EMPIRICAL RESEARCH

Distrust Moderates the Effect of Deviant Peer Affiliation on Increased Externalizing in Adolescents

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Abstract

Deviant peer affiliation predicts externalizing behavior in adolescence, but no research explores how having negative or suspicious expectations of others (i.e., distrust) may evoke or buffer against the relationship between deviant peer affiliation and externalizing behavior. The current study used data across two timepoints to investigate the impact of deviant peer affiliation and distrust on externalizing behavior 3 years later and whether race/ethnicity moderated this relationship. The sample consisted of 611 adolescents from the Project on Human Development in Chicago Neighborhoods Study (48% male; M_{age} = 15.5 years, SD = 1.6; 17% White; 34% Black; 49% Hispanic). Higher levels of distrust buffered against the influence of deviant peer affiliation on externalizing behaviors. Further, this buffering was evident in Black compared to White adolescents. Understanding externalizing behavior warrants considering the intersection between the person and their environment.

Keywords Distrust · Deviant peer affiliation · Externalizing · Race/ethnicity

Introduction

Externalizing behaviors consist of a broad range of disruptive actions that can be reflected in several childhood and adolescent disorders, including oppositional defiant disorder (ODD) and conduct disorder (CD) (American Psychiatric Association, 2013). Behaviors that characterize ODD, such as irritability, aggressiveness, disobedience, and argumentativeness, emerge earlier in childhood compared to other disruptive behaviors and predict development of more severe and persistent externalizing behaviors later in adolescence and adulthood (Lahey et al., 2009). Although deviant peer affiliation is a well-established risk factor for externalizing behaviors broadly (Dishion et al., 2010), and ODD more specifically (Boden et al., 2010) during adolescence, limited research has considered how individual differences may contribute to, or buffer against, this relationship. More specifically, distrust, or having confident negative and suspicious expectations of others' conduct (Lewicki et al., 1998), influences interpersonal

functioning (Rotenberg & Boulton, 2013), as well as psychosocial well-being (Rotenberg et al., 2005), indicating that it may be particularly important to investigate in the context of the relationship between deviant peer affiliation and externalizing. Developing an understanding of how environmental-level factors and person-level factors intersect and contribute to externalizing behavior is necessary to prevent escalation of these behaviors beyond adolescence into adulthood. Thus, the main goal of this study was to further knowledge of which individuals are at highest risk for externalizing behaviors by examining whether or not deviant peer affiliation interacts with distrust to predict later externalizing behavior in a sample of adolescents.

A host of environmental-level and person-level factors contribute to the development of externalizing behaviors. Coming from a family with lower socioeconomic status (Lansford, 2018) and living in neighborhoods with greater ethnic-racial homogeneity (White et al., 2020) and greater neighborhood disorder (Jennings et al., 2018) increase risk for exhibiting externalizing behaviors. Additionally, being biologically male (Demmer et al., 2017) and younger (Moffitt, 2006) relate to higher levels of externalizing behaviors. One environmental-level predictor of externalizing behavior that has been well-studied is deviant peer affiliation. Deviant peer groups provide contexts in which oppositional and disruptive behaviors are valued and encouraged, increasing risk for the

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development or maintenance of externalizing behaviors in children (Chen et al., 2015). Theories suggest that deviant peer affiliation contributes to the initiation and/or maintenance of externalizing behavior through reciprocal effects of selection (i.e., gravitation towards peers who act similarly to oneself; Erickson et al., 2000) and socialization (i.e., experiencing peer pressure and positive reinforcemnt to engage in externalizing behaviors; Van Ryzin & Dishion, 2014). Compared to adolescents who are only high on deviant peer affiliation, only high on oppositional defiant behaviors, or low on both features, adolescents who are both high on deviant peer affiliation and oppositional defiant behaviors have the highest justice system involvement (Simons et al., 1994). Taken together, deviant peer affiliation predicts increased externalizing behaviors, as well as more severe consequences associated with this behavior.

