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Breaking the cycle: A longitudinal study of factors that disrupt peer selection and influence processes among urban youth

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BREAKING THE CYCLE: A LONGITUDINAL STUDY OF FACTORS THAT DISRUPT PEER SELECTION AND INFLUENCE PROCESSES AMONG URBAN YOUTH

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Clinical Psychology at Virginia Commonwealth University.

by

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Abstract

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Having friends who engage in problem behavior (i.e., aggression, substance use, delinquency) has consistently been linked to adolescents' own engagement in problem behavior. There are, however, several key gaps in the literature on peer influence. Few studies have considered the influence of friends' prosocial behavior and there has been limited research to identify promotive factors that influence urban youths' affiliation with peers who engage in problem and prosocial behavior across early adolescence, a time of heightened susceptibility to peer influence. The purpose of this study was to identify modifiable promotive factors that reduce adolescents' problem behavior by decreasing exposure to friends' delinquent behavior and promoting affiliation with peers who engage in prosocial behavior. Specifically, the promotive effects of a positive future orientation, the presence of a caring adult, and child disclosure were examined given prior evidence of relations between these factors, peer affiliation, and problem behavior. Analyses were conducted on four waves of longitudinal data collected within the same year from 2,710 students attending three urban middle schools (*Mage* = 12.3; 52% female) who participated in an efficacy trial of a bullying prevention program. Seventy nine percent of participants identified as Black/African American (including 6% who endorsed one or more other racial identities). One-sided cross-lagged mediation analyses found

support for friends' delinquent behavior as a mediator of longitudinal relations between child disclosure and changes in physical aggression, substance use, and delinquency. Similar effects were not found for positive future orientation or presence of a caring adult. Friends' prosocial behavior did not significantly mediate longitudinal relations between promotive factors and adolescent problem behavior. Findings suggest prevention efforts should enhance adolescents' communication with their parents about their activities and whereabouts to disrupt peer influence dynamics and reduce problem behavior during early adolescence. Additional implications for theory and prevention efforts relevant to the positive development of youth in urban low-income communities are discussed.

Breaking the cycle: A longitudinal study of factors that disrupt peer selection and influence processes among urban youth

Peers play a powerful role in adolescents' adjustment. Having friends who engage in problem behavior has consistently been linked to adverse outcomes among adolescents residing in urban, under-resourced communities, including adolescents' own engagement in problem behavior (i.e., aggression, substance use, delinquency) (Kornienko et al., 2019; Thompson et al., 2020). However, relatively little is known regarding the effects of friends' prosocial behavior in the development of adolescent problem behavior. Moreover, there is a critical gap in our knowledge of promotive factors that influence one's affiliation with peers who engage in delinquent and prosocial behavior across early adolescence, a period of heightened susceptibility to peer influence. The current study aimed to identify modifiable promotive factors that reduce the risk of adolescents' engagement in aggressive behavior, substance use, and delinquent behavior by decreasing exposure to friends' delinquent behavior and promoting affiliation with peers who engage in prosocial behavior. Clarifying the complex relations among promotive factors for peer affiliation and problem behavior is essential to guide efforts to reduce risk and bolster positive development for youth living in urban communities with high rates of violence.

Literature Review

Early Adolescent Development

The transition to adolescence is marked by developmental and ecological changes that bolster the salience of the peer context. During this time, more frequent interactions among early adolescents and their peers coincide with decreased parental monitoring (i.e., premature autonomy; Dishion et al., 2004). As a result, youth have greater opportunity to interact with peers autonomously and experiment with new social roles (Prinstein & Giletta, 2016). The nature

of peer relationships also changes during the transition to adolescence. Compared with childhood, peer relationships in adolescence are characterized by higher levels of intimacy and emotional disclosure as adolescents rely on peers as primary sources of social and emotional support (Harter et al., 1996). Youth also tend to have larger social networks in adolescence than in childhood (Prinstein & Giletta, 2016).

Early adolescents develop more advanced social and cognitive abilities, such as a greater ability to form a stable self-concept and contemplate the future. They also develop the ability to imagine how others view them, creating the potential for more sophisticated social interactions as well as increased awareness of their social status within their peer group and heightened self-consciousness (Prinstein & Giletta, 2016). Peers become a prominent source of feedback and self-comparison as adolescents begin to experiment with their values, preferences, and self-concept. By early adolescence, youth are more likely to present themselves in a manner that is viewed favorably by peers rather than in ways that are rewarded by adults. For instance, Juvonen and Murdock (1995) found that students in fourth grade wanted to portray themselves as effortful to teachers and peers alike, whereas students in eighth grade were more reluctant to convey to popular peers than to teachers that they put forth effort in their schoolwork. Taken together, these changes facilitate a unique period of identity development in adolescence that largely occurs within the peer context (Prinstein & Giletta, 2016).

Theory and research from the fields of social and developmental neuropsychology suggest that adolescents' brain development fosters increased risky behavior and a heightened sensitivity to peer feedback and acceptance (Albert et al., 2013; Blakemore, 2018; Blakemore & Mills, 2014; Gardner & Steinberg, 2005). Prior research has indicated that adolescents take more risks (e.g., delinquent or criminal behavior, substance use) than children and adults (Patton et al.,

2016), and that they are especially likely to do so in the presence of peers (see Albert et al., 2013). Compared with children and adults, early adolescents' perceptions of risk have been found to be more highly influenced by the perceptions of other adolescents rather than by adults' perceptions of risk (Knoll et al., 2017). Albert et al. (2013) noted that being in the presence of their peers can prime adolescents to be in a "reward-sensitive motivational state" (p. 115) that increases the salience of immediate rewards such as positive feedback from peers. This is likely due in part to the maturational gap between the rapid development that occurs in the brain's socioemotional reward system and the more prolonged changes in adolescents' cognitive capacities supporting self-regulation (Albert et al., 2013).

As early adolescents undergo significant individual-level changes, they must also adapt to the changes that come with the ecological transition from elementary to middle school. Middle schools are often larger and less structured than elementary schools, with a more heterogeneous student population that often feeds from two or more elementary schools (Eccles et al., 1993). In elementary school, youth have one teacher and one set of classmates with whom they are familiar. In contrast, middle school students have multiple classes throughout the day that each have a different teacher and set of classmates, which may provide greater exposure to problem behavior (Eccles et al., 1993; Seidman & French, 2004). These factors disrupt the social organization of the peer context, causing adolescents to form new peer hierarchies. As a result, peers become a particularly salient source of influence during this time (Allen et al., 2006). Considering ecological and developmental changes occur in tandem, it is not surprising that early adolescence is a vulnerable point in development for a range of adverse psychological and behavioral problems.

One of the most highly cited theories on the development of problem behavior in adolescence is Moffitt's (1993) taxonomy of offending, which distinguishes between two trajectories. For most youth, problem behavior emerges alongside puberty and desists by young adulthood (“adolescence-limited” trajectory). However, a small subset of youth exhibit problem behavior in childhood that persists into adulthood (“life-course persistent” trajectory). These two trajectories are distinguished not only by the onset and course of problem behavior but also by their etiology. Moffitt (1993) theorized that adolescence-limited offenders engage in problem behavior as a normative consequence of exposure to delinquent behavior in their peer group, broader cultural and historical contexts that influence adolescent development, and adolescents’ experience of the “maturity gap” (i.e., discomfort and dissatisfaction with the contrast between their biological maturation and lack of access to mature privileges and responsibilities) (Moffitt, 2007). In contrast, the life-course persistent trajectory of antisocial behavior is predicted by individual risk (e.g., delayed motor development, poor temperament, below average intellectual ability) and environmental risk (e.g., harsh discipline, low socioeconomic status, peer rejection), leading to early onset conduct problems that are maintained by the interaction between these risk factors (Brennan et al., 2003; Moffitt, 2007).

A recent longitudinal study with short-interval assessment points (i.e., every 3 months) examined trajectories of problem behavior in a predominantly African American sample of middle school students (Farrell, Goncy, et al., 2018b). Mean levels of physical aggression were found to remain stable within and across each grade. The authors found significant increases in substance use from one grade to the next, with a significant linear increase in substance use across the eighth grade. There were significant decreases in both physical aggression and substance use during the summer between each grade. Delinquent behavior was relatively stable

in sixth and seventh grade and exhibited mean decreases across the eighth grade. The authors also found that male students reported higher levels of delinquent behavior overall and exhibited greater decreases in the summers between grades compared with female students. For both delinquent behavior and physical aggression, the rate of change in that behavior across one grade was inversely related to the rate of change in the subsequent grade (Farrell, Goncy, et al., 2018b).

Taken together, these findings highlight the importance of examining adolescent problem behavior within and between each grade of middle school as well as during the summers between each grade. Studies that assess problem behavior annually or bi-annually during a school year are limited in their ability to capture dynamic processes (e.g., associations between peer relationships and problem behavior) during a period in which youth experience rapid social, cognitive, and ecological changes. Given evidence of significant intra-individual differences in rates of change in one or more grades for each construct, Farrell, Goncy, et al.'s (2018b) findings also underscore the need for additional research to clarify how various factors, such as the behavior of an adolescent's peers, may influence changes in problem behavior within and between each grade of middle school.

Adolescent Resilience and Positive Development

Although adolescence is a period of increased risk, it is also a period of great opportunity for positive development during which key strengths, assets, and ambitions emerge and prosper into adulthood (Steinberg, 2015). A key feature of both Positive Youth Development (PYD) theory (Lerner et al., 2013) and the developmental assets framework (Benson et al., 2011) is their emphasis not only on individual strengths but also the resources embedded within an adolescent's ecology. PYD theory focuses on the "5 C's" as factors that promote positive development: (a) connection, or positive bonds with people and social institutions and feelings of

safety and belonging, (b) confidence, or belief in one's own self-worth and ability to succeed, (c) character, or taking responsibility and feeling connected to one's values, (d) competence, or the ability to act in appropriate and effective ways across contexts, and (e) caring, or having empathy for others (Bowers et al., 2010). The 5 C's overlap with some of the internal assets described within the developmental assets model, which includes commitment to learning, positive values (e.g., integrity, responsibility), social competence, and positive identity (e.g., positive future orientation). However, the developmental assets model extends the Five C's to include external assets such as support (e.g., from family and other adults), empowerment, boundaries and expectations (e.g., positive peer influence), and constructive use of time (Benson et al., 2011).

These strengths and assets synergistically promote thriving, or positive and healthy functioning, across development. According to PYD theory, adolescents are active agents in their own development via their choices in relationships, goals, roles, and utilization of resources (Lerner et al., 2013). Thus, resilience is most likely to occur when youth align themselves with these assets, which is particularly critical when person-context transactions between adolescents and their ecology are marked by elevated levels of risk or adversity (Lerner et al., 2013). Many of the 5 C's and developmental assets are also considered "promotive factors", or qualities that indicate successful adaptation and are predictive of thriving. Of note, there is much debate in the literature as to how promotive and protective factors should be defined and differentiated. Similar to prior work (e.g., Zimmerman et al., 2013), promotive factors are conceptualized in the current study as developmental assets and resources that interrupt the trajectory from risk to pathology. For the sake of clarity, the term "promotive factors" is used to describe factors that are hypothesized to be positively related to friends' prosocial behavior and negatively related to friends' delinquent behavior.

Another theory relevant to understanding adolescent development is the Phenomenological Variant Ecological Systems Theory (PVEST; Spencer, 1997; 2006). PVEST is similar to PYD theory in its centering of resilience and positive development. However, PVEST is unique in that it is an extension of Bronfenbrenner's ecological model. It emphasizes: (a) the social, historical, and cultural contexts in which development takes place, (b) adolescents' perceptions and self-appraisals that contribute to their identity development, and (c) the idea that human vulnerability and resiliency are intertwined. These distinctions make PVEST an important framework for understanding the cultural and ecological circumstances that uniquely impact adolescents of color in high-burden urban communities (American Psychological Association, 2008; Spencer & Swanson, 2016).

PVEST posits that identity formation involves five components that interact in a cyclical manner throughout the life span (Spencer et al., 1997). First, youth possess or are exposed to various risk, protective, and promotive factors that enhance or mitigate adverse outcomes (i.e., net vulnerability level). Vulnerability occurs when youths' risk factors outweigh their assets and protective factors. Second, youth possess or are exposed to factors that support or inhibit their ability to cope with risks they encounter (i.e., net stress engagement). Third, youth develop reactive coping strategies— which may be adaptive, maladaptive, or a combination of both— to resolve situations that produce dissonance (e.g., experiences of discrimination). Fourth, youth continue to repeat these coping strategies until they become stable and combine with their own self-appraisal to form an emergent identity. The final component is life-stage specific coping outcomes, in which the identity that one has formed affects their future behavior and outcomes (e.g., achievement, health). Taken together, concepts from these models focused on resilience in adolescent development can be used to understand how promotive factors may reduce

adolescents' exposure to risk factors with well-documented negative consequences, such as having friends who engage in problem behavior.

Friends' Delinquent Behavior

Befriending adolescents who engage in aggression, substance use, and other forms of delinquent behavior (e.g., theft, vandalism) is one of the strongest and most consistent predictors of an adolescents' own engagement in problem behavior (see Dishion & Tipsord, 2011; Gifford-Smith et al., 2005; Hoeben et al., 2016; Prinstein & Giletta, 2016 for reviews). Prior studies have found that adolescents' affiliation with peer groups that engage in delinquent behavior tends to increase from early to mid-adolescence and decrease thereafter (Elliott & Menard, 1996; Lacourse et al., 2003; Vitaro et al., 1997), underscoring the importance of understanding the effects of peers' and friends' delinquent behavior in early adolescence. Although having peers/friends who engage in problem behavior is often referred to as "deviant peer affiliation" in the literature, this construct will be referred to as peers'/friends' delinquent behavior throughout this study to place emphasis on the behaviors displayed within the peer group (rather than characterizing the peer group as a whole) and to use a more appropriate term to describe the behaviors that are frequently included in such measures (e.g., aggression, substance use, and other delinquent behaviors). Additionally, similar to Farrell et al. (2017), I distinguish between peers and friends throughout this document, such that "peers" refers to same-age individuals that an adolescent regularly interacts with and shares experiences with and "friends" refers to a smaller group of individuals that an adolescent chooses to interact with, spends more time with, and has a stronger attachment to.

Numerous studies have investigated the relation between adolescents' delinquent behavior and that of their peers and friends. In a predominantly African American sample of

urban middle school students, Farrell et al. (2017) examined the cross-sectional relations between peers' and friends' behavior (e.g., peer pressure for fighting, friends' delinquent behavior) and adolescents' prosocial and problem behavior. They found that adolescents' perception of their friends' delinquent behavior was the strongest predictor of adolescent-reported delinquent behavior and substance use after accounting for other aspects of peer behavior and sociodemographic characteristics (e.g., grade, gender). However, having friends who engage in delinquent behavior was not associated with teacher-reported physical aggression or prosocial behavior. Although a strength of their study is their consideration of multiple domains of peer influence, the findings are limited by the cross-sectional design of the study.

Building on both the strengths and limitations of Farrell et al. (2017), a recent study by Thompson et al. (2020) examined reciprocal relations between adolescents' perceptions of peers' and friends' behavior and the frequency of adolescents' physically aggressive behavior. They analyzed longitudinal data from the same sample as the current study, with four waves of data collected every 3 months from 2,290 urban middle school students. Peer pressure for fighting, friends' delinquent behavior, and friends' support for fighting demonstrated both unique and combined effects on changes in physical aggression and vice versa. These findings were consistent across sex, grade, and time. In contrast, Farrell et al. (2011) found that adolescents who reported higher levels of friends' delinquent behavior also reported more frequent aggressive behavior and this relation became stronger across the three years of middle school (β = .19 at Wave 1; β = .23 at Wave 5). This is consistent with evidence that peers become increasingly influential in adolescents' own behavior between early and mid-adolescence (e.g., Prinstein & Giletta, 2016). Friends' delinquent behavior was also found to be the strongest predictor of adolescents' aggressive behavior even after controlling for other risk and protective

factors for aggression (Farrell et al., 2011). Taken together, these studies provide evidence of longitudinal relations between adolescents' aggressive behavior and their perceptions of their friends' delinquent behavior, but the stability of this relation over time differs between studies. Farrell et al. (2011) examined data collected less frequently (e.g., five waves across 3 years) and from a more diverse sample than that of Thompson et al. (2020), which may contribute to the discrepant findings between these studies.

The strong relation between friends' delinquent behavior and adolescent substance use has been studied extensively. Duan et al. (2009) examined the long-term effects of adolescents' perceptions of their friends' and peers' substance use on their self-reported substance use across middle and high school using data from the Midwestern Prevention Project. Their findings indicated that peers' and friends' alcohol and marijuana use predicted adolescents' own use of these substances in middle school, but not in high school. Van Ryzin et al. (2012) examined parent and peer influences on substance use in an ethnically diverse sample across five waves of data corresponding to sixth, seventh, ninth, and eleventh grades and early adulthood (age 23). Findings indicated that parenting factors (i.e., parental monitoring, parent-child relationship quality) and peers' delinquent behavior predicted substance use across adolescence, but peers' delinquent behavior was related to substance use in early adulthood. These findings underscore not only the strong relation between adolescents' and their peers' substance use in early adolescence, but also the long-term effects of exposure to problem behavior within the peer context.

In addition to associations with aggression and substance use, prior studies have documented a strong link between peers' and friends' delinquent behavior and adolescents' own involvement in delinquent behavior. In a test of etiological factors predicting Moffitt's (1993)

taxonomy, exposure to peers' delinquent behavior was more strongly associated with the adolescence-limited trajectory than the life-course persistent trajectory (Moffitt & Caspi, 2001), although at least one study found that peers' delinquent behavior demonstrated similar effects on violent behavior regardless of whether their behavior was consistent with the adolescence-limited or life-course persistent trajectory (Lacourse et al., 2003). Prior studies among male adolescents have found that friends' delinquent behavior directly relates to increases in adolescents' own level of delinquency among those whose problem behavior begins in adolescence (Simons et al., 1994; Vitaro et al., 1997). Additionally, the number of individuals who selectively affiliate with male peers who exhibit early-onset delinquent behavior increases in early adolescence (Vitaro et al., 1997). This finding is consistent with Moffit's (1993) theory that male adolescents following a life-course persistent trajectory of offending are often a target of emulation for their peers on the adolescence-limited trajectory.

Friends' Prosocial Behavior

Most prior research on peer influence has focused on how adolescents are drawn to and influenced by peers who engage in delinquent behavior, with less attention paid to understanding the role of peers' prosocial behavior in shaping adolescents' behavior. Having peers or friends who engage in prosocial behavior, or social behavior that serves to benefit others (e.g., sharing with, helping, and comforting others; Eisenberg et al., 2006), has generally been studied in relation to other developmental assets. For instance, prior research has found that exposure to prosocial behavior in the peer context is related to adolescents' own prosocial behavior (Padilla-Walker & Bean, 2009; Lee et al., 2017), civic engagement (Choukas-Bradley et al., 2015), and self-esteem (Quimby et al., 2018). These findings support the notion that early adolescence is a period of not only vulnerabilities, but also of opportunities for prosocial development

(Blakemore & Mills, 2014; Padilla-Walker & Carlo, 2014). However, it is critical to understand the role of friends' prosocial behavior in the development of adolescent problem behavior given that reducing problem behavior is a common goal of youth violence prevention efforts.

