Bagwell, 1995). By early adolescence, at a time of increased independence from parents, close friends are presumed to meet additional social needs, such as validation, support, and intimacy (Sullivan, 1953). As such, friends provide adolescents with a sense of security and reassurance, protecting against adjustment problems and contributing to the development of self-worth. For example, even having just one friend attenuates the emotional and physiological consequences of negative social experiences (Adams, Santo & Bukowski, 2011; Hodges, Boivin, Vitaro & Bukowski, 1999). Those lacking a friendship (i.e., a close relationship with a same-aged peer) are, in turn, at risk for lower self-worth and increased depression (Wentzel, Barry & Caldwell, 2004).

In spite of evidence demonstrating the socioemotional toll of lack of friends during adolescence, the underlying mechanisms between friendlessness and internalizing difficulties (e.g., depression and low self-esteem) have not received much empirical attention. Guided by social-cognitive models in which interpersonal interactions, or lack thereof, are presumed to shape perceptions of the social world (e.g., Crick & Dodge, 1994), the current study examined how lack of friends might be related to perceptions of the school social environment. While friendships promote trust and positive social perceptions (Sullivan, 1953), friendless students in elementary school are more likely to perceive themselves as victimized by peers (Hodges et al., 1999). Not surprisingly, peer exclusion and isolation are in turn related to feeling unsafe in school among adolescents (Goldstein, Young & Boyd, 2008). Moreover, the distress associated with friendlessness is partially accounted for by negative beliefs about peers (e.g., peers are hurtful and untrustworthy; Ladd & Troop-Gordon, 2003). Such negative social perceptions (i.e., victimization, school unsafety, negative views of schoolmates) are consistent with Cacioppo and Hawkley's social-cognitive model of loneliness wherein perceived isolation sets off implicit hypervigilance for social threat in the environment (Cacioppo & Hawkley, 2009; Hawkley & Cacioppo, 2010). Accordingly, we presume friendless youth are likely to construe their school social environment as threatening by viewing themselves as victimized by

schoolmates, feeling unsafe in school, and estimating more of their peers engaging in hostile behaviors. By relying on such a multifaceted construct, we expect that perceived social threat may then help account for the internalizing difficulties associated with friendlessness (Kuperminc, Leadbeater & Blatt, 2001). Drawing from the adult literature, perceived social threat is also known to encourage behavioral withdrawal and thus stimulate a “negative feedback loop” wherein isolation is reinforced (Cacioppo & Hawkley, 2009). Thus, the way adolescents view their school social environment may also provide insight into why youth remain friendless over time (Bowker, Rubin, Burgess, Booth-LaForce & Rose-Krasnor, 2006).

Perceptions of social threat are especially relevant in early adolescence when youth transition from their elementary school to a new and much larger middle school environment (grades 6 to 8), which often disrupts past friendship networks (Eccles et al., 1993). Thus, establishing friendships is critical following the transition to middle school (Akos & Galassi, 2004; Lessard & Juvonen, 2017) and the lack of a close peer relationship might be particularly hurtful at this time of heightened social sensitivity (Blakemore & Mills, 2014). If the social needs provided by friendship are unfulfilled, lacking a friend during early adolescence may contribute to sense of insecurity or perceived social threat, increasing internalizing difficulties at this developmental phase and beyond (Bagwell, Newcomb & Bukowski, 1998).

The Current Study

The primary goal of the current study was to investigate whether perceptions of social threat help account for the development of internalizing difficulties among friendless adolescents across the three years of middle school (ages 11–13). Additionally, we tested whether perceived social threat predicts subsequent friendlessness. Social threat was operationalized as a broad multifaceted construct capturing heightened accessibility of negative social information including peer victimization experiences, perceiving school as unsafe, and estimating a higher proportion of schoolmates engaging in hostile behaviors. Friendlessness was assessed by relying on received peer nominations. Friendless youth were compared to those with at least one friend in the spring of their first year of middle school (i.e., 6th grade), when students had already had several months to get to know one another. It was hypothesized that absence of friends at school reflects a lack of friendship provisions (e.g., companionship, support), increasing the likelihood that youth view their school social environment as threatening. Specifically, we hypothesized that friendlessness by the end of 6th grade predicts greater sense of threat by 7th grade, which in turn, is associated with increased internalizing difficulties (i.e., depressive symptoms, social anxiety and low self-esteem) by 8th grade. Both perceived social threat and internalizing difficulties were represented as latent constructs in the model assessing the indirect effect of friendlessness through perceived social threat. As a secondary aim, we also examined whether 7th grade perceptions of social threat predict lack of friends at the end of middle school.