Although affiliation with deviant peers strongly relates to increased risk for externalizing behaviors, not all adolescents are equally influenced by deviant peers (Fergusson et al., 2007). For example, high levels of deviant peer affiliation predict the development of externalizing in adolescents with medium and high levels of reward dominance (i.e., greater sensitivity to reward than punishment) but not in adolescents with low levels of reward dominance (Goodnight et al., 2006). As another example, for adolescents with relatively high levels of self-regulation, deviant peer affiliation did not predict later externalizing behavior. However, for adolescents with low or average levels of self-regulation, deviant peer affiliation predicts the development of externalizing behavior (Gardner et al., 2008). While a number of factors influence externalizing behavior, research shows that there is individual variability in the relationship between deviant peer affiliation and externalizing behavior.

One important facet of forming relationships with others is distrust. Individuals vary in their general tendency (i.e., not specific to a situation or person) to distrust others (McKnight et al., 2004). Individual differences in distrust predict cooperative behaviors (De Cremer & Tyler, 2007), perceptions of risk (McKnight et al., 2004), and discrimination of facial trustworthiness (Calabrese et al., 2017). In children, research shows that children with low expectations that peers will keep their word (e.g., an indication of higher levels of distrust) have increased difficulties in relationships, such as experiencing higher social exclusion and peer rejection (Rotenberg et al., 2005; Rotenberg et al., 2014). Further, higher levels of distrust can increase engagement in externalizing behaviors. For example, children who expect peers to not keep promises show increased physical or verbal aggression (Rotenberg et al., 2014), and more stable levels of high aggression (Malti et al., 2013). In turn, children who exhibit externalizing behavior engage in less trustworthy behavior (Sharp et al., 2011) and are perceived to be less trustworthy by peers (Malti et al., 2013), suggesting a bidirectional relationship between distrust

and externalizing behavior. Taken together, children with higher levels of distrust show increased relational difficulties with peers and greater externalizing behavior, which may further affect cycles of distrust (Li et al., 2021). However, research has yet to examine distrust in relation to deviant peer relationships, which might be a particularly important peer group to study given the robust associations between deviant peer affiliation and externalizing behavior.

Although a focus of research has been on negative outcomes associated with aberrant levels of distrust, distrust can be adaptive or defensive (Lewicki et al., 2006) and exists at normative levels in the population (Wong et al., 2014). Distrust is activated by deception and hostility, which are notably frequent behaviors exhibited by deviant peers, and distrust leads to skepticism and suspicion (De Cremer et al., 2001). Being wary of a peer's intentions when the peer has a history of deception is important in order to avoid potential exploitation. Cognitively, being distrusting facilitates detection of alternatives or incongruencies, as opposed to routine associations that "go with the flow" (see Mayo, 2015, for an overview). Behaviorally, distrust in others promotes avoidance (Murray et al., 2006) and distancing oneself (Murray et al., 2011). In the context of having deviant peers, cognitions and behaviors associated with distrust may be particularly important to enforce being wary of the motives of peers whose goals may be to violate norms or encourage mutual escalation of disruptive behavior. Thus, distrust may be important to investigate in relation to deviant peer affiliation and externalizing.

Previous research also reveals that a variety of factors can lead to individuals' tendencies towards distrust. For example, in low income neighborhoods rates of residential turnover and incidents of crime are elevated (Pratt & Cullen, 2005), resulting in residents showing greater wariness when interacting with one another, increased feelings of isolation and higher distrust (Ross & Jang, 2000; Ross et al., 2001). Additionally, members of minoritized groups learn to distrust members of dominant groups (Pettigrew & Tropp, 2013), which is unsurprising given that they experience greater discriminatory treatment (e.g., fewer job interview callbacks; Bertrand & Mullainathan, 2004; greater likelihood of police force and threatening during police interaction; Davis et al. 2018; less likeliood of being informed of or shown available units for rent; Ross & Turner, 2005). Further, in order to protect against the harmful effects of discrimination, Black and Hispanic parents endorse more frequently teaching their children racially specific socialization strategies, such as the promotion of distrust. Strategies that promote distrust emphasize placing less trust in other racial/ethnic groups, but also approaching interactions with other racial/ethnic groups with caution and wariness—a message that reflects general distrust (Hughes et al., 2006). Research that captures environmental-level and person-level factors have important implications for

developing a nuanced understanding of who is at greatest risk for externalizing behavior and why.