A small number of studies have examined relations between friends' prosocial behavior and adolescents' engagement in problem behavior. Evidence suggests that friends' prosocial behavior is inversely associated with adolescents' problem behavior (Farrell et al., 2017; Padilla-Walker & Bean, 2009). Among an ethnically diverse sample of 1,659 high school students, Padilla-Walker & Bean (2009) found that friends' prosocial behavior was inversely related to adolescents' aggressive behavior, delinquent behavior, and depression symptoms. Notably, these relations were found to be strongest among White adolescents compared with African American and Hispanic/Latino/a adolescents. In contrast, there were few differences across racial and ethnic groups in the effects of friends' delinquent behavior on adolescents' behavior. These findings suggest the potential for distinct mechanisms underlying the relation between friends' prosocial behavior and adolescents' aggressive and delinquent behavior among adolescents of color relative to White adolescents. Further, the findings highlight the importance of simultaneously investigating the impact of friends' delinquent and prosocial behavior on adolescents' behavior.

Although few studies have simultaneously investigated both friends' delinquent and prosocial behavior, the available evidence suggests that there is some overlap between these constructs. For instance, Farrell et al. (2017) found a non-significant correlation (r = -.03) between friends' delinquent behavior and friends' prosocial behavior, which suggests that adolescents' friends engage in both types of behavior rather than one or the other. However, other studies have found a moderate negative correlation between friends' delinquent and

prosocial behavior (e.g., r = -.36, Lee et al., 2017; r = -.38, Walters, 2020). Notably, Walters et al. (2020) found that friends' delinquent behavior and friends' prosocial behavior shared less than 15% of their variance. The potential for co-occurring problem behavior and prosocial behavior among adolescents' friends underscores the need for additional research investigating the differential impact these behaviors may have in the development of adolescent problem behavior.

Walters (2020) examined data from an ethnically diverse sample (47% White, 21% Hispanic, 17% Black) of 2,905 early adolescents to determine whether friends' prosocial behavior functions as a risk, protective (i.e., moderating risk), or promotive factor in adolescents' delinquent behavior and substance use. Their findings indicated that friends' prosocial behavior served as both a risk and promotive factor. Specifically, friends' prosocial behavior was inversely related to changes in adolescents' property offending and substance use across a one-year period after accounting for sociodemographic characteristics, parenting factors, unsupervised routine activities, friends' delinquent behavior, and adolescents' prior delinquent behavior and substance use. These findings extend those of Coyle et al. (2016), who demonstrated an inverse cross-sectional relation between a measure of prosocial peer influence and Irish adolescents' self-reported frequency of substance use. The findings of another study did not support a risk effect, however. Lee et al. (2017) examined the link between friends' behavior in early adolescence and adolescents' behavior 3 years later among a predominantly White sample of 500 youth. After accounting for friends' delinquent behavior, friends' prosocial behavior predicted respondents' prosocial behavior but not substance use 3 years later. One explanation for these discrepant findings is that relations between friends' prosocial behavior and adolescent problem behavior may be more evident within shorter time intervals, as Walters

(2020) examined relations between adolescents' and their friends' behavior across one year. Taken together, these studies provide evidence that friendships can serve as a context for the socialization of both problem behavior and prosocial behavior.

In summary, our current understanding of the role of peers' and friends' prosocial behavior in relation to adolescents' behavior is limited, as prior studies have predominantly focused on examining the effects of friends' delinquent behavior. The available evidence suggests that friends' prosocial behavior is related to lower levels of adolescent problem behavior. Additional research is needed to clarify the potential benefits and mechanisms of friends' prosocial behavior, as well as the factors that increase the likelihood of affiliating with peers who engage in prosocial behavior, especially relative to befriending peers who engage in problem behavior. Further, most studies examining friends' prosocial behavior have relied on White middle-class samples (Wentzel, 2014) despite evidence that friends' delinquent behavior and friends' prosocial behavior may have differential effects on the behavior of African American and Latino/a adolescents relative to White adolescents (Padilla-Walker & Bean, 2009). Research investigating the role of prosocial peer affiliation in reducing problem behavior among racial and ethnic minority youth in low-income urban communities is needed.

Peer Influence, Peer Selection, or Both?

Several prominent schools of thought have emerged to elucidate processes underlying the strong relations between adolescents' and their friends' behavior. The peer influence model is rooted in principles of social learning theory (Akers, 1985) and posits that adolescents are influenced by their peers through modeling and reinforcement processes. The peer influence model is also described as the peer contagion, social facilitation, differential association, or socialization model, depending on whether the literature is from the field of psychology,

sociology, or criminology (see Vitaro et al., 2018). According to this model, adolescents who befriend peers that engage in problem behavior adopt "deviant" behaviors and attitudes that are favorable to aggression, delinquency, and substance use through their interactions with these friends (Dishion & Tipsord, 2011). This "deviancy training" occurs when children talk about deviant topics, imitate norm-violating behaviors, or reinforce deviant talk and behavior by responding with verbal and non-verbal cues of approval (Dishion & Tipsord, 2011). For example, adolescents may learn that aggressive behavior is an effective social tactic if they see their friend use aggression to successfully obtain a desirable outcome.

In contrast to the peer influence model, the peer selection model posits that adolescents choose friends who are similar to them in terms of their attitudes and behaviors (Dishion et al., 2010). This has also been referred to as peer homophily (Brechwald & Prinstein, 2011) and the confluence hypothesis (Dishion et al., 1994). Some researchers have also related the peer selection model to social control theory (Hirschi, 1969; see Knecht et al., 2010), such that adolescents with strong social bonds with family and institutions are less likely to engage in problem behavior and in turn, less likely to befriend peers who engage in problem behavior. If adolescents who do not engage in problem behavior befriend peers with similarly low levels of problem behavior, then those adolescents who *do* engage in problem behavior are left with fewer options for potential friends (i.e., other adolescents who engage in problem behavior). Thus, the peer selection model suggests that peer relationships are formed through a matching process wherein adolescents who engage in aggression, substance use, or delinquent behavior are essentially forced to form relationships with one another (Knecht et al., 2010).

Several studies have found support for the peer influence model. Logis et al. (2013) examined peer selection and influence processes on aggression, prosocial behavior, and

popularity across three waves of data collected within the same school year from a diverse sample of fifth grade students. Using social network analysis, the authors found that youth generally selected friends based on similarity in popularity and prosocial behavior rather than aggressive behavior. However, friends became more similar in their levels of aggression, prosocial behavior, and popularity over time (Logis et al., 2013). In another study using a longitudinal social network modeling approach, Kornienko et al. (2019) examined influence and selection processes on aggressive and rule-breaking behaviors within a large and diverse sample of early adolescents who completed measures at the beginning and end of one school year. They found that adolescents' aggressive behavior became more similar to their friends' aggressive behavior over time, but they did not find evidence of influence effects for rule-breaking behavior. Additionally, contrary to the authors' hypotheses, there was no evidence to support peer selection effects for either behavior (Kornienko et al., 2019). Taken together, these findings provide support for peer influence (but not peer selection) effects on adolescents' aggressive and delinquent behavior. The findings of Kornienko et al. (2019) also underscore the importance of examining influence and selection effects on multiple problem behaviors, as they found that adolescents with higher levels of rule-breaking behavior were more susceptible to peer influence of aggression, and that friends' aggressive behavior predicted increases in an adolescents' rule-breaking behavior over time. Notably, there is also evidence from experimental studies that aggregating delinquent adolescents in selective interventions may lead to iatrogenic effects by increasing adolescents' exposure to problem behavior in the peer context, thereby increasing adolescents' own engagement in problem behavior over time (see Dishion & Tipsord, 2011; Gifford-Smith et al., 2005).

Other studies have found support for peer selection rather than peer influence. Knecht et al. (2010) examined 21 classroom networks across four time points in the first grade of secondary school (N = 544) in the Netherlands. They found that adolescents tended to select friends with similar levels of delinquent behavior, yet friends' delinquent behavior did not predict increases in adolescents' level of delinquent behavior over time. Prior studies examining the relation between peers' behavior and adolescents' substance use have also found support for peer selection effects on alcohol use (Knecht et al., 2011), tobacco use (Huisman, 2014; Mercken et al., 2012), marijuana use (de la Haye et al., 2015), and use of two or more of these substances (Huang et al., 2014; Poulin et al., 2011). For instance, de la Haye et al. (2015) examined two waves of the Add Health data and found that a shared history of marijuana use was the strongest predictor of adolescents' friendship choices, even after controlling for shared risk factors for marijuana use and past month marijuana use.

Despite empirical evidence supporting each model, there is also evidence to suggest that peer influence and peer selection are not mutually exclusive processes, but rather that both play a role in the development of problem behavior (e.g., Farrell et al., 2017; Rulison et al., 2013; Thompson et al., 2020). Interactions between youth and their environment are transactional such that youth are shaped by their environment *and* choose and shape their environment (Cicchetti & Lynch, 1993; Lerner et al., 2013). It follows that there may also be cyclical relations between the behavior of an adolescent and that of their peer group, such that peer selection and peer influence both play a role in the development and maintenance of early adolescent problem behavior.

In a recent meta-analysis of studies using social network analysis to examine peer effects on delinquent and offending behavior, Gallupe et al. (2019) concluded that adolescents are influenced by their peers and friends and also select friends based on similarity in delinquent

behavior, with the mean effect size for influence being larger than that for selection. Another meta-analysis similarly found support for both selection and influence processes despite focusing primarily on studies that relied on measures that asked adolescents to report their perceptions of their friends' behavior (Pratt et al., 2010). Thus, empirical evidence to date supports the notion that both peer influence and selection processes contribute to adolescent problem behavior, regardless of how peers' or friends' behavior is measured.

Kornienko et al. (2018) used a longitudinal social network modeling approach to examine changes in peer network selection and influence associated with self-reported delinquent behavior and violent behavior throughout middle school in an ethnically diverse sample of 998 adolescents. They found support for peer influence effects (but not peer selection) for violent behavior, such that adolescents' level of violent behavior became more similar to total levels of peer-reported violent behavior within their network between seventh and eighth grade. In contrast, their findings regarding delinquent behavior supported peer selection but not peer influence effects. Specifically, adolescents with similar levels of delinquent behavior were more likely to befriend one another between sixth and seventh grade (Kornienko et al., 2018). Thus, it is also possible that influence and selection mechanisms differ across different forms of of problem behavior.

There is also evidence that both peer selection and influence processes play a role in adolescent substance use. Poulin et al. (2011) collected four waves of data (corresponding to October, December, February, and June of the same school year) from 143 French Canadian ninth grade students. They found support for longitudinal bi-directional effects between adolescents' own substance use and that of peers with whom they formed new friendships (Poulin et al., 2011). In other words, adolescents formed new friendships with peers who

engaged in similar levels of substance use and the behavior of these new friends also contributed to changes in adolescents' substance use over time, although this relation was not consistent across time points or specific substances examined. These findings are further supported by a systematic review of studies investigating peer selection and influence processes on adolescent alcohol use (Leung et al., 2014), which indicated that nine out of 10 studies using latent growth models or structural equation models found evidence that both peer influence and selection processes play a role in adolescents' alcohol use.

Most studies that have examined peer selection and influence processes in relation to adolescent problem behavior have relied on data that were collected annually or bi-annually, which may not accurately capture the dynamics between peer affiliation and adolescent problem behavior across the school year or during the summers between school years. Prior studies have found evidence of seasonal variation in the occurrence of adolescents' problem behavior and their perceptions of their friends' behavior. Logis et al. (2013) found that peer selection effects for aggression were strongest between the Winter and Spring of the academic year. Poulin et al. (2011) found that selection effects increased across the school year for alcohol and marijuana use but decreased for cigarette use. In contrast, Thompson et al. (2020) did not find evidence of seasonal variations in peer selection or influence. These studies are limited in that they examined only one form of problem behavior (e.g., aggression; Logis et al., 2013; Thompson et al., 2020).

In summary, there is mixed evidence as to whether the relation between adolescents' and their friends' behavior is better explained by peer selection or peer influence processes, with studies finding support for peer influence (Baerveldt et al., 2008; Logis et al., 2013; Molano et al., 2013), peer selection (e.g., Knecht et al., 2010; Young et al., 2014), or both (Rulison et al., 2013; Thompson et al., 2020). Overall, the available evidence from longitudinal studies seems to

support the potential for an iterative loop whereby adolescents become increasingly involved with peers who influence their behavior, which leads to further affiliation with like-minded peers, which then perpetuates this cycle. This highlights the potential for prevention efforts to disrupt the cycle of peer selection and influence by decreasing adolescents' exposure to problem behavior and increasing exposure to prosocial behavior within their peer group, which may then reduce their risk of problem behavior. The overarching goal of the current study is to identify modifiable promotive factors that function in this manner and can be targeted in prevention efforts.

Sociodemographic Influences on Peer Affiliation and Problem Behavior

There is some evidence to support sex and gender differences in peer affiliation and problem behavior as well as relations among these constructs. Male adolescents have been found to report higher levels of physical aggression, delinquent behavior, or friends' delinquent behavior than female adolescents in both cross-sectional (Farrell et al., 2017; Padilla-Walker & Bean, 2009) and longitudinal studies (Farrell et al., 2011; Véronneau & Dishion, 2010). These findings align with gender role stereotypes that link masculinity with toughness (Galambos, 2004; Kågesten, 2016). In contrast, female adolescents have been found to report higher levels of friends' prosocial behavior than their male counterparts (Farrell et al., 2017; Padilla-Walker & Bean, 2009). This is consistent with prior research demonstrating that female adolescents tend to have more positive interactions with their peers and are generally more relationship-oriented than male adolescents (Collins & Steinberg, 2006; Rose & Rudolph, 2006). There is also some evidence from research with early adolescent samples that the cross-sectional association between adolescent substance use and friends' delinquent behavior is stronger among female adolescents than male adolescents (Farrell et al., 2017) and that female adolescents report more

frequent substance use (Chen & Jacobson, 2012). In at least one study, female adolescents were found to be more likely than male adolescents to select friends based on violent or delinquent behavior and to be influenced by their friends' involvement in violence (but not by their friends' delinquent behavior, which had consistent effects across sex) (Haynie et al., 2014).

Some studies have found a lack of evidence to support sex or gender differences in the relation between peers' or friends' delinquent behavior and changes in adolescent problem behavior across middle school (Thompson et al., 2020; Véronneau & Dishion, 2010) and in the cross-sectional relation between friends' prosocial behavior and adolescent problem behavior (Farrell et al., 2017). Researchers have reasoned that gender socialization processes related to aggression may be distinct within urban under-resourced communities with high rates of violence, leading male and female adolescents in these communities to exhibit similar rates of aggression (Bettencourt & Farrell, 2013; Bradshaw et al., 2010; Thompson et al., 2020).

Findings regarding sex and gender differences in adolescents' susceptibility to peer influence (i.e., the degree to which an adolescents' behavior changes to align with peer group norms) have also been mixed. McCoy et al. (2019) found two primary trends in the findings of 26 studies included in their review of the literature in this area. Their review indicated that nearly half of the studies did not find evidence of gender differences. The remaining studies found that peer influence effects for a composite measure of risk-taking behavior were stronger among male than female adolescents, except for two studies that found that peer influence effects were stronger among female adolescents. This is consistent with gender role socialization theory, which holds that male adolescents seek to act in ways that are consistent with traditional masculine ideals (Galambos, 2004). Findings from previous research have indicated that male adolescents are more likely than female adolescents to perceive risky or defiant behavior to be

more strongly aligned with popularity and peer approval (Closson, 2009; Iwamoto & Smiler, 2013) and to experience peer rejection when they do not conform to gender role stereotypes (Bosson et al., 2006). As noted by McCoy et al. (2019), one limitation of most of the studies they reviewed is that several risk-taking behaviors were combined into a composite risk-taking behavior variable, which may obscure gender and sex differences in specific types of risk behavior (e.g., substance use versus nonviolent delinquency).

In order to adequately understand individual development and change, it is also critical to consider the ways in which culture and context shape adolescent development. There is broad agreement that community-level characteristics have a significant influence on health and well-being (Diez Roux & Mair, 2010). Many youth residing in low-income urban communities face a number of contextual risk factors for problem behavior, including residential instability, environmental toxins, and deficient resources (Evans, 2004; Gaylord-Harden et al., 2007; Herrenkohl et al., 2000; Leventhal & Brooks-Gunn, 2003). Additionally, high rates of exposure to violence among youth in urban communities are linked with increased trauma symptoms, which in turn enhance risk for aggression and substance use (Lee, 2012; Thompson & Farrell, 2019). Adolescents in densely populated urban communities may also have greater access to peers (Boykin McElhaney & Allen, 2001). This can increase youths' risk of developing problem behavior when informal social control processes that promote community members' collective monitoring and regulation of youth are lacking (Sampson et al., 1997). It should also be noted that not all urban communities possess these risk factors. There is heterogeneity across urban communities just as there is heterogeneity among the youth and families situated within these communities.

Risk factors in the ecology of urban, high-burden communities are situated within broader systems of oppression that disproportionately impact people of color and those who are economically disadvantaged (see Spencer & Swanson, 2016). Exposure to delinquent behavior in the peer context has consistently been linked to negative outcomes among samples of predominantly African American adolescents residing in under-resourced urban communities (Brook et al., 2011; Farrell et al., 2017; Lloyd & Anthony, 2003). These adolescents are also disproportionately affected by the consequences associated with substance use, aggression, and delinquent behavior, including adverse educational outcomes (Basch, 2011), juvenile justice involvement (Kakade et al., 2012), and substance use problems later in life (Mayes & Suchman, 2006). Given that most studies examining relations between adolescents' and their friends' behavior focused on predominantly White samples of middle-class youth, additional studies focused on predominantly African American samples of youth in urban high-burden communities are warranted.

Hypothesized Promotive Factors

The overwhelming majority of studies examining factors related to peer affiliation and problem behavior among adolescents in urban communities have relied on risk-focused, deficit-based frameworks (Brown & Bakken, 2011). However, not all youth exposed to the same risk factors engage in problem behavior (Brennan et al., 2003; Mustanski et al., 2013). Over the past decade, researchers have begun to investigate the role of promotive factors in adolescent outcomes to identify the factors that support positive youth development. Nevertheless, there remains a dearth of longitudinal studies investigating promotive factors that predict changes in adolescents' exposure to both problem and prosocial behavior within their peer group. Instead, most prior studies focus on the consequences of affiliating with peers who engage in problem

behavior (Brechwald & Prinstein, 2011; Dishion & Tipsord, 2011). A more relevant focus for prevention efforts is to identify modifiable promotive factors that reduce the risk of exposure to friends' delinquent behavior and increase the likelihood of befriending adolescents who engage in prosocial behavior, which may disrupt the cycle of peer selection and influence processes that contribute to the development of problem behavior in adolescence. Potential promotive factors that were examined in the current study include child disclosure, relationship with a caring adult, and future orientation.

Child Disclosure

Parents' knowledge of their child's whereabouts, activities, and friendships has consistently been linked to adolescents' and their friends' delinquent behavior across ethnically and socioeconomically diverse samples (Laird et al., 2008; Osgood & Anderson, 2004; Racz & McMahon, 2011; Rios et al., 2020; Warr, 1993). Throughout this study, "parents" will be used as a term to include biological parents and primary caregivers. Parental knowledge can be obtained through several mechanisms: (a) a parent asking their child about their activities (i.e., parental solicitation), (b) a parent restricting their child's activities or implementing rules to limit their child's ability to engage in certain activities without their knowledge (i.e., parental control), and (c) a youth telling their parent about their activities (i.e., child disclosure). Although all three mechanisms may contribute to parental knowledge, prior research has consistently found that child disclosure is the strongest predictor of parental knowledge (Garthe et al., 2015; Keijsers et al., 2010; Kerr & Stattin, 2000; Stattin & Kerr, 2000; Willoughby & Hamza, 2011).