The present study contributes to the existing research in several ways. First, by focusing on a social-cognitive construct of perceived social threat, we underscore the role of the school context. This approach complements previous findings highlighting the social deficiencies

(e.g., lack of social skills) of friendless youth (Glick & Rose, 2011). Second, we believe that perceptions of one's social environment are important inasmuch as they are likely to help account for subsequent internalizing difficulties as well as future social isolation (Cacioppo & Hawley, 2009). Third, we examined these questions following a critical school transition across three years of middle school. Finally, because we relied on an ethnically diverse public school sample, we presume that the findings generalize across a range of demographic groups.

Method

The current study relies on data from a large, longitudinal study of adolescents recruited from 26 public middle schools in California that varied systematically in ethnic composition ($N=5,991$; 52% female). Based on self-reported ethnicity in the fall of 6th grade, the sample was 32% Latino/a, 20% Caucasian/White, 13% East/Southeast Asian, 12% African-American/Black and 23% from other ethnic groups. The proportion of students eligible for free/reduced lunch price (a proxy for school SES) ranged from 18% to 86% ($M=47.6$, $SD=18.3$) across the 26 schools. Eighty-five and 78% of the total sample were retained in 7th grade and 8th grade respectively.

Procedure

The study was approved by the relevant Institutional Review Board and school districts. All eligible 6th grade students and families received informed consent and informational letters. Parental consent rates averaged 81% across the schools. Data collection was conducted in schools, and students received \$5 in the 6th grade and \$10 in 7th and 8th grade for completion of the surveys.

Measures

Friendlessness.—Presence versus absence of friends was determined using an unlimited peer nomination procedure where students listed the names of their good friends in their grade at school. Rather than relying on lack of reciprocal friendships that tend to overestimate friendlessness (Bagwell & Schmidt, 2013) or friendship nominations *given* that are likely to include desired friendships (Echols & Graham, 2016), we relied on *received* friendship nominations (Schacter & Juvonen, 2017). Friendlessness was coded as 0 (one or more friendship nominations received) or 1 (no nominations received). While we relied on friendlessness in the spring of 6th grade when testing the mediation hypothesis, we used 7th and 8th grade friendship data when predicting friendlessness by the end of middle school.

Perceived Social Threat.—Three indicators were used to assess perceived social threat at 7th grade: peer victimization, school safety, and peer misconduct. *Peer victimization* ($\alpha=.78$) was assessed with four items adapted from a measure developed by Neary and Joseph (1994). Designed to reduce social desirability effects, participants first chose one of two options for each item (e.g., “Some kids are *often* picked on by other kids” but “Other kids are *not* picked on by other kids”). Thereafter they rated if it was “really true” or “sort of true” for them (resulting in a 4-point scale). *School safety* ($\alpha=.80$) was measured using a subscale taken from the Effective School Battery (Gottfredson, 1984). Six items (e.g., “Are

you afraid that someone will hurt or bother you at school?") were rated on a 5-point scale (1=always to 5=never). *Peer misconduct* ($\alpha=.84$) was assessed by asking participants to estimate the number of grademates engaging in hostile and potentially threatening social behaviors (e.g., "get in fights" or "make fun of others") on a 5-point scale (1=hardly any to 5=almost all the students).

Internalizing Difficulties.—Three indicators were used to assess internalizing difficulties at 6th and 8th grade: depressive symptoms, social anxiety, and self-esteem. *Depressive symptoms* ($\alpha_{gr6}=.80$; $\alpha_{gr8}=.85$) were measured using 7-items assessed consistently at 6th and 8th grade (e.g., "I felt sad") that were adapted from the Center for Epidemiological Studies Depression Scale (Radloff, 1977). Items were rated on frequency over the past week (1=less than 1 day to 4=5–7 days). *Social anxiety* ($\alpha_{gr6}=.82$; $\alpha_{gr8}=.81$) was assessed using six items (e.g., "I worry about what others say about me"), rated on a 5-point scale (1=not at all to 5=all the time). This measure was adapted from the Social Anxiety Scale for Adolescents (La Greca & Lopez, 1998). *Self-esteem* ($\alpha_{gr6}=.75$; $\alpha_{gr8}=.88$) was measured using four items of the Self-Perception Profile scale (Harter, 1982). For each item, participants chose one of two options (e.g., "Some kids are often *unhappy* with themselves" but "Other kids are pretty *pleased* with themselves") and then rated the applicability of each (1=really true for me to 4=sort of true for me).