Current Study

Prior research shows robust associations between deviant peer affiliation and externalizing behavior; however, less is known about individual differences, such as distrust, that might moderate this relationship. Utilizing data from the Project on Human Development in Chicago Neighborhoods (PHDCN), the current study examines whether or not self-reported distrust moderates the relationship between deviant peer affiliation and externalizing behaviors 3 years later in a sample of 611 adolescents. All analyses included age, sex, prior externalizing behavior, family socioeconomic status, neighborhood disorder, and racial/ethnic composition of neighborhood as covariates of non-interest. Given research suggesting that distrust reflects viewing other's behaviors as negatively motivated (e.g., self-seeking or dishonest), it was hypothesized that in the context of affiliating with deviant peers, distrust will be protective against engagement in later externalizing behaviors. Additionally, given research showing that levels of distrust vary by race/ethnicity, exploratory analyses were conducted to examine relationships among racial/ethnic group, distrust, and deviant peer affiliation in relation to externalizing.

Methods

Sample

This study utilized data from the PHDCN Community Survey (PHDCN-CS) and the PHDCN Longitudinal Cohort Study (PHDCN-LCS), which are accessible by request through the Inter-University Consortium for Political and Social Research. In the PHDCN-CS, city blocks were randomly selected from the 343 neighborhood clusters, followed by random selection of households within the selected city blocks. One adult from each household was randomly selected to complete an interview in their home. Individual responses from the PHDCN-CS were aggregated by PHDCN investigators to create averages of neighborhood-level characteristics (e.g., disadvantage, racial composition). Data for the PHDCN-CS were collected between 1994–1995. As noted above, research indicates that externalizing is influenced by neighborhood context (Chung & Steinberg, 2006; Xue et al., 2005) thus, controlling for aspects of the neighborhood environment allowed us to more clearly isolate the effects of distrust and deviant peer affiliation on the development of externalizing behaviors.

The PHDCN-LCS followed seven cohorts of children, adolescents, young adults, and their caregivers over the span of seven years, and data were collected at 3 waves. Each cohort represented a developmental period, and age cohorts included birth (0–6 months), 3, 6, 9, 12, 15, and 18 years. Respondents were sampled from 80 of the 343 pre-defined neighborhood clusters from the PHDCN-CS. From the 80 selected neighborhoods, 35,000 households (who were not involved in the PHDCN-CS) were randomly sampled and screened for eligible children and adolescents. At each wave of data collection, parent and child interviews were conducted primarily in-person, or alternatively over the phone. Informed consent from a parent or guardian of each respondent and assent from youth respondents were obtained prior to each interview. Depending on the participant's age and wave of data collection, participants were compensated $5–20 for each interview. Although three waves of data were collected, only data from 1994–1997 (wave 1) and 1997–1999 (wave 2) were used in the current study. Wave 1 of data collection had an overall response rate of 75% and wave 2 of data collection had an overall response rate of 85.93%. From the seven cohorts, only respondents from cohort 12 and cohort 15 were included in the current study, given that these were the cohorts whose ages corresponded to the period of adolescence. Respondents who moved residences between wave 1 and wave 2 of data collection were excluded from analysis, since analysis included neighborhood-level covariates ($n = 517$). In order to be conservative in the analyses, listwise deletion was conducted to remove cases with missing data in relation to key measures and covariates ($n = 281$). Logistic regressions showed that participants excluded due to missing data did not differ significantly (all p's > 0.26) from participants included in the study based on age, sex, race/ethnicity, externalizing behavior at wave 1 or wave 2, deviant peer affiliation, or distrust. Adolescents in racial/ethnic groups with an insufficient number of respondents in the sample were also excluded (Asian $n = 11$; Pacific Island $n = 2$; Native American $n = 5$; Other $n = 12$). The final sample consisted of 611 adolescents (48% male) who identified as White (17%), Black (34%), or Hispanic (49%) with mean age at wave 2 of data collection of 15.5 years ($SD = 1.6$) (see Table 1 for correlation matrix among key variables; see Table 2 for full sample characteristics).