Whereas high levels of child disclosure are associated with more positive child adjustment (Kerr & Stattin, 2000), parent-child relationships (Wissink et al., 2006), and coping skills (Almas et al., 2011), low levels of child disclosure have been linked with increases in

adolescents' delinquent behavior (Keijsers et al., 2010; Kerr et al., 2010) and substance use (Padilla-Walker, Son, et al., 2018; Soenens et al., 2006). In a recent longitudinal study, Padilla-Walker, Son, et al. (2018) used growth mixture modeling to examine patterns of child disclosure across adolescence (ages 12 to 18) among a predominantly White sample from whom data were collected annually. The majority of adolescents (82%) exhibited relatively high initial levels of disclosure followed by a gradual decrease over time, which is consistent with the findings of other studies documenting normative decreases in child disclosure (Laird et al., 2013), particularly following the transition to middle school (Laird & Marrero, 2011). However, a second subgroup exhibited low and stable disclosure across adolescence (13%). Relative to those with a high-decreasing trajectory of child disclosure across adolescence, those with a low-stable trajectory reported more frequent involvement in delinquent behavior at age 12 and more frequent involvement in both delinquent behavior and substance use at age 18. These findings are consistent with longitudinal studies among Dutch (Keijsers et al., 2010) and Swedish (Kerr et al., 2010) early adolescents, which found that higher levels of child disclosure predicted lower levels of delinquent behavior one year later. However, apart from one study that used a daily diary method to assess disclosure and secrecy in a low-income urban sample of adolescents (e.g., Smetana et al., 2010), the stability of child disclosure across more frequent intervals than once per year remains largely unstudied to my knowledge. It is possible that child-parent information management processes are dynamic during early adolescence given the multitude of developmental and ecological changes that occur during this time. Notably, there is also limited research investigating the longitudinal relation between child disclosure and adolescents' involvement in physical aggression.

Researchers have posited that when parents lack knowledge of their child's activities, whereabouts, and friendships, adolescents may be more likely to affiliate with peers who engage in problem behavior and in turn, more likely to engage in problem behavior themselves (Kerr & Stattin, 2000). At low levels of disclosure, adolescents' parents may lack the knowledge or information that would enable them to appropriately monitor and supervise their adolescent's interactions with their friends. Consequently, in accordance with routine activity theory (Osgood et al., 1996), adolescents may be more likely to be exposed to friends' delinquent behavior via unstructured socializing in the absence of authority figures. Within such contexts, problem behavior may become easier and more rewarding to engage in, and there is limited potential for adults to implement social control responses (e.g., establishing rules, restricting activities). This hypothesis is supported by research demonstrating that: (a) a lack of disclosure (and parental knowledge by proxy) increases adolescents' engagement in unstructured activities and problem behavior (Laird et al., 2008; Osgood & Anderson, 2004); (b) friendships with peers who engage in problem behavior are more likely to develop when parents are unaware of the behavior of their children's friends (Warr, 1993); and (c) friends' delinquent behavior has a stronger effect on offending for adolescents who often spend their free time in unstructured routine activities, but not for adolescents with strong bonds to their friends (Svensson & Oberwittler, 2010). These findings are consistent with social control and routine activity theories and underscore the importance of child disclosure in preventing problem behavior.

On the other hand, when parents become aware that their child's friends are engaging in problem behavior, they can take steps to limit their child's interactions with these youth (Tilton-Weaver et al., 2013). This may include restricting their child's activities or establishing parameters or rules around their child's socializing with certain peers (i.e., increasing parental

control). Parents may also prevent youth from affiliating with peers who engage in problem behavior by creating a relational context in which youth feel comfortable voluntarily disclosing information about their whereabouts, activities, and friends' behavior and can receive advice and guidance from their parents. Thus, high levels of child disclosure (and therefore parental knowledge) may promote adolescents' selection of friends who engage in more prosocial and less problem behavior and, in turn, result in lower levels of adolescent problem behavior.

Despite empirical evidence linking child disclosure to both friends' and adolescents' problem behavior, I could not find any studies examining the potential mediating role of friends' delinquent behavior or friends' prosocial behavior in the link between adolescents' disclosure and involvement in problem behavior. However, prior research has examined whether friends' delinquent behavior mediated the link between other parenting factors and problem behavior. For instance, using data from the National Longitudinal Study of Adolescent Health, Deutsch et al. (2012) found that higher levels of parental control and lower levels of maternal support were associated with having more close friends who used substances, which in turn was related to high levels of adolescent delinquent behavior. Several other studies have demonstrated the mediating role of friends' delinquent behavior in the effects of parent-driven monitoring efforts on adolescents' delinquent behavior (e.g., Ary et al. 1999; Patterson et al. 1989; Warr, 2005). Thus, although peers are a more proximal predictor of adolescent delinquent behavior, parents can influence adolescent problem behavior through their role in shaping the nature and availability of adolescents' interactions with their peers.

Presence of a Caring Adult

Prior theoretical and empirical work has emphasized the importance of a supportive, caring parent-adolescent relationship in promoting positive youth development. Both social

control theory (Hirschi, 1969) and attachment theory (Ainsworth, 1989; Bowlby, 1988) provide insight into this relation. Social control theory maintains that parental attachment is a critical social bond that promotes adolescents' adoption of conventional values and reduces their risk of befriending peers who engage in problem behavior (Hirschi, 1969). Attachment theory posits that people build representational or working models of themselves and others from their experiences with caregivers, which serve as the basis for future interactions with others. Those with secure parental attachment can regulate their emotions effectively and rely on their parent or other persons that they have formed relationships with (e.g., peers) in order to receive support (Ainsworth, 1989; Bowlby, 1988). On the other hand, those who experience disruptions in parental attachment (i.e., insecure attachment) exhibit greater externalizing problems (Fearon et al., 2010), which may be a function of increased risk for exposure to problem behavior in the peer context among adolescents with insecure parental attachment. Consistent with these theories, prior studies have found that various facets of the parent-adolescent relationship (i.e., attachment bonds, relationship quality, parental support) are inversely related to adolescents' delinquent behavior (Barnes et al., 2006; Hoeve et al., 2012), aggressive behavior (Arım et al., 2011), and substance use (Allen et al., 2012; Rusby et al., 2018). Moreover, at least two studies have found that parent-child attachment and relationship quality indirectly predict delinquent behavior (de Vries et al., 2016) and substance use (Van Ryzin et al., 2012) via friends' delinquent behavior.

To my knowledge, only one study has examined associations between parent-adolescent relationship quality and adolescents' perceptions of their friends' prosocial behavior. In a longitudinal study focused on Black middle school students living in low-income Chicago neighborhoods with high crime rates, Quimby et al. (2018) found a positive association between

adolescents' perceptions of maternal and paternal closeness and their friends' prosocial behavior over time. They also found that gender did not moderate this association despite evidence that female adolescents tend to have more positive interactions with their peers (Collins & Steinberg, 2006) and report higher levels of prosocial behavior among their friends relative to male adolescents (Padilla-Walker & Bean, 2009). These findings highlight the role of parent-child relationships in shaping adolescents' peer context.

Some adolescents form relationships with mentors, or non-parental adults such as a teacher, extended family member, coach, or neighbor. Mentors serve a variety of important functions in an adolescents' life that are particularly relevant to the developmental tasks of autonomy from parents and identity development in adolescence. Mentors may serve as role models and thus influence adolescents' ideas about who they might become in the future (their "possible selves"; Markus & Nurius, 1986; Oyserman et al., 2004). Mentors can also contribute to identity development by acting as a "social mirror", such that their opinions and perceptions of the adolescent become incorporated into the adolescent's perception of themselves (Schwartz et al., 2013). Adolescents may also be more comfortable with or open to receiving advice and guidance and disclosing information to natural mentors given their desire for autonomy from their parents (Kerr et al., 2010; Kerr & Stattin, 2000; Willoughby & Hamza, 2011). Additionally, for youth with disrupted parental attachment, mentors may influence adolescents' working models of relationships by serving as an alternative attachment figure (Schwartz et al., 2013). Relevant to social control theory, prosocial mentors may also encourage adolescents' bonding with groups and institutions to promote favorable outcomes.

Although studies have examined the association between a positive, caring relationship with a natural mentor and adolescents' problem behavior within urban, predominantly African

American samples, the literature is scant and only one study was identified that also examined relations with friends' delinquent behavior (i.e., Zimmerman et al., 2002). In a predominantly African American sample of adolescents residing in a large Midwestern city, Zimmerman et al. (2002) found that natural mentors had a compensatory effect (i.e., when "positive factors counteract or neutralize the effects of risk factors", p. 223) rather than a protective effect on problem behavior. Specifically, adolescents with natural mentors exhibited lower levels of marijuana use and nonviolent delinquency and had more positive attitudes toward school than those without natural mentors. They also found that having a natural mentor was associated with lower levels of friends' delinquent behavior which in turn led to reductions in the frequency of problem behavior. This indirect effect accounted for approximately one-third of the relation between having a natural mentor and engaging in problem behavior (Zimmerman et al., 2002). These findings suggest that natural mentors may discourage problem behavior through both direct and indirect means. However, I was unable to find any studies that have examined associations between having a caring relationship with a natural mentor and friends' prosocial peer affiliation.

Caring and supportive relationships with nonparental adults may be particularly critical for adolescents residing in under-resourced urban communities due to community-level risk factors (e.g., lack of social cohesion, exposure to community violence) and limited opportunities for mentoring relationships (e.g., limited extracurricular or after-school activities) (Thompson et al., 2020). Previous research has found that natural mentoring relationships are particularly salient among African American youth, as a fairly high prevalence of African American youth report natural mentoring relationships with both extended family and nonfamilial adults (Rhodes et al., 1992; Zimmerman et al., 2002, 2005). Previous research has also linked positive

relationships with nonfamilial adults to better psychosocial outcomes among African American youth (Hurd & Sellers, 2013; Hurd & Zimmerman, 2010). This underscores the importance of not only parental support, but also the support of fictive kin (e.g., people who are considered family but are not related by biology or marriage) in the positive development of African American youth (Quimby et al., 2018; Stewart, 2007).

Positive Future Orientation

Future orientation refers to a process by which adolescents' future-related behaviors are influenced by cognitive and motivational-affective factors (e.g., thoughts, plans, motivations, hopes, and feelings) (Johnson et al., 2014; Stoddard et al., 2011). During adolescence, future orientation is dynamic, rapidly evolving and expanding as youth increasingly make plans about the future (Stoddard et al., 2011). The theory of possible selves suggests that people are motivated by the mental images of their possible future selves (Oyserman et al., 2004). Adolescents' self-concept of what they could become (hoped-for selves), what they would like to become (expected selves), and what they are afraid of becoming (feared selves) all guide and regulate current behavior (Oyserman et al., 2004). According to theory (Markus & Nurius, 1986; Oyserman et al., 2004), optimal self-regulation occurs when a balance is achieved between the positive and negative future selves. Only having positive future selves might prevent adolescents from preparing themselves for obstacles or short-term disappointments, whereas an adolescent may not make plans for the future or be motivated to avoid short-term gratification in pursuit of long-term goals if they only have negative future selves. Moreover, youth who lack positive expectations about their future may be less concerned about the consequences associated with their behavior.

Previous studies have shown strong, inverse relations between positive future orientation and engagement in delinquent behavior (Chen & Vazsonyi, 2011), aggressive and violent behavior (Stoddard et al., 2011), alcohol use (for African American and Latino/a youth in particular; Martineau & Cook, 2017), and substance use (Bolland, 2003; Bolland et al., 2007; Robbins & Bryan, 2004). Compared with older adolescents, the relation between low levels of future orientation and negative behavioral outcomes has been found to be stronger among early adolescents who exhibit poorer self-regulatory skills (Steinberg et al., 2009). Importantly, most studies examining relations between future orientation and problem behavior have been cross-sectional. Nevertheless, a small number of longitudinal studies have demonstrated the important role of future orientation in promoting positive adolescent development. In a study focused on an African American sample of 681 mid- to late adolescents, Stoddard et al. (2011) found that higher levels of future orientation were related to greater decreases in violent behavior over time. Schmid et al. (2011) analyzed data from seventh through ninth grade students participating in the 4-H Study of PYD and found that intentional self-regulation and a positive future orientation were associated in the expected direction with trajectories of positive developmental outcomes as well as risk behaviors.

The effects of future orientation on problem behavior appear to be stronger within high-poverty neighborhoods, as prior studies have found a relation between poverty and increased fatalistic attitudes among adolescents (Borowsky et al., 2013; McCabe & Barnett, 2000; Nguyen et al., 2012). In a study focused on low-income African American and Latino/a males participating in the Chicago Youth Development Study, Prince et al. (2019) examined the reciprocal relationships among positive future orientation, expected threats to future safety, depression, and individual substance use and delinquency using four waves of data collected

annually. A weaker future orientation positively predicted changes in substance use and involvement in delinquency, both of which in turn predicted decreases in future orientation and increases in expectations of threats to future safety across adolescence. These findings were consistent across time even after controlling for youth depression and race, underscoring the importance of future orientation as a potential target for intervention and prevention efforts. However, the generalizability of this study is limited due to their restricted focus on a sample of male adolescents.

To my knowledge, only two studies have investigated relations between adolescents' future orientation and their friends' behavior. One focused on 95 inner-city middle school students found that adolescents who perceived that their friends engaged in higher levels of substance use and sexual risk behavior at the beginning of the school year exhibited decreased future orientation by the end of the school year (Dubow et al., 2001). In a cross-sectional study focused on 392 affluent high school students in the Midwestern United States, Stoddard and Pierce (2018) found that adolescents' future orientation was significantly related to their perceptions of their friends' prosocial (r = .34) and problem behavior (r = -.11). However, whereas higher levels of positive future orientation mediated the relation between friends' prosocial behavior and substance use, it did not have a mediating effect on the relation between friends' delinquent behavior and substance use. These findings may be related to sample characteristics, such that affluent youth may have other protective factors that mitigate the negative influence of friends' delinquent behavior. Alternatively, it may be that positive future orientation has a more prominent role in peer selection processes, such that adolescents with a more positive future orientation are less likely to be exposed to friends' delinquent behavior and in turn are less likely to engage in substance use. I was not able to find any studies that examined

the mediating role of friends' behavior in the relation between future orientation and problem behavior.

Statement of the Problem

Both theoretical and empirical findings highlight the powerful impact of peers on adolescents' adjustment. Previous studies have consistently demonstrated associations between adolescents' and their friends' delinquent behavior (e.g., Brook et al., 2011; Farrell et al., 2017; Farrell & White, 1998; O'Donnell et al., 2012). Theories of peer selection suggest that youth choose friends who are similar to them, whereas theories of peer influence posit that youth are influenced by the behavior of their peers via modeling and reinforcement (Dishion & Tipsord, 2011). Evidence suggests these processes are not mutually exclusive such that both play a role in the development of problem behavior (Farrell & White, 1998; Thompson et al., 2020). This suggests the potential for an iterative loop whereby adolescents become increasingly involved with peers who influence their behavior, which leads to further affiliation with like-minded peers, which then perpetuates this cycle. Prevention efforts may be able to reduce problem behavior by disrupting selection processes and, in turn, mitigating influence processes. The overarching goal of the current study was to identify modifiable promotive factors that decrease adolescents' exposure to problem behavior and increase their exposure to prosocial behavior within their peer group and in turn, reduce their risk of engaging in physical aggression, substance use, and delinquent behavior.

Reducing adolescents' exposure to friends' delinquent behavior has the potential to disrupt the cycle between processes of peer selection and influence that contribute to the development of early adolescent problem behavior. Early adolescence has been identified as a period of heightened susceptibility to peer influence (Blakemore, 2018), making it a salient time

to investigate relations between adolescents' and their friends' behavior. Across early adolescence, youth attempt to individuate from their parents as peer relationships become more salient (Dishion et al., 2004; Laursen, 2018). As such, adolescents' disclosure of their activities to their caregivers generally decreases (Laird et al., 2013). However, youth may be less likely to affiliate with peers who engage in problem behavior when parents are highly knowledgeable about their child's activities (Laird et al., 2008). Having a relationship with a supportive and caring adult (e.g., teacher, natural mentor) can also protect youth from turning to peer groups in which they are exposed to problem behavior (Hurd et al., 2014; Zimmerman et al., 2002). A positive future orientation, or adolescents' hopes and plans for their future, may motivate them to pursue their future goals and avoid peers who engage in problem behavior (Stoddard et al., 2011). Adolescents' disclosure to caregiver(s), the presence of a caring adult, and a positive future orientation have each demonstrated negative associations with substance use, aggression, and delinquent behavior (So et al., 2016, 2018; Wang et al., 2011).

Prior research on peer affiliation and problem behavior has been limited in several notable ways. First, it has paid less attention to adolescents' affiliation with prosocial peers and the role it may play in reducing problem behavior during early adolescence. Affiliating with peer groups that engage in prosocial behavior, or intentional social behaviors that serve to benefit others (e.g., sharing with, helping, and comforting others) (Eisenberg et al., 2006), has been positively associated with adolescents' own prosocial behavior and negatively associated with problem behavior (Farrell et al., 2017; Padilla-Walker, Memmott-Elison, et al., 2018). This supports the notion that early adolescence is a period of not only vulnerabilities, but also of opportunities for prosocial development (Blakemore & Mills, 2014; Padilla-Walker & Carlo, 2014). However, our understanding of the potential benefits and mechanisms of prosocial peer

affiliation, its influence on adolescents' behavior, and the factors that might increase the likelihood that youth will affiliate with a prosocial peer group are limited due to a dearth of research in this area. Second, research has focused primarily on examining the consequences associated with exposure to problem behavior in the peer context (Brechwald & Prinstein, 2011; Dishion & Tipsord, 2011). A more relevant focus for prevention efforts is to identify modifiable factors that reduce the risk of exposure to friends' delinquent behavior and enhance the likelihood of exposure to friends' prosocial behavior. Third, the majority of longitudinal studies have included two to three assessment points, with intervals between each point ranging from one (Berger & Rodkin, 2012; Lynne-Landsman et al., 2011) to several years (Dishion et al., 2010) [see Knecht et al. (2010) and Logis et al. (2013) for exceptions]. These studies have clarified changes across broad spans of development but have not provided a basis for understanding more immediate changes that occur within critical periods of development such as early adolescence. Researchers have called for longitudinal studies with frequent assessments to capture changes across short intervals of time (Collins, 2006), which allow more convincing conclusions about causal relationships among variables. Multiple assessment points across short intervals are helpful for understanding changes in dynamic processes such as peer relationships and have the potential to deepen our understanding of the development of ethnic minority early adolescents in high-risk contexts.

The predominantly African American sample of early adolescents that were analyzed in the current study is ideal for several reasons. Affiliating with peers that engage in problem behavior holds severe repercussions for adolescents in urban communities with high rates of violence due to its role in increasing risk for problem behavior. Specifically, African American youth from urban, low-income communities are disproportionately affected by consequences

associated with substance use, aggression, and delinquent behavior (e.g., juvenile justice involvement; Kakade et al., 2012). Additionally, most prior studies among adolescents residing in urban, high-burden communities have focused on deficit-based frameworks of development in high-risk contexts (Brown & Bakken, 2011; Yosso, 2017). Studies examining constructs related to strength and resilience among this population are warranted as a result and may inform culturally relevant, strengths-based prevention efforts. Taken together, there is an urgent need to identify promotive factors that reduce the risk of exposure to friends' delinquent behavior and promote affiliation with friends who engage in prosocial behavior and in turn reduce adolescents' risk of engaging in problem behavior.