Covariates.—The current analyses controlled for self-reported gender and ethnicity. Baseline internalizing difficulties were controlled at the fall of 6th grade when data on all three internalizing indicators was available. We also took into account *ethnic ingroup size* (i.e., proportion of same-ethnic peers) because lack of ethnically similar others may contribute to the friendlessness of those in the numerical minority at their school. Finally, parent education (1=elementary/junior high school to 6=graduate degree) was used as a proxy for student *socioeconomic status (SES)* given that children with low SES are at higher risk of mental health problems (Reiss, 2013).

Data Analytic Strategy

Latent variable structural equation modeling (SEM) was used to test the relations among the study constructs using Mplus 7.4 (Muthén & Muthén, 1998-2012). Full information maximum likelihood (FIML) estimation methods were used for missing data (Enders, 2010). The Cluster function was used to account for students nested within 26 middle schools. Following recommended procedures, we used bias-corrected bootstrapping procedures (10,000 bootstraps) to estimate indirect effect of friendlessness on internalizing difficulties through perceived social threat and corresponding 95% confidence intervals (Preacher & Hayes, 2008). A logit model was used to test our secondary question of whether perceived social threat predicts friendlessness (a dichotomous outcome) by the end of middle school.

Results

Twelve percent ($n=729$) of 6th grade students did not receive any friendship nominations and were considered friendless. Boys (16%) were more likely to be friendless than girls (9%), $\chi^2(1)=64.42, p<.01$. In addition, there were significant ethnic differences in friendlessness,

$\chi^2(4)=12.39, p=.02$: African-American (14%) and Latino (13%) students were more likely to be friendless than White students (9%), while Asian students (11%) and those from other ethnic groups (11%) did not differ. In addition to the means and standard deviations, the intercorrelations among the modeled variables depicted in Table 1 reveal that friendlessness is indeed associated the indicators of perceived social threat, but weakly and inconsistently related to the indicators of internalizing difficulties at Grade 6 and 8.¹

Mediation Analyses

When testing the mediation model, multiple fit indices suggested a good measurement model [$\chi^2(80)=923.06, p<.01$; SRMR=0.03; RMSEA=0.04, RMSEA CI=.040-.044], with all factor loadings above .50 (see Figure 1). As seen in Figure 1, after accounting for the covariates (i.e., baseline internalizing difficulties, gender, ethnicity, SES, ethnic ingroup size), not having a friend was associated with higher perceived social threat ($\beta=.21, p<.01$). Additionally, higher perceived social threat was related to increased internalizing difficulties ($\beta=.24, p<.01$). Despite the non-significant total effect of friendlessness at 6th grade on internalizing difficulties at 8th grade, the indirect effect was examined in light of our theoretical predictions (Rucker, Preacher, Tormala & Petty, 2011). As shown in Figure 1, there was a significant indirect path from friendlessness to internalizing difficulties (standardized indirect effect=.05, C.I.: .03-.08). That is, not having a friend at 6th grade predicted higher perceived social threat at 7th grade, which in turn predicted increased internalizing difficulties at 8th grade.²

Does Perceived Social Threat Predict Friendlessness?

Secondarily we explored how perceived social threat predicts future social isolation. A logit model predicting friendlessness (0=one or more friends, 1=friendless) at 8th grade was used to examine how perceived social threat might contribute to friendlessness at the end of middle school. Friendlessness at 8th grade was regressed on perceived social threat at 7th grade. The results suggested that each one unit increase in perceived social threat at 7th grade predicted a 16% increase in the odds of being friendless one year later (OR= 1.55, $p<.01$), over and above gender, ethnicity, SES, ethnic ingroup size and earlier (i.e., 7th grade) friendlessness.

Taken together, the results suggest that not having a friend during the first year of middle school puts youth at risk for perceiving their school environment as more threatening, which, in turn increases internalizing difficulties by 8th grade. Moreover, perceptions of social threat increase the likelihood of future friendlessness.

Discussion

Despite theoretical assertions about the importance of friendships in the social and emotional development of adolescents (Sullivan, 1953), surprisingly few studies examine the

²Supplemental analyses revealed evidence for a similar, albeit weaker, mediation process when testing the model separately for each indicator of perceived social threat (providing additional support for the validity of the latent construct).