Measures

Deviant peer affiliation

Affiliation with deviant peers was measured at wave 1 using 20 items from the *Deviance of Peers Survey*. Respondents rated items on a 3-point scale (1 = "none", 2 = "some", 3 = "all"). Items asked how many of the respondent's peers

Table 1 Spearman correlation matrix between key variables

Variable	1	2	3	4	5	6	7
1. White	-						
2. Black	−0.32***	-					
3. Hispanic	−0.44***	−0.71***	-				
4. Deviant peer affiliation	−0.11**	0.13**	−0.04	-			
5. Distrust	−0.04	0.10*	−0.06	0.20***	-		
6. Externalizing (parent-report CBCL; wave 1)	−0.06	0.13***	−0.08*	0.23***	0.14***	-	
7. Externalizing (youth self-report; wave 2)	0.02	−0.03	0.02	0.19***	0.10***	0.16***	-

$*p < 0.05$; $**p < 0.01$; $***p < 0.001$

Table 2 Sample descriptive characteristics $n = 611$

Variable	n	Mean	Std. dev	Min	Max
Age (wave 2)		15.5	1.6	12.9	19.5
Sex					
Male	294				
Race/ethnicity					
White	102				
Black	208				
Hispanic	301				
Externalizing (parent-report CBCL; wave 1)		10.6	8.9	0	61
Deviant peer affiliation		29.5	5.7	20	49
Distrust		2.3	1.6	0	8
Externalizing (youth self-report; wave 2)		0.8	2.1	0	8
Family socioeconomic status		−0.1	1.4	−3	3.5
Neighborhood disorder		1.2	0.3	0.6	1.8
Neighborhood composition					
Predominantly White	87				
Predominantly Black	118				
Predominantly Hispanic	74				

CBCL child behavior checklist

engaged in deviant behaviors (i.e., purposefully damaging property, stealing, fighting, or attacking others). Higher scores denoted greater affiliation with deviant peers. Internal consistency for the measure of deviant peer affiliation in the current sample was good (omega total (ω) = 0.89).

Distrust

The PHDCN-LCS did not include a distrust scale, thus, a measure of distrust was constructed using individual items from the Youth Self-Report (YSR; Achenbach, 2001), which is the youth respondent version of the Child Behavior Checklist (CBCL; Achenbach, 1991). Respondents rated items on a 3-point scale (0 = "not true" to 2 = "very/often

true"). Four items on the YSR were selected to reflect distrust. Selected items were consistent with items utilized in prior studies on neighborhood disorder and distrust (Ross & Jang, 2000; Ross et al., 2001), as well as other measures of specific forms of distrust (i.e., promotion of mistrust parent socialization messages; Hughes & Johnson, 2001; the Cultural Mistrust Inventory; Terrell & Terrell, 1981). Items included "I feel that others are out to get me," "I am secretive or keep things to myself", "I am suspicious," and "I keep from getting involved with others." Items were summed with higher scores indicating increased levels of distrust. In line with research that suggests that measures of broad (e.g., distrust), as opposed to specific concepts (e.g., trust in health systems) results in lower internal consistency (Clifton, 2020), internal consistency for the measure of distrust was low (omega total (ω) = 0.51).

Externalizing behavior

Externalizing was derived from an adapted self-report of the Oppositional Defiant Disorder module of the *Diagnostic Interview Schedule for Children* (DISC; Shaffer et al., 1993), which was completed by respondents at wave 2. Participants were asked to consider whether or not they had engaged in externalizing behaviors related to hostility, aggressiveness, defiance, and rule-breaking for at least several few months. Eleven behaviors were rated, and the endorsement of more items represented higher engagement in externalizing behaviors (see Table 3 for distribution of counts). Scores were significantly positively correlated with CBCL externalizing scores at wave 2, $r(609) = 0.18$, $p < 0.001$, 95% CI [0.10, 0.26], and the YSR externalizing scores at wave 2, $r(609) = 0.37$, $p < 0.001$, 95% CI [0.29, 0.43], providing evidence of construct validity. The CBCL was not utilized as the measure of externalizing, given that the measure of distrust was constructed using the YSR (the youth version of the CBCL), thus raising concerns about the potential for measurement error related to common variance.