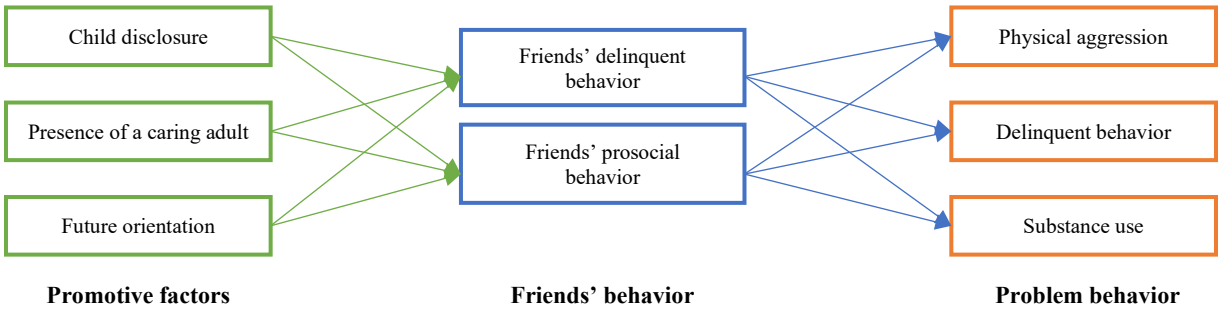
Current Study

The overarching goal of the current study was to identify modifiable factors that reduce the risk of adolescent problem behavior by decreasing exposure to friends' delinquent behavior and increasing exposure to friends' prosocial behavior (see Figure 1). This study has three specific aims: (a) to examine the unique and combined influences of friends' delinquent behavior and friends' prosocial behavior on adolescents' problem behavior (i.e., substance use, aggression, delinquency) within and across each grade of middle school, (b) to determine the extent to which promotive factors (i.e., disclosure of activities to a caregiver, presence of a caring adult, positive future orientation) influence adolescents' peer group affiliation within and across each grade of middle school, and (c) to investigate the extent to which peer affiliation mediates the relation between promotive factors and problem behavior within and across each grade of middle school.

The first aim of this study was to examine the unique and combined influences of friends' delinquent and prosocial behavior on changes in early adolescents' problem behavior. Clarifying

Figure 1

Theoretical model of the relations among promotive factors, friends' behavior, and problem behavior



how these variables change and relate to one another over time is a critical first step toward identifying factors that influence these changes. There were several hypotheses related to Aim 1. Consistent with peer influence processes, it was anticipated that friends' prosocial behavior would be inversely related to subsequent changes in each problem behavior (Hypothesis 1a), whereas friends' delinquent behavior would be positively associated with subsequent changes in each adolescent problem behavior (Hypothesis 1b). These hypotheses were based on the findings of previous research (e.g., Farrell et al., 2011; Gallupe et al., 2019; Padilla-Walker & Bean, 2009; Thompson et al., 2020; Walters, 2020) as well as social control theory (Hirschi, 1969). Additionally, consistent with the findings of Padilla-Walker and Bean (2009), it was hypothesized that friends' delinquent behavior would generally exhibit stronger longitudinal associations with each problem behavior than friends' prosocial behavior (Hypothesis 1c). Findings regarding the longitudinal relations between friends' delinquent behavior and adolescents' frequency of involvement in physical aggression were expected to replicate those of Thompson et al. (2020), who used data from the same sample as this study.

The second aim of this study was to determine the extent to which promotive factors influence friends' delinquent and prosocial behavior over time. Based on theories such as PYD

and PVEST that suggest the presence of developmental assets and strengths can reduce later risk and enhance positive development, promotive factors were hypothesized to influence peer selection over time, such that each promotive factor would be positively associated with subsequent changes in friends' prosocial behavior and inversely associated with subsequent changes in friends' delinquent behavior (Hypothesis 2). Hypothesis 2 is also supported in part by previous research documenting relations between these promotive factors and adolescents' perceptions of their friends' behavior (e.g., de Vries et al., 2016; Laird et al., 2008; Prince et al., 2019; Quimby et al., 2018; Stoddard & Pierce, 2018; Zimmerman et al., 2002).

The third aim of this study was to investigate whether peer affiliation mediates the relation between promotive factors and problem behavior within and across each grade of middle school. Positive future orientation, child disclosure, and the presence of a caring adult were hypothesized to have significant indirect effects on substance use, aggression, and delinquency via friends' delinquent and prosocial behavior. Specifically, promotive factors were hypothesized to be positively associated with subsequent changes in friends' prosocial behavior and inversely associated with subsequent changes in friends' delinquent behavior and, in turn, associated with reductions in the frequency of problem behavior within and across each grade of middle school (Hypothesis 3). This hypothesis is based on PVEST, PYD, and developmental assets theories, which posit that the more assets a youth possesses, the more likely they are to follow a healthy developmental trajectory. Additionally, this hypothesis is supported by prior studies that found peer affiliation mediated the relation between promotive factors and problem behavior (de Vries et al., 2016; Padilla-Walker, Son, et al., 2018; Van Ryzin et al., 2012).

Longitudinal relations among promotive factors, friends' behavior, and adolescent problem behavior differed by sex and grade were also examined to generate insights regarding

for whom and under what circumstances the hypothesized relations occur. These analyses were largely exploratory due to a lack of prior work examining such differences, particularly among early adolescents in high-burden urban communities. However, several hypotheses about sex and grade differences were considered for the first aim, which are rooted in theory and prior research. Consistent with the findings of Thompson et al. (2020), the longitudinal relation between friends' delinquent behavior and adolescents' physical aggression was not anticipated to differ by sex or grade (Hypothesis 4a). Additionally, similar to the findings of Kornienko et al. (2018), the effect of friends' behavior on delinquency and substance use was hypothesized to be strongest during sixth grade (i.e., peer selection processes), whereas the effects of delinquency and substance use on friends' behavior were hypothesized to be strongest during eighth grade (Hypothesis 4b). Friends' delinquent behavior was hypothesized to evidence stronger longitudinal associations with delinquent behavior among male adolescents compared with female adolescents (Hypothesis 4c) based on gender role socialization theory (Galambos, 2004) and the findings of McCoy et al. (2019). Lastly, it was hypothesized that the longitudinal relations between friends' delinquent behavior and substance use would be stronger among female adolescents (Hypothesis 4d) given the findings of prior studies (Dick et al., 2007; Farrell et al., 2017).

Method

Participants

The current study involved secondary analysis of data collected between 2010 and 2018 for a project that evaluated the efficacy of the Olweus Bullying Prevention Program (OBPP; Olweus & Limber, 2010) at three middle schools in the Southeastern United States (see Farrell et al., 2018). The schools were selected based on their high rates of truancy and location in

neighborhoods with high levels of violence. According to school records, 74% to 100% of students attending these schools were of lower socio-economic status as measured by federal free or reduced lunch program eligibility. The project used a multiple baseline experimental design such that the OBPP was implemented in one school during Year 2 of the study, in the second school in Year 3, and the third school in Year 6. Apart from the Fall of Years 1 and 6 and Summer of Year 8, data were collected in 3-month intervals corresponding to the Fall, Winter, Spring, and Summer of each school year. In Year 1, a random sample of 619 English-speaking students was recruited, with 194 to 214 in each grade distributed across the three schools. An additional 295 to 340 participants were recruited at the start of each subsequent year, including a new cohort of incoming sixth graders and seventh and eighth graders to replace students who left the school or discontinued participation. Active consent by a parent or guardian and student assent were obtained from approximately 80% of eligible participants.

The final sample of 2,755 adolescents is representative of the population of students attending the three middle schools during the 8 years of the study. Participants had a mean age of 12.3 years and were in sixth (35%), seventh (32%), or eighth (34%) grade. Based on school records, 52% of participants were female and 48% were male, which were the only response options for sex. Participants identified their race and ethnicity in separate questions. Eighteen percent endorsed Hispanic/Latino/a ethnicity. With respect to race, 79% of participants identified their race as Black/African American (including 6% of the overall sample who endorsed African American race as well as one or more other racial identities), 6% identified as White, and 3% endorsed other racial identities. Additionally, 12% of participants, most of whom (79%) identified their ethnicity as Hispanic/Latino/a, did not endorse any race. In terms of participants' family structure, 15% reported living with both parents, 25% with a single mother and no other

adult, and 23% with a parent and stepparent. Over half (65%) of participants completed measures while enrolled in a school that was actively implementing the intervention.

Procedure

All procedures were approved by the university's institutional review board. Students were eligible to participate if they spoke English and were enrolled at one of the targeted middle schools. Study staff introduced the project to students individually or in groups during the school day, answered questions about the study and participation, and sent information packets home with the students. Study staff followed up with parents or legal guardians via phone call, home visits, or both as needed to discuss the research project, explained information on the consent forms, and answered any other questions.

The study used a planned missing design such that each participant was randomly assigned to complete two of the four waves during each year of middle school. In addition to providing data that is missing completely at random, this approach also reduces participant burden, fatigue, and attrition (Graham et al., 2001). Participants completed measures on audio-assisted computers at school during the academic year and at their homes during the summer. Participants received a $10 gift card each time they completed any portion of the survey. Surveys were collected from 95% of eligible students.

Although some students participated across several grades, four of the 10 cohorts were not in the study for all three grades. As a result, rather than attempt to model changes across all 12 waves, changes were examined across waves within each school year as a within-person factor (i.e., within-person changes across the fall, winter, spring, and summer waves), and differences across grades as a between-persons (i.e., group) factor. Because some students participated during more than one grade, a dataset was created for this study in which data from

one grade were randomly selected for each participant to avoid confounding between-person and within-person effects in the cross-grade comparisons.

Measures

Adolescent Problem Behavior

The Problem Behavior Frequency Scale-Adolescent Report (PBFS-AR; Farrell, Thompson, et al., 2020) is a self-report measure designed to assess adolescents' frequency of victimization, aggression, substance use, and delinquent behavior. The current study examined the 9-item Substance Use subscale, which assessed the use of gateway drugs (e.g., cigarettes, beer, wine, hard liquor, marijuana; Kandel, 1975), the 7-item Physical Aggression subscale, and the 5-item Delinquent Behavior subscale, which assessed nonviolent delinquent behaviors, such as theft and property damage. Participants rated the frequency of each behavior in the past 30 days on a 6-point scale, with 0 (*never*), 1 (*1–2 times*), 2 (*3–5 times*), 3 (*6–9 times*), 4 (*10–19 times*), 5 (*20 or more times*). Higher scores represented higher frequency of a problem behavior. Based on data from the same project that provided data for the current study, the PBFS-AR demonstrated concurrent validity with teacher- and self-report ratings of adolescents' behavior and strong measurement invariance over gender, grade, intervention, and time (Farrell, Goncy, et al., 2018a; Farrell, Thompson, et al., 2020). The alpha coefficients for the subscales ranged from .77 to .85.

Friends' Behavior

The Friends' Behavior Scale (Farrell et al., 2017) was used to measure the degree to which adolescents perceived that their close friends were engaging in delinquent and prosocial behavior. The first item on the scale asked participants to indicate the number of close friends they had (i.e., "friends who you see more than once a week and that you like doing things with").

The remaining 17 items were preceded with the following stem: "Now, we want to ask you about the behavior of these close friends. In particular, we want to know how many of them, as far as you know, have done any of these things in the last 3 months." Items were rated on a 5-point scale, ranging from 1 (*none of them*) to 5 (*all of them*). The Friends' Delinquent Behavior subscale is composed of 10 items that ask respondents to indicate how many of their friends had been involved in different delinquent activities and behavior (e.g., theft, vandalism, drug use, physical aggression). The 7-item Friends' Prosocial Behavior subscale asked adolescents how many of their friends engaged in prosocial activities, behaviors, and responses to potential conflict (e.g., helped out around the house, tried their best in school, solved most disagreements peacefully). Farrell et al. (2017) found support for the structure of the scale, with strong measurement invariance across gender, grades, settings, time, and intervention conditions. The measure has also demonstrated concurrent validity with adolescents' problem behavior and prosocial behavior (Farrell et al., 2017). The alpha coefficient for the friends' delinquent and prosocial behavior subscales were .84 and .85, respectively.

Promotive Factors

The 5-item Child Disclosure subscale of the Parenting Practices Scale (Kerr & Stattin, 2000) is a self-report measure of parental knowledge based on what is willingly disclosed by the child. A sample item is, "If you are out at night, when you get home, do you tell what you have done that evening?" Items were rated on a 5-point scale, ranging from higher knowledge/control to lower knowledge/control. Kerr and Statin (2000) previously validated the structure of the measure and found evidence of good test-retest reliability and inverse relations with problem behavior. The 9-item Presence of Caring subscale from the Individual Protective Factors Index (IPFI; Springer et al., 1997) was used to measure an individual's sense of support from an adult

(e.g., “There is a trustworthy adult I could turn to for advice if I were having problems.”). Respondents indicated how closely several statements matched their feelings, with “YES!” indicating the statement was very true for them; “yes” if it was somewhat true; “no” if it was somewhat false; and “NO!” if it was very false. The 6-item Positive Outlook subscale from the IPFI was used to measure an individual’s future orientation. A sample item is, “I think I will have a nice family when I get older.” Respondents indicated how closely several statements matched their feelings. A “YES!” is checked if the statement was very true for them; “yes” if it is somewhat true; “no” if it was somewhat false; and “NO!” if it was very false. The alpha coefficient for these scales ranged from .69 to .75 in the current study.

Analysis Plan

Each aim was addressed in the context of a one-sided cross-lagged regression model in which the two friends’ behavior variables were modeled as mediators of the relations between the three hypothesized promotive factors and changes in adolescents’ frequency of involvement in physical aggression, substance use, and delinquency (Figure 2). Relative to a bi-directional model, the use of a one-sided model reduced model complexity and more directly tested the hypothesis that the promotive factors would impact adolescents’ friends’ behavior and, in turn, mitigate problem behavior. Within this model, promotive factors were regressed on covariates at each wave, but were otherwise treated as exogenous variables in that they were allowed to correlate with each other across waves and with friends’ behavior variables at each prior wave. Each friends’ behavior variable was regressed on covariates, promotive factors, and friends’ behavior variables at the prior wave. The frequency of each adolescent problem behavior was regressed on the covariates, the three promotive factors, the two friends’ behavior variables, and the same adolescent problem behavior at the prior wave. Problem behavior variables were not

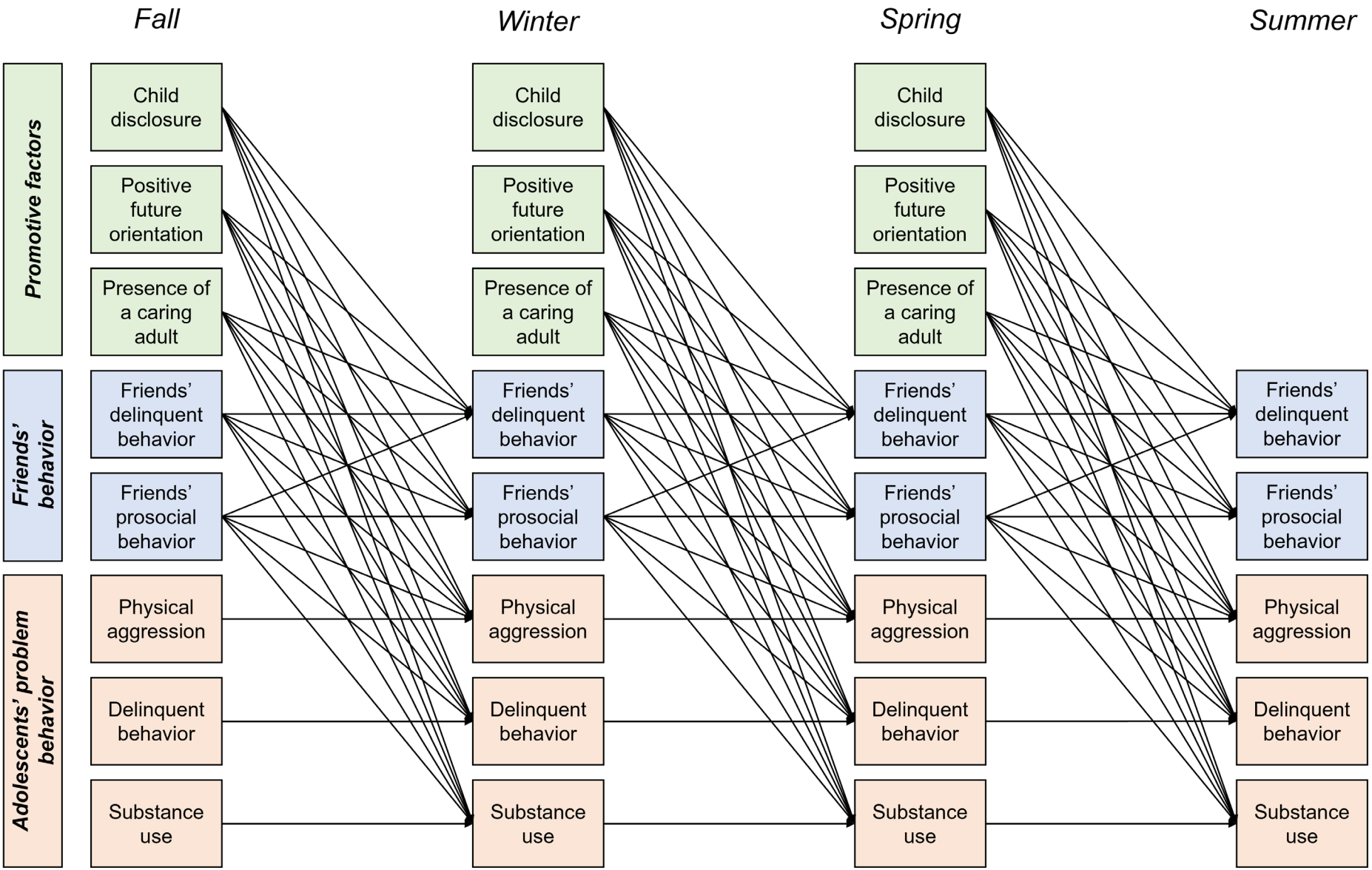
regressed on one another because the research questions do not require examination of the unique effects of the three problem behaviors. Variables assessed within the same wave were allowed to correlate with one another.

Analyses were conducted in Mplus version 8.4 (Muthén & Muthén, 2017). Maximum likelihood estimation with robust standard errors (MLR) and full information maximum likelihood (FIML) were used to account for non-normality and address missing data respectively. Scores on all constructs were multiplied by 10 to help stabilize estimates without affecting standardized coefficients or significance tests. The model included autoregressive effects and controlled for female sex, grade (dummy-coded with sixth grade as the reference group), and intervention status (with data collected during the baseline phase at each school as the reference). model fit was evaluated based on the root mean square error of approximation (RMSEA), comparative fit index (CFI), and Tucker-Lewis index (TLI) (Hu & Bentler, 1999). To test the consistency of effects across time, the scaled chi-square difference test (Satorra & Bentler, 2010) was used to compared an unconstrained model in which cross-wave regression coefficients were allowed to vary with a model in which cross-wave coefficients constrained to be equal across waves. Based on previous studies with this dataset (e.g., Farrell et al., in press), a model with second-order autoregressive effects (i.e., for each variable adding effects of its wave 1 and 2 values on its values at waves 3 and 4, respectively) was also examined to determine whether these effects would significantly improve the fit of the model.