¹To evaluate factorial validity for perceived social threat and internalizing difficulties, a two-construct Confirmatory Factor Analysis (CFA) was conducted which suggested good model fit [$\chi^2(15)=3562.06, p<.01$; SRMR=0.03; RMSEA=0.04, RMSEA CI=.035-.051].

experience of adolescent friendlessness (see Wentzel et al., 2004 for exception). Even less is known about the psychological mechanisms that might help account for the emotional difficulties of youth who lack friends at school. By relying on prospective longitudinal data following the transition to middle school, we show how lacking friends by the end of 6th grade increases perceptions of social threat, which in turn, contributes to the development of depressive symptoms, social anxiety and low self-esteem by 8th grade. Hence, our findings offer a social-cognitive account on the liabilities of not having a chum or a buddy in early adolescence.

Our findings suggest that friendlessness during the first year in middle school does not directly predict internalizing difficulties by the end of middle school. Rather, youth without friends came to see their social environment as more hostile and unsafe by the second year of middle school (7th grade), which in turn, predicted increased internalizing difficulties by 8th grade. With fewer opportunities to engage in supportive, validating and intimate relationships with their peers, friendless youth may be more wary of their schoolmates. For example, lack of companionship (e.g., someone to sit with at lunch) and instrumental aid (e.g., someone to stick up for them) are likely to contribute to perceptions of social threat. In contrast, those with close friendships may generalize their experiences by developing feelings of trust and safety towards the larger school environment (cf. Berndt, 2004).

Our findings are generally consistent with Cacioppo and Hawkley's (2009) social-cognitive model of loneliness. Although we did not investigate hypervigilance for social threat, our results suggest that perceived social threat contributes to future isolation (i.e., friendlessness). Negative social perceptions and expectations may undermine adolescents' motivation to engage with the social environment, paving the way for continued objective isolation (Cacioppo & Hawkley, 2009). However, similar to subtypes of socially withdrawn children (Harrist, Zaia, Bates, Dodge & Pettit, 1997), it is important to recognize that some friendless youth may prefer to be alone. If friendlessness does not raise threat perceptions, it is unlikely to also contribute to internalizing difficulties.

There are several limitations to this study. First, our measures of social threat and internalizing difficulties relied on self-reports. In future studies, it will be important to also include objective measures of the school environment (e.g., school-level aggression, discipline problems). Second, by relying on friendship nominations from participants, we were unable to differentiate friendless youth who have no friends at all from those who may have friends in other grades or outside of school. Third, we did not take into account the duration of friendlessness. In light of research suggesting that chronic social isolation is particularly harmful to psychological health (Heinrich & Gullone, 2006), future studies should examine whether a history of friendlessness helps account for an accumulation of adjustment problems. It is unclear how long you need to be friendless before threat perceptions come online and whether external factors (e.g., group-level acceptance, school prosocial norms) may influence this association.

Despite these limitations, this study contributes to the literature on negative peer experiences by demonstrating that friendlessness is related to negative social perceptions and internalizing difficulties. Although some interventions have been developed to help

friendless youth by assigning them a “buddy” at school, there has been limited empirical support for the effectiveness of such befriending interventions (Bagwell & Schmidt, 2011). Instead, interventions that focus on fostering more positive social norms (e.g., antibullying programs designed to change school culture) may serve friendless youth better inasmuch as they reduce reports of peer victimization and increase overall school safety. Even if youth are not in the position to form or maintain a friendship, they may feel less threatened if they witness kindness and caring interactions among schoolmates.