Table 3 Frequency table of externalizing behaviors at wave 2

Number of endorsed symptoms	0	1	2	3	4	5	6	7	8
n	522	1	6	11	9	14	17	12	19

Race/ethnicity

A series of dummy coded variables were created to represent the adolescent's race/ethnicity (Black, Hispanic, or White).

Covariates of non-interest

Prior externalizing behavior The CBCL completed by parents or primary caregivers at wave 1 was used to measure youth externalizing behaviors at baseline. The CBCL asks primary caregivers to respond to a series of 113 items that assess various problematic behaviors and emotions in youth and includes an externalizing subscale with items such as "argues a lot," "disobedient at home," or "lies or cheats." Items are rated on a 3-point scale (0 = "not true" to 2 = "very/often true"). The CBCL is a well validated and reliable instrument (Nakamura et al., 2009). T-scores from the externalizing subscales were used in analyses, with higher scores indicating greater externalizing behaviors.

Biological sex at birth Biological sex collected via parent report at wave 1 was coded with a dichotomous indicator (0 = female and 1 = male).

Age Age was measured in months at wave 2 of data collection.

Family socioeconomic status Family socioeconomic status was derived from a measure created by PHDCN investigators. The measure was created utilizing standardized principal components analysis of parents' maximum education, parents' occupation, and parents' maximum salary. The measure ranged from −3 to 3.5, with higher scores reflecting greater socioeconomic status.

Racial/ethnic composition of neighborhood Dummy coded variables representing neighborhoods that were composed of majority White, majority Black, majority Hispanic, and mixed racial/ethnic composition of residents were created.

Neighborhood disorder The PHDCN-CS dataset contained a variable representing neighborhood disorder. This measure was generated by investigators by asking respondents to rate "how much of a problem" six items related to physical and social problems were in their neighborhood on a 3-point scale (1 = "no a problem", 2 = "somewhat of a problem", 3 = "a big problem"). The adjusted mean scale scores (mean over the scale of items and adjusted for missing data) were calculated at the person-level.

Analytic Strategy

Inspection of the dependent variable, externalizing behavior, revealed an excessive number of zeros (85%) and a non-normal distribution with skewness of 2.47 ($SE = 0.10$) and kurtosis of 4.66 ($SE = 0.20$). A zero-inflated negative binomial model (ZINB) was selected given that ZINB models are designed to analyze skewed distributed counts or rates (Atkins & Gallop, 2007). The ZINB model was compared against other count models using the Vuong test (Vuong, 1989) in order to confirm the ZINB model was the most appropriate model for analysis. The ZINB was conducted using the zeroinfl function from the pscl package (Zeileis et al., 2008) in R (R Core Team, 2020).

Using zero-inflated count models allowed for the prediction of two distributions. The logit model predicted the likelihood of an observation being a "certain zero" (i.e., having zero probability of having an externalizing symptom) and the negative binomial count model predicted both positive integers and zeros. In other words, after the logit model controlled for the effect of excess zeros, the negative binomial count model predicted the distribution of externalizing behavior. To facilitate interpretation, regression coefficients were exponentiated to create odds ratios (OR) for the logit model and rate ratios (RR) for the negative binomial model. OR indicated the change in odds of having no externalizing behaviors, whereas RR reflected the change in incidence rate of externalizing behavior.