For Aim 1, the unique effects of each friends' behavior variable behavior on each adolescent problem behavior were investigated using significance tests on partial regression coefficients that controlled for the other friends' behavior variable and covariates. Type I error was addressed by using a Wald test on the set of parameters as an omnibus test. The analytic

Figure 2

One-sided cross-lagged mediation model representing friends' behavior variables as mediators of the relation between promotive factors and problem behavior. Effects of covariates (i.e., sex, grade, intervention status) on each variable, correlations among all promotive factors, correlations of each promotive factor with friends' behavior and problem behavior variables at the same wave and all prior waves, and correlations among residuals for friends' and adolescents' behavior within the same wave were included in the model, but are not shown in the figure.



approach for Aim 2 was similar to Aim 1. A Wald test was used to determine the significance of the combined effects of hypothesized promotive factors on friends' delinquent behavior and friends' prosocial behavior. The unique effects of each hypothesized promotive factor on the friends' behavior variables were determined using significance tests on partial regression coefficients that controlled for the other promotive factors and covariates. The magnitudes of these coefficients were compared using the model constraint command. For Aim 3, the indirect effects of the promotive factors on adolescent problem behavior via friends' behavior were calculated within the context of the comprehensive model. Indirect effects through each mediator were estimated with bias corrected bootstrap estimates as implemented in Mplus (MacKinnon, 2017).

The effects of sex, grade, and intervention status were also investigated for each aim. This was accomplished by conducting separate multiple group analyses within the comprehensive model in which the grouping variable was either sex, grade, or intervention status. The scaled chi-square difference test (Satorra & Bentler, 2010) was used to determine whether constraining cross-wave coefficients or stability coefficients across groups significantly improved the fit of the model relative to a model in which these parameters were not constrained. If evidence of group differences in cross-wave or stability coefficients emerged, Wald tests identified parameters that differed significantly across groups and the model constraint command was used to examine the magnitude of these differences.

Results

Descriptive Statistics

Means and standard deviations are displayed in Table 1, and correlations among the measures across waves are reported in Table 2. Several variables were log-transformed due to

highly skewed and kurtotic distributions, including friends' delinquent behavior, physical aggression, delinquent behavior, and substance use. Log-transformed values were then rescaled to have the same mean and standard deviation as the original variable for ease of interpretation. Stability coefficients had moderate ($r \geq .30$) to large ($r \geq .50$; Cohen, 1988) effect sizes for the three hypothesized promotive factors (median $r = .57$), friends' behavior scales (median $r = .50$), and problem behavior scales (median $r = .56$). Most variables within the same wave were significantly correlated. Promotive factors generally had moderate to large positive correlations with one another (median $r = .28$). Presence of a caring adult and positive future orientation evidenced somewhat stronger positive correlations with one another (median $r = .38$) than the positive relations between child disclosure and the other promotive factors (median $r = .26$). Friends' delinquent behavior had small ($r \geq .10$; Cohen, 1988) negative correlations or near zero correlations with friends' prosocial behavior (median $r = -.09$). Physical aggression generally had moderate positive correlations with substance use (median $r = .31$) and delinquent behavior (median $r = .36$). Substance use also had moderate to high positive correlations with delinquent behavior (median $r = .35$).

Relations among promotive factors and problem behaviors were negative, ranging from near zero to moderate negative effects (median $r = -.16$). Notably, the problem behavior subscales generally exhibited the strongest inverse relations with child disclosure (median $r = -.22$). Friends' delinquent behavior primarily exhibited small inverse correlations with promotive factors (median $r = -.16$) and moderate to large positive correlations with problem behaviors (median $r = .34$). In contrast, friends' prosocial behavior had small to moderate positive correlations with promotive factors (median $r = .25$) and near zero or small inverse correlations with problem behaviors (median $r = -.07$).

Table 1

Descriptive statistics

Variable	*N*	Mean	*SD*	Skewness[a]	Kurtosis[a]
T1 Positive future orientation	1010	20.3	3.8	-1.0	0.3
T1 Presence of caring	995	28.7	4.8	0.1	-1.2
T1 Child disclosure	984	23.7	9.3	0.5	-0.3
T1 Friends' delinquent behavior	1079	11.2	2.7	3.2	11.7
T1 Friends' prosocial behavior	1083	23.8	8.0	0.1	-0.7
T1 Physical aggression	1116	13.9	5.3	1.9	4.0
T1 Substance use	1120	10.8	2.5	5.1	31.7
T1 Delinquent behavior	1116	11.4	3.4	3.5	15.1
T2 Positive future orientation	1252	20.4	3.6	-0.9	0.2
T2 Presence of caring	1229	28.8	4.9	-0.1	-1.0
T2 Child disclosure	1225	24.7	8.9	0.4	-0.2
T2 Friends' delinquent behavior	1361	11.2	3.1	4.2	23.1
T2 Friends' prosocial behavior	1365	23.5	8.1	0.1	-0.8
T2 Physical aggression	1412	13.7	5.5	2.0	4.3
T2 Substance use	1403	10.9	3.0	5.2	32.9
T2 Delinquent behavior	1405	11.4	3.8	3.9	18.0
T3 Positive future orientation	1167	20.1	3.8	-0.8	-0.2
T3 Presence of caring	1165	28.7	4.9	-0.1	-0.9
T3 Child disclosure	1137	24.6	9.6	0.5	-0.2
T3 Friends' delinquent behavior	1262	11.2	2.9	4.0	21.4
T3 Friends' prosocial behavior	1260	23.2	8.3	0.2	-0.8
T3 Physical aggression	1334	14.0	5.6	1.8	3.1
T3 Substance use	1321	10.9	2.7	4.5	25.1
T3 Delinquent behavior	1325	11.4	3.6	3.9	18.8
T4 Friends' delinquent behavior	834	11.0	2.3	2.8	8.3
T4 Friends' prosocial behavior	833	23.6	8.1	0.1	-0.8
T4 Physical aggression	854	13.2	4.7	1.9	3.7
T4 Substance use	849	10.6	2.1	4.8	27.7
T4 Delinquent behavior	854	11.2	3.0	4.1	22.5

Note. $N = 2{,}710$. *SD* = Standard Deviation.

[a]Values are based on raw data (prior to log transformation).

Table 2

Correlations among study variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. T1 Positive future orientation	—													
2. T1 Presence of caring	.47***	—												
3. T1 Child disclosure	.31***	.28***	—											
4. T1 Friends' delinquent behavior	-.18***	-.14***	-.28***	—										
5. T1 Friends' prosocial behavior	.30***	.36***	.29***	-.08**	—									
6. T1 Physical aggression	-.15***	-.08***	-.30***	.37***	-.06	—								
7. T1 Substance use	-.14***	-.14***	-.27***	.54***	-.09**	.35***	—							
8. T1 Delinquent behavior	-.20***	-.17***	-.28***	.48***	-.11***	.53***	.51***	—						
9. T2 Positive future orientation	.54***	.27***	.23***	-.09	.15**	-.11*	-.05	-.17**	—					
10. T2 Presence of caring	.30***	.52***	.20**	-.09	.29***	.02	-.11*	-.16**	.49***	—				
11. T2 Child disclosure	.26***	.19**	.61***	-.18**	.20**	-.18**	-.15**	-.10	.34***	.32***	—			
12. T2 Friends' delinquent behavior	-.20***	-.06	-.18**	.39***	-.05	.24***	.22***	.26***	-.17***	-.18***	-.24***	—		
13. T2 Friends' prosocial behavior	.17**	.24***	.19**	.02	.44***	-.04	-.01	-.03	.26***	.35***	.27***	.00	—	
14. T2 Physical aggression	-.13*	-.05	-.19***	.28***	-.04	.57***	.19***	.40***	-.18***	-.17***	-.29***	.46***	-.01	—
15. T2 Substance use	-.15**	-.09	-.18**	.43***	-.02	.29***	.47***	.34***	-.18***	-.18***	-.22***	.56***	-.03	.50***
16. T2 Delinquent behavior	-.17**	-.12*	-.13*	.33***	-.06	.31***	.22***	.57***	-.17***	-.17***	-.20***	.52***	.00	.55***
17. T3 Positive future orientation	.55***	.36***	.22***	-.13*	.22***	-.12*	-.15*	-.14*	.64***	.34***	.37***	-.15**	.23***	-.17***
18. T3 Presence of caring	.37***	.49***	.22***	-.19**	.25***	-.12*	-.16**	-.12*	.44***	.56***	.32***	-.18***	.32***	-.16**
19. T3 Child disclosure	.27***	.28***	.57***	-.22***	.32***	-.20**	-.20**	-.20**	.30***	.30***	.60***	-.16**	.21***	-.21***
20. T3 Friends' delinquent behavior	-.07	-.09	-.23***	.31***	-.13*	.23***	.27***	.20***	-.22***	-.12*	-.28***	.53***	-.04	.36***
21. T3 Friends' prosocial behavior	.25***	.25***	.25***	-.07	.42***	-.04	-.14*	-.09	.21***	.27***	.13**	-.12*	.46***	-.13**
22. T3 Physical aggression	-.13*	-.17**	.33***	.26***	-.10	.50***	.13*	.30***	-.15*	-.17***	-.24***	.39***	-.03	.62***
23. T3 Substance use	-.12*	-.14*	.25***	.33***	-.10	.26***	.49***	.44***	-.19***	-.13**	-.24***	.47***	-.04	.37***
24. T3 Delinquent behavior	-.16**	-.07	.21***	.35***	.00	.27***	.21***	.46***	-.24***	-.15**	-.24***	.45***	-.05	.37***
25. T4 Friends' delinquent behavior	-.10	-.17*	.31***	.56***	-.10	.10	.29***	.29***	-.10	-.18**	-.16*	.30***	-.10	.23***
26. T4 Friends' prosocial behavior	.22**	.26**	-.21*	-.05	.37***	-.16	-.16*	-.12	.21**	.29***	.22***	-.12*	.55***	-.02
27. T4 Physical aggression	-.09	-.20*	-.27**	.14	-.07	.40***	.21**	.20*	-.08	-.11	-.14*	.18**	.02	.52***
28. T4 Substance use	-.18*	-.17*	-.21*	.27**	-.07	.13	.32***	.17*	-.17**	-.19**	-.21**	.36***	-.03	.30***
29. T4 Delinquent behavior	-.17*	-.16*	-.16	.42***	-.04	.23**	.25**	.43***	-.12*	-.12	-.15*	.29***	-.02	.34***

Table 2 (con't.)

Variable	15	16	17	18	19	20	21	22	23	24	25	26	27	28
15. T2 Substance use	—													
16. T2 Delinquent behavior	.59***	—												
17. T3 Positive future orientation	-.16**	-.21***	—											
18. T3 Presence of caring	-.16**	-.20***	.49***	—										
19. T3 Child disclosure	-.20***	-.19***	.30***	.35***	—									
20. T3 Friends' delinquent behavior	.45***	.40***	-.15***	-.12***	-.26***	—								
21. T3 Friends' prosocial behavior	-.10*	-.10*	.26***	.36***	.28***	.00	—							
22. T3 Physical aggression	.40***	.40***	-.17***	-.15***	-.27***	.41***	-.03	—						
23. T3 Substance use	.52***	.41***	-.21***	-.14***	-.18***	.53***	-.04	.42***	—					
24. T3 Delinquent behavior	.42***	.58***	-.20***	-.15***	-.24***	.52***	-.04	.51***	.59***	—				
25. T4 Friends' delinquent behavior	.27***	.31***	-.19**	-.15*	-.23***	.55***	-.12*	.38***	.34***	.38***	—			
26. T4 Friends' prosocial behavior	-.05	-.08	.13*	.23***	.23***	-.17**	.56***	-.09	-.08	-.17**	-.08*	—		
27. T4 Physical aggression	.19**	.27***	-.10	-.10	-.28***	.34***	-.01	.57***	.24***	.40***	.34***	-.06	—	
28. T4 Substance use	.48***	.38***	-.13*	-.14*	-.18**	.38***	-.10	.22***	.44***	.29***	.47***	-.09*	.30***	—
29. T4 Delinquent behavior	.33***	.45***	-.17**	-.15*	-.24***	.31***	.01	.31***	.28***	.45***	.43***	-.09*	.50***	.45***

Note. $N = 2{,}710$.
* = $p < .05$, ** = $p < .01$, *** = $p < .001$.

Multivariate Mediation Model

The multivariate mediation model included all three promotive factors, both friends' behavior variables, and all three problem behavior variables (see Figure 2 for reference). The model with first- and second-order autoregressive effects significantly improved upon the fit of the model with only first-order autoregressive effects ($\Delta\chi^2[10] = 70.02$, $p < .001$). Constraining the cross-variable relations across waves did not significantly decrease the fit ($\Delta\chi^2[46] = 45.92$, $p = .476$). This model fit the data well (see Table 3). Standardized regression coefficients are reported in Table 4, and significant parameters are shown in Figure 3.

Friends' Behavior and Problem Behavior (Aim 1)

Support was not found for Hypothesis 1a. Friends' prosocial behavior was not significantly associated with subsequent changes in physical aggression (βs = .01, *p*s = .603), substance use (βs = .01 to .02, $p = .592$), or delinquent behavior (βs = .02, *p*s = .416). However, results supported the hypotheses that friends' delinquent behavior would be positively related to subsequent changes in each problem behavior, and that these longitudinal relations would be stronger than those between friends' prosocial behavior and the problem behavior variables (Hypotheses 1b and 1c, respectively). Friends' delinquent behavior was positively associated with subsequent changes in adolescents' frequency of physical aggression (βs = .09 to .11, *p*s = .002), substance use (βs = .19 to .28, *p*s < .001), and delinquent behavior (βs = .17 to .22, *p*s < .001).

Hypothesized Promotive Factors and Friends' Behavior (Aim 2)

There was partial support for Hypothesis 2, which stated that child disclosure, presence of a caring adult, and future orientation would be positively related to subsequent changes in friends' prosocial behavior and inversely related to changes in friends' delinquent behavior.

Table 3

Fit statistics for the multivariate mediation model

Model	χ2	SCF	df	RMSEA	CFI	TLI	Comparison	ΔCFI	Δχ2	df	*p*
1. Initial model with AR1 effects	263.30	1.50	156	.016	.986	.954	2 vs 1	.014	70.02	10	.000
2. AR2 effects added	148.54	1.42	146	.003	1.00	.999	2 vs 3	.047	45.92	46	.476
3. Cross-variable effects constrained across waves	194.53	1.39	192	.002	1.00	.999					

Note. N = 2,704. SCF = Scaling Correction Factor; df = degrees of freedom; RMSEA = Root Mean Square Error of Approximation; CFI = Comparative Fit Index; TLI = Tucker-Lewis Index.

Child disclosure was inversely related to changes in friends' delinquent behavior (βs = -.07 to -.09, *p*s = .004), but was not significantly associated with changes in friends' prosocial behavior (βs = .03, *p*s = .231). In contrast, presence of a caring adult was not significantly associated with changes in friends' delinquent behavior (βs = -.01, *p*s = .788), but was positively associated with changes in friends' prosocial behavior (βs = .07 to .08 across waves, *p*s = .008). Positive future orientation was not significantly associated with changes in friends' delinquent (βs = -.05 to -.06 across waves, *p*s = .084) or prosocial behavior (βs = .04 across waves, *p*s = .166).

Multivariate Mediation (Aim 3)

The mediating effects of friends' behavior on the relations between promotive factors and subsequent changes in the frequency of adolescent problem behavior were tested next. Bias-corrected bootstrap 95% confidence intervals (CIs) were examined to assess indirect effects. These indicate the extent to which the friends' behavior variables at wave *t+1* mediated the relation between promotive factors at wave *t* on the frequency of problem behavior variables at wave *t+2*. Total and specific indirect effects are reported in Table 5.

The results provide only partial support for Hypothesis 3. Estimates of the total indirect effects indicated that the effects of positive future orientation at waves 1 and 2 on changes in

adolescent problem behavior variables at waves 3 and 4 was not significantly mediated by friends' behavior at waves 2 and 3, respectively (see Table 5). Although it is not typical to interpret specific indirect effects when the total indirect effect is nonsignificant, indirect effects represent the product of the coefficients for two variables and are often quite small. As a result, the more typical approach may be too conservative in this case. Follow-up analyses revealed significant specific indirect effects of positive future orientation on each problem behavior via friends' delinquent behavior across waves 1 to 3 and 2 to 4, respectively (aggression: βs = -.004, 95% CI = [-.011, -.001] and [-.012, -.001]; substance use: β = -.011 and -.013, 95% CI = [-.025, -.001] and [-.030, -.001]; delinquent behavior: β = -.009 and -.010, 95% CI = [-.021, -.001] and [-.022, -.001]). In contrast, the specific indirect effects of positive future orientation on each problem behavior via friends' prosocial behavior across waves 1 to 3 and 2 to 4, respectively, did not reach significance (see Table 5). The absence of significant indirect effect reflects the nonsignificant relations between friends' prosocial behavior and subsequent changes in any of the three problem behaviors.

The total indirect effects of the presence of a caring adult on each problem behavior via friends' delinquent and prosocial behavior across waves 1 to 3 and 2 to 4, respectively, were not significant. Follow-up analyses indicated that the specific indirect effects of the presence of a caring adult on each problem behavior via friends' delinquent behavior and via friends' prosocial behavior both were not significant (see Table 5). The lack of significant indirect effects reflects the absence of relations between presence of a caring adult and changes in friends' delinquent behavior. Although the presence of a caring adult was related to friends' prosocial behavior, friends' prosocial behavior was not significantly associated with changes in problem behavior.

Table 4

Standardized regression coefficients representing relations between variables at Wave t (rows) and Wave t+1 (columns) and indirect effects for the multivariate mediation model.

	Wave *t*+1									
	Friends' delinquent behavior		Friends' prosocial behavior		Physical aggression		Substance use		Delinquent behavior	
Wave *t*	β	SE	β	SE	β	SE	β	SE	β	SE
Covariate predictors of Wave 1 variables										
Male	.05	.03	-.16***	.03	-.01	.03	.03	.03	.08**	.03
Grade 7	.06*	.03	-.06	.03	.04	.03	.07**	.03	.02	.03
Grade 8	.14***	.03	-.09**	.03	.11**	.03	.16***	.03	.03	.03
Intervention status	-.03	.03	.00	.03	-.06*	.03	.04	.03	-.02	.03
R^2	.02*	.01	.03**	.01	.01*	.01	.02**	.01	.01	.01
Wave 1 predictors of Wave 2 variables										
Lag 1 autoregressive effect	.42***	.08	.36***	.05	.49***	.04	.37***	.08	.44***	.05
Friends' delinquent behavior	[a]	[a]	-.04	.02	.08**	.03	.20***	.04	.16***	.03
Friends' prosocial behavior	-.02	.02	[a]	[a]	.01	.02	.01	.02	.02	.02
Future orientation	-.05	.03	.04	.03	.02	.03	-.05	.03	-.07*	.03
Presence of a caring adult	-.01	.02	.07**	.03	-.07**	.03	-.02	.03	-.01	.03
Child disclosure	-.07**	.03	.03	.03	-.08**	.03	-.05*	.03	-.05*	.03
Male	.00	.03	-.09***	.03	-.05*	.03	-.04	.03	.01	.03
Grade 7	.00	.03	-.08*	.03	.01	.03	.05	.03	-.04	.03
Grade 8	.07*	.03	-.01	.03	-.03	.03	.03	.03	-.05	.03
Intervention status	-.03	.03	-.05	.03	-.04	.03	.00	.03	.01	.03
R^2	.23***	.07	.21***	.04	.32***	.04	.30***	.08	.33***	.06
Wave 2 predictors of Wave 3 variables										
Lag 1 autoregressive effect	.34***	.09	.29***	.06	.41***	.06	.14	.11	.30***	.08
Lag 2 autoregressive effect	.27**	.10	.27***	.07	.25***	.07	.41***	.11	.24*	.11
Friends' delinquent behavior	[a]	[a]	-.04**	.02	.08**	.03	.22***	.04	.18***	.04
Friends' prosocial behavior	-.02	.02	[a]	[a]	.01	.02	.01	.02	.02	.03
Future orientation	-.05	.03	.04	.03	.02	.03	-.04	.03	-.07*	.03
Presence of a caring adult	-.01	.02	.07**	.03	-.07**	.03	-.02	.03	-.01	.03
Child disclosure	-.07**	.02	.03	.02	-.07**	.02	-.05*	.03	-.06*	.03
Male	.04	.03	-.11***	.03	-.04	.03	-.02	.02	.01	.03
Grade 7	-.04	.03	.01	.03	-.05	.03	-.03	.03	-.02	.03
Grade 8	-.01	.03	.07*	.03	-.04*	.03	-.08*	.03	-.07*	.03
Intervention status	-.02	.03	.03	.03	-.03	.03	-.08**	.03	-.03	.03
R^2	.33***	.06	.31***	.04	.43***	.04	.40***	.08	.38***	.06

Table 4 con't.