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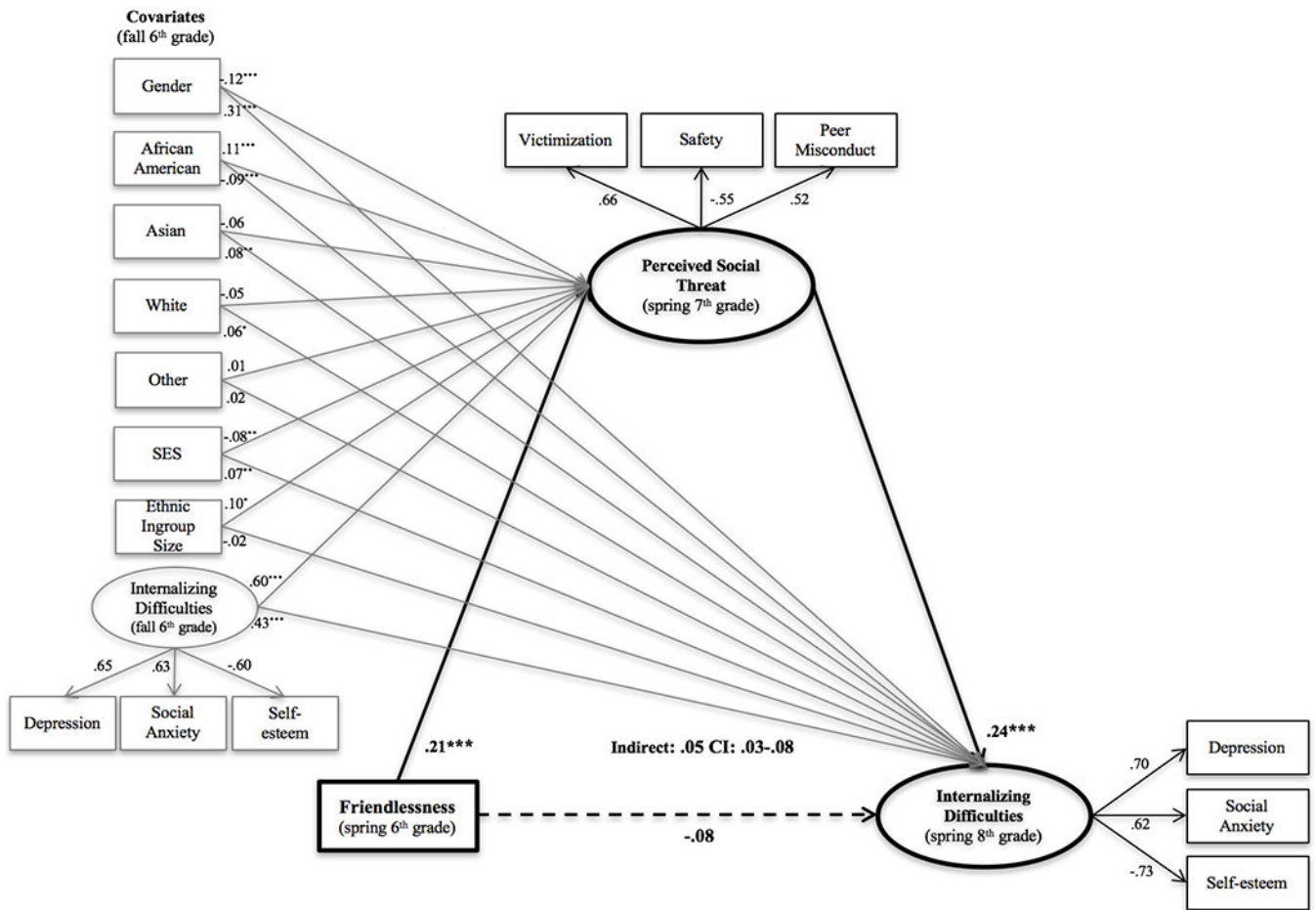


Figure 1. Standardized factor loadings and coefficients for model of friendlessness and perceived social threat on adolescents' internalizing difficulties.

Note. Gender reference group=boys. Ethnicity reference group=Latino. * $p < .05$ ** $p < .01$ *** $p < .001$

Table 1.

Means, standard deviations and intercorrelations between modeled variables.

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. Friendlessness _{gr6}	---											
2. Ethnic Ingroup Size _{gr6}	-.01	---										
3. SES _{gr6}	-.05	***	---									
4. Victimization _{gr7}	-.07	***	***	---								
5. Safety _{gr7}	-.06	***	***	***	---							
6. Peer Misconduct _{gr7}	-.04	***	***	***	***	---						
7. Depression _{gr6}	-.02	-.00	***	***	***	***	---					
8. Social Anxiety _{gr6}	-.04	-.04	**	***	***	***	***	---				
9. Self-esteem _{gr6}	-.06	-.07	***	***	***	***	***	***	---			
10. Depression _{gr8}	-.04	-.05	-.00	***	***	***	***	***	***	---		
11. Social Anxiety _{gr8}	-.03	-.01	-.06	***	***	***	***	***	***	***	---	
12. Self-esteem _{gr8}	-.03	-.05	-.01	***	***	***	***	***	***	***	***	---
Mean	-12	-32	4.00	1.98	4.27	2.33	1.58	2.08	3.32	1.70	2.09	3.21
SD	-33	-16	1.53	.78	.64	.77	.57	.78	.71	.65	.76	.82

Note. Gender reference group=boys. Ethnicity reference group=Latino.

* p<.05

** p<.01

*** p<.001.