Model 1 included the main effects of deviant peer affiliation and distrust, two-way interactions between deviant peer affiliation and distrust, as well as all covariates. Both the logit and count portions of the model included all interaction terms and covariates. Model 2 included all main effects, two-way interactions, and a three-way interaction among race/ethnicity, deviant peer affiliation, and distrust, as well as all covariates. For model 2, both the logit and count portions of the model included all interaction terms and covariates. For both models, externalizing at wave 1, deviant peer affiliation, and distrust were centered around their means prior to entry into the models.[1] All data

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[1] In order to determine whether or not a multilevel model was appropriate for our analyses, we ran an unconditional mean model and calculated the intraclass correlation. The intraclass correlation was 0.006, indicating that 0.6 percent of the variation in externalizing was associated with neighborhood membership. Given that only 0.6 percent of variation in externalizing was accounted for by neighborhood membership, a multilevel model was not utilized. However, all results were replicated using a multilevel model. Additionally, for all models, all results remained the same if age at wave 1 was used in models as a covariate instead of age at wave 2.

exclusions, manipulations, measures, and conducted analyses in the study have been reported.

Results

Model 1: The Effect of Distrust on the Association Between Deviant Peer Affiliation and Externalizing Behavior

A likelihood ratio test comparing model 1 to a model without predictors showed that model 1 was a better fit for the data $X^2(26) = 61.15$, $p < 0.001$. Additionally, a Vuong test comparing the ZINB model with the standard negative binomial model confirmed that the ZINB model provided a better model fit ($p < 0.001$). Adjusted R^2 for the model was 0.32. The logit portion of the model, which predicts the likelihood of zero probability of having externalizing behaviors, showed that adolescents who had greater deviant peer affiliation ($b = -0.33$, $OR = 0.72$, $p = 0.01$, 95% CI [−0.58, −0.08]) had decreased odds of zero externalizing behaviors. Additionally, there was a significant interaction between deviant peer affiliation and distrust ($b = 0.21$, $OR = 1.24$, $p = 0.037$, 95% CI [0.01, 0.42]), such that at greater levels of deviant peer affiliation and higher levels of distrust, odds of having zero probability of externalizing behaviors were increased (see Table 4). There was no significant effect of distrust on odds of having zero probability of externalizing behaviors.

In the negative binomial count portion of the model, which predicts the number of externalizing behaviors endorsed after accounting for individuals who endorse zero externalizing behaviors, there was a significant interaction between deviant peer affiliation and distrust ($b = -0.08$, $RR = 0.93$, $p = 0.030$, 95% CI [−0.14, −0.01]), indicating that higher levels of distrust buffered against the positive effect of deviant peer affiliation on increased externalizing 3 years later (see Fig. 1; Table 4). There were no significant main effects of deviant peer affiliation or distrust on externalizing.

Model 2: Exploratory Analyses on Relations among Race/Ethnicity, Distrust, and Externalizing Behavior

Adjusted R^2 for the model was 0.35. The logit portion of the model showed no significant effects related to deviant peer affiliation, distrust, or the interaction between deviant peer affiliation and distrust.

In the negative binomial count portion of the model, the interaction among deviant peer affiliation, distrust, and Black racial group was significant ($b = -0.24$, $RR = 0.79$, $p = 0.047$, 95% CI [−0.47, −0.003]), showing that compared to White adolescents, the buffering effect of distrust on deviant peer affiliation and externalizing 3 years later

Table 4 Zero-Inflated Negative Binomial Regression Results for Model 1

Logit Model	B(SE)	z	OR
Variable			
Intercept	5.70 (1.42)	4.02***	298.44
Age (wave 2)	−0.28 (0.08)	−3.30***	0.76
Male	0.29 (0.25)	1.14	1.34
Black	0.29 (0.44)	0.65	1.33
Hispanic	0.36 (0.40)	0.92	1.44
Externalizing (parent-report CBCL; wave 1)	−0.32 (0.11)	−2.86**	0.72
DPA	−0.33 (0.13)	−2.57*	0.72
Distrust	−0.25 (0.13)	−1.91	0.78
DPA*Distrust	0.21 (0.10)	2.09*	1.24
Family socioeconomic status	−0.09 (0.10)	−0.87	0.92
Neighborhood disorder	−0.10 (0.15)	−0.63	0.91
Predominantly White Neighborhood	0.37 (0.42)	0.42	1.45
Predominantly Black Neighborhood	0.63 (0.41)	0.43	1.87
Predominantly Hispanic Neighborhood	−0.02 (0.43)	0.43	0.98