	Friends' delinquent behavior		Friends' prosocial behavior		Physical aggression		Substance use		Delinquent behavior	
	β	SE	β	SE	β	SE	β	SE	B	SE
Wave 3 predictors of Wave 4 variables										
Lag 1 autoregressive effect	.47***	.10	.36***	.06	.34***	.09	.16	.14	.17	.12
Lag 2 autoregressive effect	.19	.12	.33***	.07	.27**	.09	.24	.13	.29**	.10
Friends' delinquent behavior	[a]	[a]	-.04**	.02	.09**	.03	.25***	.05	.19***	.04
Friends' prosocial behavior	-.02	.03	[a]	[a]	.01	.03	.02	.03	.02	.03
Future orientation	-.06	.04	.04	.03	.02	.03	-.06	.04	-.08*	.03
Presence of a caring adult	-.01	.03	.08**	.03	-.07**	.03	-.03	.03	-.01	.03
Child disclosure	-.09**	.03	.03	.03	-.09**	.03	-.07*	.03	-.07*	.03
Male	-.03	.03	-.07*	.03	-.01	.03	-.01	.03	-.02	.03
Grade 7	.09**	.03	.01	.04	.01	.04	.08*	.03	-.03	.04
Grade 8	.02	.04	.05	.04	-.07*	.03	.04	.04	-.05	.04
Intervention status	.04	.03	.01	.03	.02	.03	-.01	.03	-.03	.03
R^2	.40***	.07	.45***	.05	.39***	.04	.32***	.06	.31***	.05

Note. N = 2,707. Each column represents the coefficients for predicting the variable listed in the column heading.
[a]Coefficient for this variable reported under autoregressive lag 1 effect.
*p < .05, **p < .01, ***p < .001.

Figure 3

One-sided cross-lagged mediation model representing friends' behavior variables as mediators of the relation between promotive factors and adolescent problem behaviors. Effects of covariates (i.e., sex, grade, intervention status) on each variable, correlations among all promotive factors, correlations of each promotive factor with friends' behavior and problem behavior variables at the same wave and all prior waves, and correlations among residuals for friends' and adolescents' behavior within the same wave will be included in the model,but are not shown in the figure. Non-significant parameters are indicated by a grey dotted line.

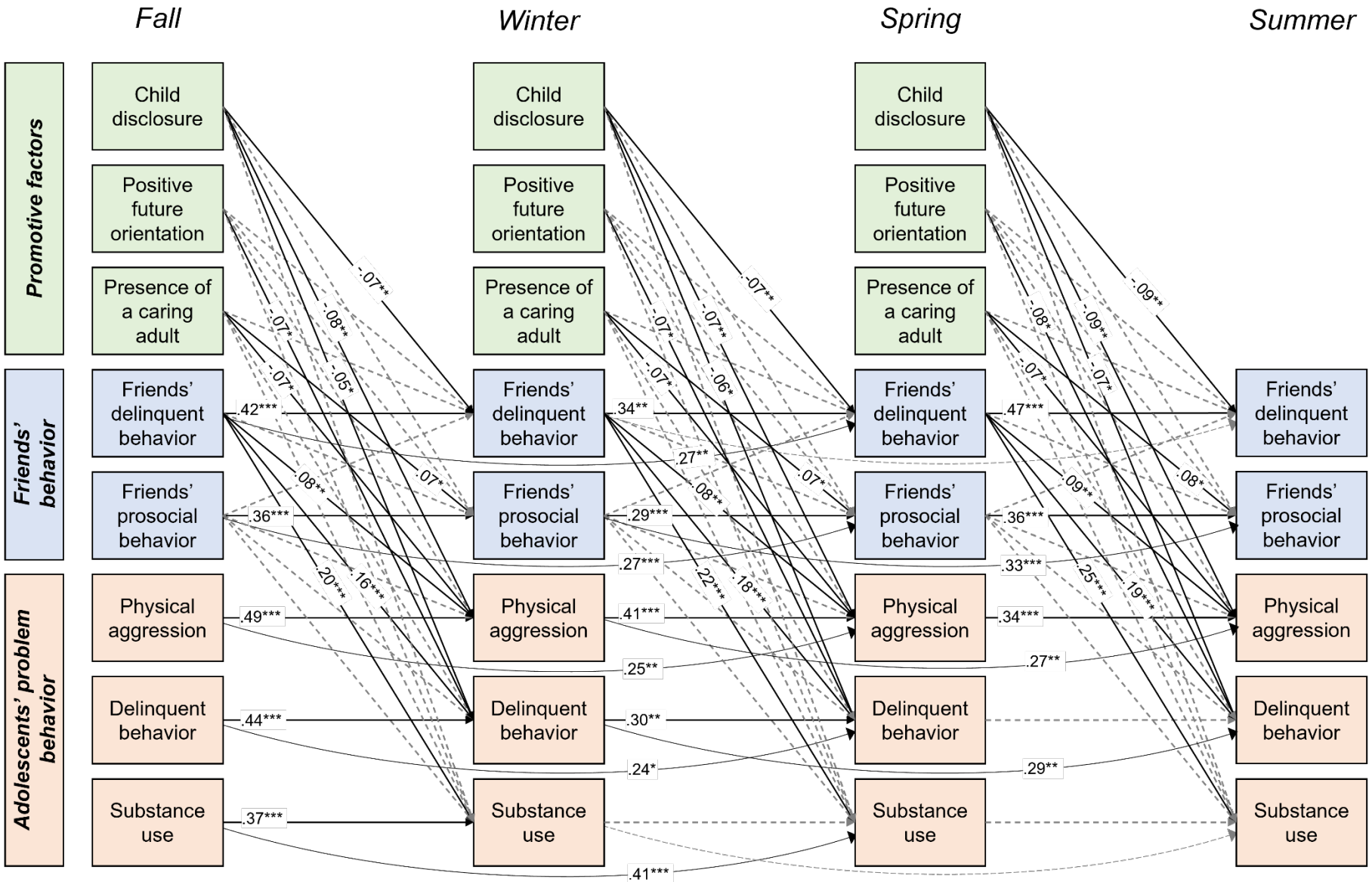


Table 5

Total and specific indirect effect estimates for promotive factors on problem behavior via friends' behavior

	Total indirect effect		T2 Friends' delinquent behavior		T2 Friends' prosocial behavior	
	β	95% CI [LL, UL]	β	95% CI [LL, UL]	β	95% CI [LL, UL]
T1 Positive future orientation --> T3 Physical aggression	-.004	[-.010, .001]	-.004	[-.011, -.001]	.000	[-.001, .004]
T1 Positive future orientation --> T3 Substance use	-.011	[-.025, .000]	-.011	[-.025, -.001]	.000	[-.001, .003]
T1 Positive future orientation --> T3 Delinquent behavior	-.008	[-.020, .001]	-.009	[-.021, -.001]	.001	[.000, .004]
T1 Presence of a caring adult --> T3 Physical aggression	.000	[-.004, .005]	.000	[-.004, .002]	.001	[-.002, .005]
T1 Presence of a caring adult --> T3 Substance use	.000	[-.010, .009]	-.001	[-.011, .007]	.001	[-.001, .005]
T1 Presence of a caring adult --> T3 Delinquent behavior	.000	[-.007, .008]	-.001	[-.008, .006]	.001	[-.001, .006]
T1 Child disclosure --> T3 Physical aggression	-.005	[-.011, -.001]	-.006	[-.012, -.002]	.000	[.000, .003]
T1 Child disclosure --> T3 Substance use	-.015	[-.027, -.006]	-.015	[-.028, -.006]	.000	[.000, .003]
T1 Child disclosure --> T3 Delinquent behavior	-.012	[-.022, -.004]	-.013	[-.023, -.005]	.001	[.000, .004]
	Total indirect effect		T3 Friends' delinquent behavior		T3 Friends' prosocial behavior	
	β	95% CI [LL, UL]	β	95% CI [LL, UL]	β	95% CI [LL, UL]
T2 Positive future orientation --> T4 Physical aggression	-.004	[-.011, .001]	-.004	[-.012, -.001]	.000	[-.001, .004]
T2 Positive future orientation --> T4 Substance use	-.013	[-.029, .000]	-.013	[-.030, -.001]	.001	[-.001, .004]
T2 Positive future orientation --> T4 Delinquent behavior	-.009	[-.021, .001]	-.010	[-.022, -.001]	.001	[.000, .005]
T2 Presence of a caring adult --> T4 Physical aggression	.000	[-.005, .006]	-.001	[-.005, .003]	.001	[-.002, .005]
T2 Presence of a caring adult --> T4 Substance use	-.001	[-.012, .011]	-.002	[-.013, .009]	.001	[-.002, .006]
T2 Presence of a caring adult --> T4 Delinquent behavior	.000	[-.008, .009]	-.001	[-.009, .007]	.002	[-.001, .007]
T2 Child disclosure --> T4 Physical aggression	-.006	[-.012, -.001]	-.006	[-.013, -.002]	.000	[.000, .004]
T2 Child disclosure --> T4 Substance use	-.018	[-.032, -.007]	-.018	[-.032, .007]	.000	[.000, .004]
T2 Child disclosure --> T4 Delinquent behavior	-.013	[-.024, -.004]	-.013	[-.025, -.006]	.001	[.000, .004]

Note. N = 2,707. SE = Standard error; 95% CI = 95% Confidence interval; LL = Lower limit; UL = Upper limit.

Estimates of the total indirect effects of child disclosure on each adolescent problem behavior indicated that one or both friends' behavior variables significantly mediated these effects across waves 1 to 3 and 2 to 4, respectively (aggression: β = -.005 and -.006, 95% CI = [-.011, -.001] and [-.012, -.001]; substance use: β = -.015 and -.018, 95% CI = [-.027, -.006] and [-.032, -.007]; delinquent behavior: β = -.012 and -.013, 95% CI = [-.022, -.004] and [-.024, -.004]). Follow-up analyses of these total indirect effects indicated that there were significant specific indirect effects via friends' delinquent behavior across waves 1 to 3 and 2 to 4, respectively, on aggression (βs = -.006, 95% CI = [-.012, -.002] and [-.013, -.002]), substance use (β = -.015 and -.018, 95% CI = [-.028, -.006] and [-.032, .007]), and delinquent behavior (βs = -.013, 95% CI = [-.023, -.005] and [-.025, -.006]). In contrast, the specific indirect effects of child disclosure on problem behavior via friends' prosocial behavior were not significant (see Table 5), which is due to the nonsignificant relations between child disclosure and changes in friends' prosocial behavior as well as between friends' prosocial behavior and changes in each problem behavior.

Sensitivity Analyses

Sensitivity analyses were conducted to determine whether the absence of some hypothesized indirect effects was the result of shared variance among the promotive factors or friends' behavior variables. Indirect effects were tested within simple mediation models that included one promotive factor, one friends' behavior variable, and all three problem behavior variables in each model and allowed all path coefficients to vary across waves. These models had an acceptable fit based on the RMSEA (all ≤ .02), CFI (all > .97), and TLI (all > .92) (see Table 6 for all fit indices). After adding in second-order autoregressive effects, the fit of each model significantly improved based on the scaled chi-square difference test at $p < .001$ (Satorra &

Bentler, 2010). These models showed improvement in all three fit indices (RMSEAΔ = -.007 to -.005; CFIΔ = .008 to .015; and TLIΔ = .021 to .038). Finally, models with cross-variable paths constrained across waves did not significantly decrease the fit based on the scaled chi-square test and indicated minimal change in the fit indices. These models fit the data very well (RMSEAs < .02, CFIs > .98 and TLIs > .96). As a result, models with second-order autoregressive effects and constrained stability coefficients provided the basis for evaluating mediation effects. Standardized regression coefficients for the relations between Wave 1 and Wave 2 variables within each of the six models are reported in Table 7.

Future Orientation Models

The first model tested the mediating effects of friends' delinquent behavior on the relations between future orientation and subsequent changes in the frequency of physical aggression, substance use, and delinquent behavior. In terms of direct effects, positive future orientation was inversely associated with subsequent changes in friends' delinquent behavior (βs = -.10 to -.08 across waves, p = .001). Friends' delinquent behavior was positively related to adolescents' frequency of physical aggression (βs = .09 to .11, p = .002), substance use (βs = .19 to .28, p < .001), and delinquent behavior (βs = .17 to .22, p < .001) over time. Bias-corrected bootstrap 95% confidence intervals identified significant indirect effects of future orientation across waves 1 to 3 and 2 to 4, respectively, on physical aggression (β = -.007 and -.009, 95% CI = [-.015, -.003] and [-.018, -.004]), respectively), substance use (β = -.018 and -.023, 95% CI = [-.034, -.009] and [-.043, -.011], respectively), and delinquent behavior (β = -.016 and -.017, 95% CI= [-.029, -.008] and [-.032, -.009], respectively) via friends' delinquent behavior.

Table 6

Fit statistics for simple mediation models with one promotive factor, one friends' behavior variable, and all three problem behavior variables.

Model label	Description	χ2	SCF	df	RMSEA	CFI	TLI	Comparisons	ΔCFI	Δχ2	df	*p*
Friends' delinquent behavior as a mediator of relations between future orientation and problem behavior												
PO-FD1	Unconstrained	134.05	2.22	87	.014	.987	.963	PO-FD2 vs PO-FD1	.009	26.59	8	.001
PO-FD2	AR2 effects added	92.30	2.02	79	.008	.996	.989	PO-FD2 vs PO-FD3	-.001	13.39	14	.496
PO-FD3	Cross-var effects constrained across waves	105.65	2.03	93	.007	.997	.991					
Friends' prosocial behavior as a mediator of relations between future orientation and problem behavior												
PO-FP1	Unconstrained	182.50	1.82	87	.020	.974	.927	PO-FP2 vs PO-FP1	.015	35.74	8	< .001
PO-FP2	AR2 effects added	120.86	1.62	79	.014	.989	.965	PO-FP2 vs PO-FP3	.000	10.59	14	.718
PO-FP3	Cross-var effects constrained across waves	133.61	1.56	93	.013	.989	.971					
Friends' delinquent behavior as a mediator of relations between presence of a caring adult and problem behavior												
PC-FD1	Unconstrained	137.44	2.17	87	.015	.986	.961	PC-FD2 vs PC-FD1	.010	26.96	8	.001
PC-FD2	AR2 effects added	94.33	1.97	79	.008	.996	.987	PC-FD2 vs PC-FD3	.001	15.57	14	.340
PC-FD3	Cross-var effects constrained across waves	109.95	1.95	93	.008	.995	.988					
Friends' prosocial behavior as a mediator of relations between presence of a caring adult and problem behavior												
PC-FP1	Unconstrained	190.84	1.77	87	.021	.973	.923	PC-FP2 vs PC-FP1	.014	35.50	8	< .001
PC-FP2	AR2 effects added	129.15	1.56	79	.015	.987	.959	PC-FP2 vs PC-FP3	-.001	7.28	14	.924
PC-FP3	Cross-var effects constrained across waves	140.48	1.49	93	.014	.988	.967					
Friends' delinquent behavior as a mediator of relations between child disclosure and problem behavior												
CD-FD1	Unconstrained	133.86	2.18	87	.014	.988	.966	CD-FD2 vs CD-FD1	.008	25.07	8	.002
CD-FD2	AR2 effects added	94.64	1.98	79	.009	.996	.987	CD-FD2 vs CD-FD3	.000	13.38	14	.497
CD-FD3	Cross-var effects constrained across waves	108.12	1.97	93	.008	.996	.990					
Friends' prosocial behavior as a mediator of relations between child disclosure and problem behavior												
CD-FP1	Unconstrained	180.29	1.78	87	.020	.976	.932	CD-FP2 vs CD-FP1	.014	35.02	8	< .001
CD-FP2	AR2 effects added	119.49	1.58	79	.014	.990	.967	CD-FP2 vs CD-FP3	.000	8.24	14	.876
CD-FP3	Cross-var effects constrained across waves	130.50	1.52	93	.012	.990	.974					

Note. *N* = 2,704. SCF = Scaling Correction Factor; df = degrees of freedom; RMSEA = Root Mean Square Error of Approximation; CFI = Comparative Fit Index; TLI = Tucker-Lewis Index; AR(2) = lag 2 autoregressive effects.

When friends' prosocial behavior was examined as the mediator, positive future orientation was positively related to subsequent changes in friends' prosocial behavior (βs = .08 to .09 across waves, $p < .001$). Friends' prosocial behavior did not significantly predict changes in any of the problem behavior variables (βs = -.02 to .01, *ps* = .435 to .828 across constructs). Consequently, there were no significant indirect effects of future orientation across waves 1 to 3 and across waves 2 to 4, respectively, on physical aggression (β = -.001 and -.002, 95% CI = [-.005, .001] and [-.006, .002]), substance use (β =-.001 and -.002, 95% CI = [-.005, .002] and [-.007, .002]), and delinquent behavior (β = 0 and .001, 95% CI = [-.003, .004] and [-.003, .005]) via friends' prosocial behavior.

These results indicate that positive future orientation is related to changes in each peer variable, and these changes are mediated by friends' delinquent behavior. Mediation was not found through friends' prosocial behavior because it was not significantly related to subsequent changes in any of the problem behavior variables.

Presence of a Caring Adult Models

The presence of a caring adult was inversely associated with subsequent changes in friends' delinquent behavior (βs = -.06 to -.07 across waves, *p*s = .003). Additionally, friends' delinquent behavior was positively related to changes in adolescents' frequency of physical aggression (βs = .09 to .10, *p*s = .002), substance use (βs = .20 to .29, $ps < .001$), and delinquent behavior (βs = .17 to .22, $ps < .001$). There were significant indirect effects of presence of a caring adult across waves 1 to 3 and across waves 2 to 4, respectively, on physical aggression (β = -.005 and -.006, 95% CI = [-.011, -.002] and [-.013, -.003]), substance use (β = -.013 and -.017, 95% CI = [-.025, -.006] and [-.033, -.008]), and delinquent behavior (β = -.011 and -.013, 95% CI= [-.021, -.005] and [-.025, -.006]) via friends' delinquent behavior.

In the model with friends' prosocial behavior as the mediator, presence of a caring adult was positively related to subsequent changes in friends' prosocial behavior (βs = .10 to .11 across waves, *p*s < .001). However, friends' prosocial behavior did not significantly predict changes in any of the problem behavior variables (βs = -.07 to -.001, *ps* = .612 to .958 across constructs). As a result, there were no significant indirect effects of presence of a caring adult across waves 1 to 3 and across waves 2 to 4, respectively, on physical aggression (βs = 0, 95% CI = [-.004, .004] and [-.005, .005]), substance use (β =-.001 and -.002, 95% CI = [-.006, .003] and [-.008, .004]), and delinquent behavior (βs = 0, 95% CI = [-.004, .005] and [-.005, .006]) via friends' prosocial behavior.

Overall, the presence of a caring adult was related to changes in each peer variable. Friends' delinquent behavior significantly mediated these relations. However, similar to the models for future orientation, friends' prosocial behavior did not mediate relations between presence of a caring adult and problem behavior because it was not significantly related to changes in problem behavior.

Child Disclosure Models

Child disclosure was inversely associated with subsequent changes in friends' delinquent behavior (βs = -.10 to -.12 across waves, $p < .001$). Friends' delinquent behavior predicted subsequent changes in adolescents' frequency of physical aggression (βs = .07 to .09, $p = .010$), substance use (βs = .18 to .27, $p < .001$), and delinquent behavior (βs = .16 to .20, $p < .001$). There were significant indirect effects of child disclosure across waves 1 to 3 and across waves 2 to 4, respectively, on physical aggression (β = -.007 and -.008, 95% CI = [-.014, -.003] and [-.016, -.003]), substance use (β = -.021 and -.026, 95% CI = [-.035, -.012] and [-.044, -.015]), and

Table 7

Standardized regression coefficients representing relations between Wave 1 (rows) and Wave 2 (columns) variables for simple mediation models

	Wave 2 variables									
	Friends' delinquent behavior		Friends' prosocial behavior		Physical aggression		Substance use		Delinquent behavior	
Wave 1 variables	β	SE	β	SE	β	SE	β	SE	β	SE
Friends' delinquent behavior as mediator of relations between future orientation and problem behavior										
Lag 1 autoregressive effect	.44***	.08			.47***	.05	.33**	.11	.44***	.06
Friends' delinquent behavior	[a]	[a]			.09**	.03	.19***	.04	.17***	.04
Future orientation	-.08**	.03			-.03	.02	-.08**	.03	-.08**	.03
Male	.01	.03			-.03	.03	-.03	.03	.01	.03
Grade 7	.01	.03			.02	.03	.05	.03	-.04	.03
Grade 8	.08*	.03			-.01	.03	.04	.03	-.05	.03
Intervention status	-.03	.03			-.05	.03	.00	.03	.01	.03
R^2	.23**	.08			.28***	.05	.24*	.12	.32***	.07
Friends' prosocial behavior as mediator of relations between future orientation and problem behavior										
Lag 1 autoregressive effect			.38***	.05	.49***	.05	.38**	.13	.47***	.07
Friends' prosocial behavior			[a]	[a]	-.02	.02	-.02	.02	.01	.02
Future orientation			.09***	.02	-.05*	.02	-.10**	.03	-.11***	.03
Male			-.10***	.03	-.03	.03	-.02	.03	.02	.03
Grade 7			-.09**	.03	.03	.03	.07*	.03	-.02	.03
Grade 8			-.02	.03	-.01	.03	.06	.03	-.03	.03
Intervention status			-.05	.03	-.06*	.03	-.01	.03	.00	.03
R^2			.21***	.04	.26***	.05	.17	.10	.26***	.06
Friends' delinquent behavior as mediator of relations between presence of a caring adult and problem behavior										
Lag 1 autoregressive effect	.44***	.08			.47***	.05	.33**	.11	.44***	.06
Friends' delinquent behavior	[a]	[a]			.09**	.03	.20***	.04	.17***	.04
Presence of a caring adult	-.06**	.02			-.06**	.02	-.05*	.02	-.04*	.02
Male	.01	.03			-.04	.03	-.03	.03	.01	.03
Grade 7	.01	.03			.02	.03	.05	.03	-.04	.03
Grade 8	.08*	.03			-.02	.03	.04	.03	-.05	.03
Intervention status	-.03	.03			-.05	.03	.01	.03	.01	.03
R^2	.22**	.08			.28***	.05	.23*	.11	.31***	.07

Table 7 con't.

	Wave 2 variables									
	Friends' delinquent behavior		Friends' prosocial behavior		Physical aggression		Substance use		Delinquent behavior	
Wave 1 variables	β	SE	β	SE	β	SE	β	SE	β	SE
Friends' prosocial behavior as mediator of relations between presence of a caring adult and problem behavior										
Lag 1 autoregressive effect			.36***	.05	.50***	.05	.37**	.12	.48***	.07
Friends' prosocial behavior			[a]	[a]	.00	.02	-.01	.02	.00	.02
Presence of a caring adult			.10***	.02	-.08**	.02	-.07**	.02	-.06*	.03
Male			-.09**	.03	-.04	.03	-.03	.03	.01	.03
Grade 7			-.09**	.03	.03	.03	.07*	.03	-.02	.03
Grade 8			-.02	.03	-.01	.03	.06	.03	-.03	.03
Intervention status			-.05	.03	-.05	.03	.00	.03	.00	.03
R^2			.20***	.04	.27***	.05	.16	.09	.25***	.06
Friends' delinquent behavior as mediator of relations between child disclosure and problem behavior										
Lag 1 autoregressive effect	.42***	.08			.47***	.05	.33**	.11	.44***	.06
Friends' delinquent behavior	[a]	[a]			.07*	.03	.18***	.04	.16***	.04
Child disclosure	-.10***	.02			-.08***	.02	-.07**	.02	-.07**	.02
Male	.01	.03			-.04	.03	-.03	.03	.01	.03
Grade 7	.00	.03			.02	.03	.05	.03	-.04	.03
Grade 8	.07*	.03			-.02	.03	.03	.03	-.05	.03
Intervention status	-.02	.03			-.04	.03	.01	.03	.02	.03
R^2	.23**	.07			.29***	.05	.24*	.11	.32***	.07
Friends' prosocial behavior as mediator of relations between child disclosure and problem behavior										
Lag 1 autoregressive effect			.38***	.05	.48***	.05	.37**	.12	.47***	.07
Friends' prosocial behavior			[a]	[a]	.00	.02	-.01	.02	.01	.02
Child disclosure			.07**	.02	.10***	.02	.11***	.03	.12***	.03-
Male			-.10***	.03	-.03	.03	-.03	.03	.02	.03
Grade 7			-.08**	.03	.02	.03	.06*	.03	-.03	.03
Grade 8			-.02	.03	-.01	.03	.05	.03	-.03	.03
Intervention status			-.06*	.03	-.04	.03	.01	.03	.02	.03
R^2			.20***	.04	.28***	.05	.18	.10	.26***	.07

Note. N = 2,707. X = predictor; M = mediator. R^2 values are for Wave 2 variables listed in the corresponding column headings.

[a]Coefficient for this variable reported under autoregressive lag 1 effect.

*$p < .05$, **$p < .01$, ***$p < .001$.

delinquent behavior (β = -.018 and -.020, 95% CI= [-.030, -.010] and [-.033, -.011]) via friends' delinquent behavior.

For the model in which friends' prosocial behavior served as the mediator, child disclosure was positively related to subsequent changes in friends' prosocial behavior (βs = .07 across waves, p = .002). Friends' prosocial behavior did not significantly predict changes in any of the problem behavior variables (βs = -.003 to -.07, *ps* = .687 to .900 across constructs, and thus there were no significant indirect effects of child disclosure on physical aggression (βs = 0, 95% CI = [-.003, .002] and [-.003, .003]), substance use (βs = -.001, 95% CI = [-.004, .002] and [-.005, .003]), and delinquent behavior (βs = .001, 95% CI = [-.002, .004] and [-.002, .005]) via friends' prosocial behavior.

These results indicate that child disclosure was related to changes in each peer variable. Friends' delinquent behavior significantly mediated these relations. As in the other models, friends' prosocial behavior did not mediate relations between child disclosure and problem behavior because it was not significantly related to subsequent changes in any of the problem behavior variables.

Multiple Group Analyses

Multiple group analyses were conducted in the context of the multivariate mediation model (with all three promotive factors, both friends' behavior variables, and three problem behavior variables; see Figure 2) to determine the consistency of findings across grades, intervention condition, and sex. For each grouping variable (e.g., sex), the fit of a model that allowed parameters to vary across groups (e.g., male and female adolescents) was compared with a model in which path coefficients were constrained across groups and waves (see Table 8). In both models, each parameter was constrained across waves. MLR was used for the models in

which sex was the grouping variable. For the models with grade or intervention status as the grouping variable, I used maximum likelihood estimation (i.e., ML) due to issues that arose while using maximum likelihood estimation with robust standard errors (i.e., MLR). Thus, although the chi-square difference test was considered in model evaluation, it was interpreted with caution in these models. ML tends to underestimate standard errors for parameters when the data are not normally distributed, leading to an increased likelihood of Type I errors.

In the multiple group model with intervention status as the grouping variable, the constrained model did not significantly decrease the fit compared with the unconstrained model ($\Delta\chi^2(23) = 33.67$, $p = .070$), and had an acceptable fit and fewer parameters than the unconstrained model. This indicates that there were no significant differences across intervention conditions in the model parameters. No hypotheses were made regarding differences by intervention status.

For the multiple group by grade models, the chi-square difference test indicated that the unconstrained model fit the data significantly better than the constrained model ($\Delta\chi^2(46) = 67.41$, $p = .022$). However, both models had nearly identical fit based on the RMSEA, TLI, and CFI (e.g., ΔCFI < .01; Cheung & Rensvold, 2002). The constrained model was therefore considered the most optimal model because it had fewer parameters. Overall, there was not strong evidence of grade differences, providing support for the hypothesis that the longitudinal relation between friends' delinquent behavior and adolescents' physical aggression
would not differ by grade (Hypothesis 4a). However, findings did not support Hypothesis 4b regarding grade differences in the effect of friends' behavior on delinquency and substance use.

The multiple group by sex models yielded a similar pattern of fit. The chi-square difference test provided support for the unconstrained model ($\Delta\chi^2(23) = 60.69$, $p < .001$), yet fit

Table 8

Fit indices for multivariate multiple group mediation models by sex, grade, and intervention status.

Model	Parameters	χ2	SCF	df	RMSEA	CFI	TLI	Comparison	ΔCFI	Δχ2	df	*p*
Multivariate multiple group models by sex												
1. Unconstrained across sex	718	473.52	1.25	384	.013	.989	.972	Model 2 vs 1	.003	60.69	23	.000
2. Constrained across sex	695	521.86	1.22	407	.014	.986	.966					
Multivariate multiple group models by grade												
1. Unconstrained across grades	990	889.62	[a]	576	.025	.972	.932	Model 2 vs 1	.002	67.41	46	.021
2. Constrained across grades	944	957.03	[a]	622	.024	.970	.932					
Multivariate multiple group models by intervention status												
1. Unconstrained across intervention status	718	718.00	[a]	384	.023	.974	.934	Model 2 vs 1	.001	33.67	23	.070
2. Constrained across intervention status	695	695.00	[a]	407	.023	.973	.935					

Note. N = 2,707. Multiple group constrained models held all effects except covariates constant across groups and waves. RMSEA = root mean square error of approximation; CFI = comparative fit index; TLI= Tucker-Lewis Fit index; AR2 = lag 2 autoregressive effects.
[a] SCF not reported for models that used ML estimation.

indices were very similar between models (i.e., ΔRMSEA = .001; ΔCFI = .003; ΔTLI = .006). Moreover, the constrained model is more parsimonious with 23 fewer parameters and has excellent fit by most criteria. Overall, the results did not provide strong evidence of sex differences.

Discussion

Though researchers have studied delinquent peer influence for decades, major gaps remain in our understanding of the influence of prosocial peers, peer influence across short time intervals (e.g., less than one year), and factors that predict adolescents' affiliation with delinquent or prosocial peer groups (see Prinstein & Giletta, in press). These gaps hamper our ability to develop interventions that disrupt peer selection and influence processes implicated in the development of problem behavior. This study aimed to address the aforementioned gaps in the literature by identifying promotive factors that enhance prosocial peer affiliation and reduce delinquent peer affiliation and, in turn, reduce problem behavior among a predominantly African American sample of urban middle school students from whom data were collected quarterly.

Friends' Behavior and Problem Behavior (Aim 1)

The first aim of this study was to examine the influences of friends' delinquent and prosocial behavior on changes in early adolescents' problem behavior. Friends' delinquent behavior was positively associated with changes in adolescents' aggression, substance use, and delinquent behavior. This is consistent with a large body of literature documenting longitudinal relations between friends' delinquent behavior and different forms of adolescent problem behavior (e.g., Gallupe et al., 2019; Kornienko et al., 2019; Logis et al., 2013; Poulin et al., 2011). Moreover, this finding provides support for theories of peer influence.

In contrast, friends' prosocial behavior was not associated with changes in adolescent problem behavior. Lee et al. (2017) similarly found that friends' delinquent behavior, but not friends' prosocial behavior, was significantly associated with changes in adolescent substance use. However, the findings differ from prior cross-sectional (Coyle et al., 2016) and longitudinal (Walters, 2020) studies that found evidence of relations between friends' prosocial behavior and adolescent substance use. Walters (2020) relied on dichotomized measures of property offending and substance use and used a somewhat unusual analytic approach to examine the promotive effect of friends' prosocial behavior on problem behavior (i.e., compared the odds of property offending and substance use between those who scored in the upper quartile of friends' prosocial behavior and the rest of the sample). Coyle et al.'s (2016) study was cross-sectional and used hierarchical regression to determine the effect of prosocial peer influence on adolescents' substance use. Lee et al. (2017) used an analytic approach that was more similar to the current study (i.e., longitudinal structural equation modeling with continuous variables), although friends' behavior and substance use were assessed three years apart. Overall, it seems likely that the variations in the design of these studies play a role in the discrepant findings. It is notable that Walters (2020) and Coyle et al. (2016) accounted for several constructs that were not considered in the current study or Lee et al. (2017), such as involvement in unsupervised routine activities, personal and family adjustment, and social support. Additional research is needed to shed light on the effects of these constructs on the longitudinal relations between friends' prosocial behavior and different forms of adolescent problem behavior.

Hypothesized Promotive Factors and Friend's Behavior (Aim 2)

The second aim of this study was to determine the extent to which the hypothesized promotive factors influenced adolescents' selective affiliation with peers who engage in

prosocial and delinquent behavior. There was partial support for the hypothesis that the presence of a caring adult, a positive future orientation, and child disclosure would be positively associated with changes in friends' prosocial behavior and inversely associated with changes in friends' delinquent behavior. Similar to Laird et al (2008) and other prior studies, adolescents' perception that their parents were consistently knowledgeable about their whereabouts and activities was inversely related to changes in friends' delinquent behavior. This finding underscores the importance of increasing child disclosure to disrupt adolescents' selective affiliation with peers who engage in delinquent behavior. When youth disclose limited information about their activities and peer relationships, it can be more difficult for parents to monitor their child's activities or know when to intervene in their child's behavior or peer relationships. This may lead to greater exposure to friends' delinquent behavior via adolescents' involvement in unstructured and unsupervised routine activities (Osgood et al., 1996). On the other hand, when youth talk openly with their parents about their whereabouts, activities, and friendships, parents are provided with opportunities to discourage affiliation with peers who engage in delinquent behavior by strengthening their emotional bonds to their family and providing more opportunities for them to receive support and guidance from their caregivers (Kerr et al., 2010; Tilton-Weaver et al., 2013).

Child disclosure demonstrated promotive effects on changes in friends' prosocial behavior in the sensitivity analysis, but not in the full multivariate mediation model. This suggests that child disclosure does play a role in promoting prosocial peer affiliation but does not have unique effects on changes in friends' prosocial behavior after accounting for the effects of the other hypothesized promotive factors and friends' delinquent behavior at the same and prior waves. The significant inverse relations between child disclosure and friends' delinquent

behavior both within each wave and across time may have influenced this finding in the full model. In response to child disclosure, caregivers may be more likely to provide advice, guidance, and set boundaries when it comes to adolescents' friends who engage in delinquent behavior, yet they may not place the same emphasis on encouraging their child to affiliate with prosocial peers.

The associations between positive future orientation and changes in friends' delinquent behavior were significant in the sensitivity analysis but not in the full model. Prior work has shown that youth of color are more likely than White, middle-income youth to believe that they will not live to old age (Borowsky et al., 2009). This may be a distal consequence of systemic racism, which causes persistent inequities (e.g., social, financial, academic) in minoritized youths' opportunities to thrive. Some have posited that youth who are able to maintain a positive future orientation despite these adversities have a greater ability to appraise stressors as less threatening ("shift and persist"; Chen & Miller, 2012). In other words, resilience is cultivated through their ability to adapt to stressors (Ohsri et al., 2018). Additionally, youth may be able to maintain a positive future orientation in the face of stressors because they have access to characteristics, relationships, or other resources that can help them achieve their future goals. For instance, consistent with PYD and social control theories (e.g., see Masten, 2014), youth who feel more connected to their families and school hold more positive beliefs about their future (Crespo et al., 2013). The lack of significant associations between future orientation and changes in friends' delinquent behavior in the full model may be due in part to the moderate within-wave correlations between future orientation and presence of a caring adult (r = .47 to .49). These correlation coefficients do not reach the typical cutoff for multicollinearity ($r \geq .8$; Berry & Feldman, 1985), but may still affect relations between future orientation and changes in friends'

delinquent behavior in the full model. Although the results from the full model suggest that child disclosure may be a more critical intervention target than future orientation, the significant direct effects of positive future orientation on changes in friends' delinquent behavior in the sensitivity analysis are meaningful and suggest that promoting future orientation still has potential to deter youth from selectively affiliating with peers who engage in delinquent behavior.

Similarly, although positive future orientation did not significantly predict changes in friends' prosocial behavior in the full model, the relations between these constructs were significant in the context of the sensitivity analysis. Only one prior study was identified that investigated between adolescents' future orientation and their friends' prosocial behavior. Stoddard and Pierce (2018) found that, among a predominantly White and affluent sample of high school students, there was a significant cross-sectional relation between adolescents' future orientation and their friends' prosocial behavior (r = .34). This is somewhat similar to the magnitude of the within-wave correlations among these constructs in the current study (r = .26 to .30) despite differences in sample characteristics. However, this study builds on the findings of Stoddard and Pierce (2018) by examining longitudinal relations among these variables, both with (i.e., in the full model) and without (i.e., in the sensitivity analysis) accounting for other factors that may be influencing the association between these constructs, including child disclosure, presence of a caring adult, and friends' delinquent behavior at the same and prior waves. The findings of the current study indicate that future orientation does play a role in prosocial peer affiliation among early adolescents in urban high-burden communities. However, its effects were diminished in the full model. Again, the within-wave correlations between future orientation and presence of a caring adult could be accounting for at least a portion of the relations between

future orientation and changes in friends' prosocial behavior in the full model, particularly given the unique effect of presence of a caring adult on changes in friends' prosocial behavior.

Having a relationship with a caring adult was the only hypothesized promotive factor that was positively associated changes in friends' prosocial behavior over time in the full model. Relative to White adolescents, prior research has documented that African American and Hispanic/Latino/a adolescents report higher levels of communalism and familism values and behaviors such as prioritizing family obligations and spending time with family (Fuligni et al., 1999; Schwartz et al., 2010; Spencer & Swanson, 2016; Wolf et al., 2015). Afrocentric theories place value on interpersonal relationships more broadly (Jones et al., 2012), which is supported by research showing that African American youth use social support as a coping strategy more than their Hispanic/Latino/a and White peers (Tolan et al., 2003). The current study provides further evidence of the importance of caring and supportive adult relationships among youth of color in urban high-burden communities.

The relation between the presence of a caring adult and changes in friends' delinquent behavior was not significant in the context of the full model. This finding does not align with social control theory (Hirschi, 1969), attachment theory (Ainsworth, 1989; Bowlby, 1988), or prior research evidence of significant inverse relations between natural mentors (Zimmerman et al., 2002), parental attachment (Hoeve et al., 2012), and parent-child relationship quality (Van Ryzin et al., 2012) and friends' delinquent behavior. However, these constructs differ in some ways from the presence of a caring adult, and I was not able to identify any prior studies that examined longitudinal associations between the presence of a caring adult and friends' delinquent behavior. The presence of a caring adult was inversely associated with changes in friends' delinquent behavior within the sensitivity analysis. Similar to the reasoning provided

earlier, the diminished relations between the presence of a caring adult and changes in friends' delinquent behavior in the full model (relative to the sensitivity analysis) may be due to the strong within-wave correlations between presence of a caring adult and future orientation. It may also be a function of the relations between presence of a caring adult and friends' prosocial behavior. Overall, the findings of the current study provide evidence that relationships with caring adults have the potential to influence adolescents' selection of friends (particularly friends who engage in prosocial behavior) among early adolescents of color living in urban high-burden communities.

Multivariate Mediation (Aim 3)

The third aim of this study was to investigate whether the hypothesized promotive factors influenced peer affiliation and, in turn, reduced problem behavior over time. There was only partial support for this hypothesis. To my knowledge, this study is the first to demonstrate the mediating role of friends' delinquent behavior on relations between child disclosure and adolescent problem behavior. This extends the findings of prior longitudinal studies that indicated child disclosure was inversely associated with adolescents' delinquent behavior (Keijsers et al., 2010; Kerr et al., 2010) and substance use (Padilla-Walker, Memmott-Elison, et al., 2018). Unlike prior studies, which were focused on predominantly White samples of 12- to 18-year-olds, the current study focused on a predominantly African American sample of early adolescents. This is an important contribution given that, relative to their White counterparts, African American adolescents are more likely to face severe consequences for their involvement in problem behavior (e.g., juvenile justice involvement; Kakade et al., 2012). Moreover, youth are more susceptible to peer influence during early adolescence (Albert et al., 2013; Blakemore, 2018; Blakemore & Mills, 2014; Knoll et al., 2017). The current study also built on prior work

by examining data collected in 3-month intervals, whereas the vast majority of prior work has focused on data collected annually or less frequently. The findings of this study indicate that child disclosure has the potential to indirectly impact problem behavior via friends' behavior within a 9-month timespan. Thus, studies that collect data on an annual or biannual basis are limited in their ability to capture the more rapid and dynamic change processes that occurred among child disclosure, friends' delinquent behavior, and problem behavior in this study.

Contrary to hypotheses and prior research among urban adolescents (e.g., Zimmerman et al., 2002), friends' delinquent behavior did not mediate the effects of positive future orientation or presence of a caring adult on changes in adolescent problem behavior. However, there was evidence of significant indirect effects in the sensitivity analyses. Similar to the findings for Aim 2, these findings provide evidence that positive future orientation and the presence of a caring adult are meaningful, modifiable promotive factors, with the potential to affect one of the strongest predictors of adolescent problem behavior. Nevertheless, the unique effect of child disclosure on changes in friends' delinquent behavior may suggest that it is a more impactful target for intervention and prevention efforts. In the full model, the nonsignificant indirect effects of future orientation on problem behavior via friends' delinquent behavior are likely a function of the nonsignificant direct effects of future orientation on changes in friends' delinquent behavior and adolescents' aggressive and delinquent behavior. Similarly, the nonsignificant indirect effects of the presence of a caring adult on problem behavior via friends' delinquent behavior are likely due to the lack of significant direct effects on changes in friends' delinquent behavior and adolescents' delinquent behavior and substance use.

The finding that friends' prosocial behavior did not mediate relations between any of the promotive factors and problem behavior variables was largely a function of the lack of relations

between friends' prosocial behavior and changes in problem behavior. The fact that peer influence effects were not supported for friends' prosocial behavior further underscores the importance of disrupting adolescents' affiliation with peers who engage in delinquent behavior within prevention and intervention efforts implemented in urban middle schools. However, in addition to empirical evidence noted previously regarding the relations between hypothesized promotive factors and friends' prosocial behavior, the findings of this study are not consistent with prior research indicating that friends' prosocial behavior is inversely associated with adolescents' aggressive behavior (Padilla-Walker & Bean, 2009), substance use (Coyle et al., 2016; Farrell et al., 2017; Walters, 2020), and delinquent behavior (Padilla-Walker & Bean, 2009; Walters, 2020). On the other hand, a cross-sectional study using data from the same project as the current study found that friends' prosocial behavior was not significantly associated with physical aggression or delinquent behavior (Farrell et al., 2017).

Ultimately, there is very limited research examining the role of friends' prosocial behavior in the development of adolescent problem behavior, and the findings of longitudinal studies to date are difficult to compare due to variations in their design and sample characteristics. The findings of the current study contribute to a growing body of research that acknowledges not only risk factors and deficits in the peer context, but also the potential for peers to influence urban middle school students' behavior in positive and prosocial ways. Other outcomes that prior work has found to be associated with friends' prosocial behavior should be considered in future research, including adolescents' own prosocial behavior (Padilla-Walker & Bean, 2009; Lee et al., 2017), civic engagement (Choukas-Bradley et al., 2015), and self-esteem (Quimby et al., 2018).

Sex, Grade, and Intervention Effects

The results did not provide strong evidence of differential effects by sex, grade, or intervention condition. The lack of sex differences in cross-variable relations is consistent with some prior longitudinal studies examining friends' and adolescents' problem behavior (Véronneau & Dishion, 2010), including studies that used data from the same project as the current study (e.g., Farrell et al., in press; Thompson et al., 2020). The results of a systematic review indicated that that nearly half of the 26 studies did not provide evidence of gender differences (McCoy et al., 2019). However, consistent with gender role socialization theory, McCoy et al. (2019) indicated that most of the other studies found that peer influence effects on risk-taking behavior were stronger among male adolescents than female adolescents. Of note, only 4 of the studies reviewed were longitudinal. Two cross-sectional studies have found that the associations between friends' delinquent behavior and substance use are stronger among female adolescents (Dick et al., 2007; Farrell et al., 2017). Nevertheless, some researchers have argued that gender socialization processes are distinct within urban under-resourced communities with high rates of violence, such that male and female adolescents exhibit similar rates of problem behavior (Bettencourt & Farrell, 2013; Bradshaw et al., 2010; Thompson et al., 2020).

Although few studies have tested grade differences, evidence from one study indicated that peer selection effects for delinquent behavior and substance use were strongest between sixth and seventh grade, whereas peer influence effects were strongest between seventh and eighth grade (Kornienko et al., 2018). Kornienko et al.'s (2018) study differs from the current study in their use of social network analysis. It is possible that social network analysis may be able to more appropriately model the nuances of selection and influence effects, although prior work suggests there is evidence of some congruency when comparing meta-analytic findings of

studies using each approach (Gallupe et al., 2019; Pratt et al., 2010). This study also differed from Kornienko et al. (2018) in terms of the sample characteristics. Although both studies recruited participants from middle schools situated in neighborhoods with high rates of crime, Kornienko et al.'s (2018) sample was more racially diverse (42% White, 29% African American, 7% Hispanic/Latino/a, 5% Asian American). Despite the lack of grade differences in the current study, future research should not rule out the possibility that grade differences might exist given the lack of prior research investigating this.

There were no specific hypotheses related to differences by intervention condition. The lack of differences by intervention condition aligns with the findings of other longitudinal studies that used data from the same project as this study (e.g., Farrell et al., in press; Thompson et al., 2020).

Limitations

The current study has several limitations that should be noted. It focused on a predominantly African American sample of early adolescents from three urban middle schools serving under-resourced communities with high rates of crime and violence. Thus, the findings may not generalize to other populations that differ in age, ethnicity, urbanicity, or socioeconomic status. The lack of diversity within the sample precludes examination of racial differences in the relation between promotive factors, peer affiliation, and problem behavior. This is an important area for future inquiry given evidence of racial and ethnic differences in friends' delinquent behavior and friends' prosocial behavior and their relations with adolescents' own problem behavior (Deutsch et al., 2012; Padilla-Walker & Bean, 2009). However, the focus on a predominantly African American sample of early adolescents residing in high-risk urban communities is an important strength of the study given limited prior research investigating the

effects of promotive factors and friends' prosocial behavior within this population (see Farrell et al., 2017 as an exception). Although this study is longitudinal, the ability to make causal inferences are still limited. The results may be influenced by a "third variable" or by broader contextual factors that influence all variables that were examined in this study, potentially with time-varying effects.

All constructs in this study were assessed via self-report measures, which may result in shared method variance. For instance, problem behavior is most commonly assessed via self-report given that, relative to teachers or caregivers, adolescents can provide more specific information about their own behaviors that are often covert, complex, and subtle (Card & Hodges, 2008). On the other hand, self-report measures of problem behavior are susceptible to under- and over-reporting biases (Card & Hodges, 2008). Teacher-report is a helpful source of information because teachers observe adolescents' behavior and their interactions with peers in structured and unstructured settings at school. Caregivers' perspectives, although somewhat less objective than teachers' (Orpinas et al., 2015), offer insight regarding youths' behavior outside of the school context. Although careful consideration should be given to the potential limitations of teacher- and caregiver-report as they relate to the research questions, it may be useful for future studies to consider including teacher- or caregiver-report measures of problem behavior,

Additionally, although the most common approach to measuring friends' delinquent behavior is via adolescents' report of their perception of friends' behavior, such measures may inflate the association between adolescents' behavior and that of their friends (Hoeben et al., 2016). Perceptions of peer behavior may reflect individual biases (e.g., the respondents' level of delinquency and self-control, lack of knowledge regarding peers' behavior), leading to inaccurate reports of peer delinquency and thus miscalculations of peer influence (Young et al.,

2011, 2014). This limitation is notable because prior studies have found that the effects of other constructs (e.g., self-control) are underestimated when examined alongside perceptual measures of peer behavior (Boman & Gibson, 2011). However, there is also evidence that adolescents' perceptions of their friends' behavior (i.e., perceptual measures) and friends' self-reports of their own behavior (i.e., network measures) represent distinct constructs that relate to delinquent behavior in different ways (Rebellon & Modecki, 2014; Young et al., 2014, 2015). Moreover, meta-analytic findings underscore the role of both peer selection and influence processes regardless of whether measures based on perceptions or social networks are used (Gallupe et al., 2019; Pratt et al., 2010). The findings of this study should be interpreted in light of the limitations of measures based on adolescents' perceptions of their friends' behavior. Another limitation of the Friends' Behavior Scale is that it asks adolescents how *many* of their friends engage in delinquent and prosocial behavior rather than how *often* their friends engage in these behaviors. Thus, no conclusions can be drawn about changes in the frequency of adolescents' friends' behavior over time from the results of this study. Future research should investigate the frequency of friends' engagement in prosocial and delinquent behavior, as this may further our understanding of peer selection and influence as it relates to promotive factors and problem behavior.

Conclusion and Future Directions

The purpose of this study was to identify modifiable promotive factors that reduce adolescents' problem behavior by decreasing exposure to friends' delinquent behavior and promoting affiliation with peers who engage in prosocial behavior among a predominantly African American sample of early adolescents. This study addressed several gaps in the literature by examining the influence of prosocial peers, changes across short time intervals, and factors

that predict adolescents' affiliation with delinquent or prosocial peer groups (Prinstein & Giletta, in press). This study yielded several notable findings with implications for intervention and prevention programming and future research.

Friends' delinquent behavior mediated relations between child disclosure and adolescent problem behavior. This finding suggests that enhancing child disclosure can disrupt peer selection and influence processes implicated in the development of problem behavior. The fact that these effects were present across 3-month intervals is notable, as most prior longitudinal studies have focused on changes across assessment points that are one year or more apart. In designing intervention strategies to enhance child disclosure (and parental knowledge by proxy; e.g., Soenens et al., 2006), it is important to consider empirical evidence indicating that certain strategies can have iatrogenic effects. One study found that when parents enforced more rules, the likelihood of affiliating with peers who engage in delinquent behavior increased for those who felt overcontrolled by their parents and decreased for those who did not (Tilton-Weaver et al., 2013). Additionally, longitudinal research has found that parental solicitation and adolescents' feelings of being controlled by their parents are positively related to adolescent problem behavior, even after controlling for current and prior levels of problem behavior (Kerr et al., 2010; Willoughby & Hamza, 2011). Adolescents who feel overcontrolled may disclose less to their parents in an effort to re-establish their sense of autonomy. This can reduce parental knowledge and increase adolescents' involvement in unstructured and unsupervised activities where they are more likely to befriend peers who engage in delinquent behavior, thus becoming more prone to peer influence and problem behavior (Kerr & Stattin, 2000; Tilton-Weaver et al., 2013). Instead, interventions should consider encouraging parents to provide an appropriate amount of support and coaching to their child (e.g., talking to their child about friendship

choices, supporting their child's friendships, giving advice when it is solicited; Tilton-Weaver et al., 2013). These are less intrusive strategies and may make the child feel comfortable disclosing more information about their activities and friendships. Additionally, prevention efforts should focus on enhancing parent-child relationship quality and effective communication skills in order to enhance child disclosure during early adolescence.

Second, friends' delinquent behavior mediated the effects of positive future orientation and presence of a caring adult on adolescent problem behavior, but only in models that included one hypothesized promotive factor, one friends' behavior variable, and all problem behavior variables. Although child disclosure may be a more critical focus for intervention and prevention efforts due to its unique effects on changes in friends' delinquent behavior, there may still be value in addressing future orientation and relationships with caring adults in intervention and prevention programming, particularly given evidence of direct relations between these variables and changes in at least one problem behavior. PVEST theory posits that vulnerability occurs when youths' risk factors outweigh their promotive/protective factors. Enhancing child disclosure, future orientation, *and* relationships with caring adults may serve a broader purpose of reducing the net vulnerability level of African American and Hispanic/Latino/a early adolescents residing in urban high-burden communities.

One program that may address future orientation and relationships with caring adults is the Youth Empowerment Solutions (YES) program (Stoddard et al., 2020; Zimmerman et al., 2018). YES is a theory-driven, empirically-supported an after-school program designed to help middle school students gain self-confidence, think critically about their community, and feel empowered to create positive community-level change by working with adults. Results from study using a modified randomized control group design indicated that YES participants

exhibited increased psychological empowerment, which in turn was associated with more prosocial behavior, academic effort, and responsible decision making, as well as less aggressive and delinquent behavior (Zimmerman et al., 2018). A recently developed adaptation of the YES program, Youth Empowerment Solutions for Positive Futures (YES-PF), is a 5-week summer enrichment program that aims to prevent school dropout and substance use by promoting youth empowerment, school engagement, and future orientation (Stoddard et al., 2020). YES-PF was developed somewhat recently, but the results of a recently published feasibility study provide promising results. Specifically, sixth and seventh grade students who exhibited early warning signs for school disengagement were found to report higher levels of leadership efficacy and a greater sense of control over their lives and potential problems after participating in the program (Stoddard et al., 2020).

Finally, given that friends' prosocial behavior was not significantly related to changes in problem behavior, it is not surprising that it did not significantly mediate the relations between the hypothesized promotive factors and adolescent problem behavior. However, the hypothesis that friends' prosocial behavior would mediate the relations between the hypothesized promotive factors and problem behavior was informed by prior theoretical and empirical work. Thus, the findings of this study raise several questions and considerations for future research.

First, although the Friends' Behavior Scale (FBS) has demonstrated strong psychometric properties (Farrell et al., 2017), it is still possible that the friends' prosocial behavior subscale lacks content validity. A brief review of prosocial peer affiliation measures indicated that existing measures of friends' prosocial behavior vary widely in the behaviors they assess. One measure was primarily focused on prosocial peer influence on adolescent substance use and asked the same set of five questions (e.g., "If I was drinking or taking drugs [subject] would try

to help me and give me advice") for four different subjects (i.e., best friend, "friends who I hang out with", "people in my school or in my area", "people I see on TV/films") (Coyle et al., 2016). Another measure asked about friends' involvement in family, school, religious, and community activities and friends' characteristics (i.e., good students, get along with adults at school, obey school rules, are honest) (Walters, 2020). The behavior most commonly included across the measures was being academically oriented (e.g., FBS: "do their best in school"; Walters et al., 2020: "are good students"; Quimby et al. (2018): "study hard", "get good grades"). Beyond academic orientation, it seems there are no agreed upon behaviors that constitute friends' prosocial behavior based on the lack of overlap among behaviors assessed within available measures. A recent review documented that this is also an issue among measures of adolescents' own prosocial behavior (El Mallah, 2019). Ultimately, more work is needed to clearly define prosocial behavior beyond academic orientation. Researchers might consider behaviors such as helping, comforting, sharing, and cooperating in the definition and measurement of adolescents' and their friends' prosocial behavior (El Mallah, 2019).

It could also be that friends' behavior is modeled too simplistically in this study. It is likely that adolescents befriend peers who engage in both forms of behavior to some degree, and there may be distinct subgroups of adolescents who are exposed to different patterns of prosocial and delinquent behavior in their peer group. Future research should use a mixture modeling approach to investigate this further and determine whether promotive factors predict one's pattern of friends' behavior. Overall, major areas of inquiry for peer influence researchers include clarifying the definition of prosocial behavior and investigating mechanisms of selection and influence across peer groups that engage in different levels of prosocial and delinquent behavior.

It will also be important for future research to continue to build on this study by examining relations among promotive factors, friendship characteristics (e.g., quality, reciprocity), and the behavior of adolescents' friends within dyadic or network data. In doing this work, researchers should consider examining the promotive factors included in this study as well as factors beyond the individual, peer, and family levels. For instance, future studies might consider the role of school- or community-level norms about prosocial behavior in influencing peer selection processes (see Lenzi et al., 2012). In accordance with social learning theory, prosocial behavior may become more appealing and problem behavior less appealing to youth (both for themselves and within their peer group) when the broader school or community context accepts, encourages, models, and reinforces prosocial behavior. In terms of friendship characteristics, future research should consider factors such as closeness, reciprocity, and plasticity of friendships and social networks. These constructs were not assessed in the original project for which the data were collected and thus could not be examined in this study. One study found that nearly half of youth report changes in their peer group network over the course of a year (Berger & Rodkin, 2012). Examining the stability of peer group networks may shed light on some of the non-significant findings of the current study. For instance, it could be that non-significant relations were due to changes in one's peer group from one wave to the next. There is also evidence to suggest that the closeness (Prinstein & Giletta, 2016) and reciprocity (Stevens & Prinstein, 2005) of adolescent friendships may affect the potency of peer influence as close, mutual relationships may provide more opportunity for socialization process to occur. These are important areas for future inquiry that will deepen our understanding of how to disrupt the cycle of peer selection and influence that heightens' adolescents' risk of engaging in problem behavior.

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