Negative Binomial Model	B(SE)	z	RR
Variables			
Intercept	1.85 (0.60)	3.10**	6.37
Age (wave 2)	−0.01 (0.04)	−0.41	0.99
Male	−0.09 (0.10)	−0.83	0.92
Black	−0.12 (0.19)	−0.66	0.89
Hispanic	0.20 (0.17)	1.18	1.23
Externalizing (parent-report CBCL; wave 1)	0.02 (0.04)	0.48	1.02
DPA	0.08 (0.05)	1.62	1.08
Distrust	0.05 (0.05)	0.88	1.05
DPA*Distrust	−0.08 (0.03)	−2.18*	0.93
Family socioeconomic status	0.04 (0.04)	0.87	1.04
Neighborhood disorder	0.04 (0.06)	0.69	1.04
Predominantly White Neighborhood	−0.14 (0.17)	−0.82	0.87
Predominantly Black Neighborhood	0.19 (0.18)	1.06	1.20
Predominantly Hispanic Neighborhood	0.03 (0.17)	0.2	1.04
Log(theta)	17.64 (16.93)	1.04	

AIC = 878.13

CBCL child behavior checklist, *DPA* deviant peer affiliation, *OR* odds ratios, *RR* rate ratios

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

was specific to Black adolescents (see Fig. 2; Table 5). The interaction among deviant peer affiliation, distrust, and the Hispanic compared to White racial group was not
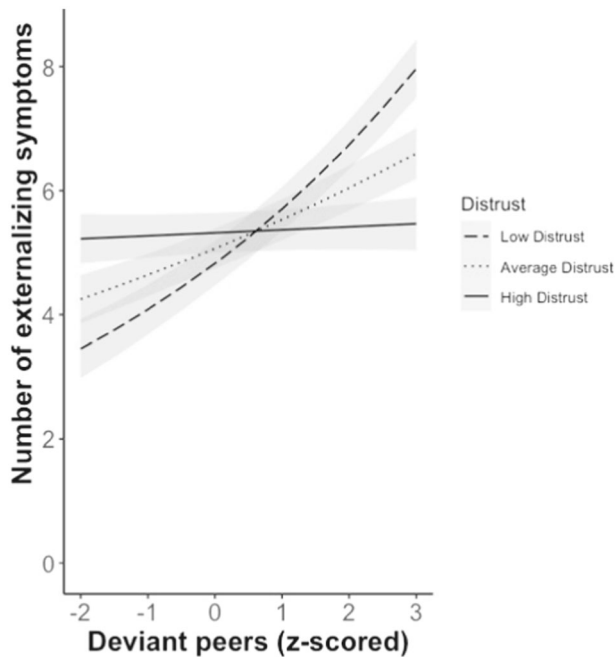
Fig. 1 Predicted count of externalizing symptoms as a function of distrust and deviant peer affiliation. *Note*: Error bands indicate 95% confidence intervals. Low distrust represents 1 SD below the mean, average distrust represents the mean, and high distrust represents 1 SD above the mean.

significant, although descriptively, the interaction suggests that the buffering effect of distrust on deviant peer affiliation and later externalizing also applies to Hispanic adolescents (see Fig. 2). The interaction among deviant peer affiliation, distrust, and the White racial group was also not significant, although descriptively, the interaction suggests an opposite pattern, wherein the association between deviant peer affiliation and externalizing is strongest at high levels of distrust for White adolescents (see Fig. 2).

Discussion

Deviant peer affiliation is reliably associated with engagement in externalizing behaviors during adolescence (Dishion et al., 2010; Samek et al., 2016). However, not all adolescents who interact with deviant peers display externalizing behaviors. Individual differences, such as distrust, influence how adolescents perceive and navigate their social world, ultimately influencing their behavior. The results show that greater deviant peer affiliation is more strongly associated with later externalizing behavior for adolescents lower on distrust compared to adolescents higher on distrust, and this buffering effect is specific to Black adolescents compared to their White counterparts.

Previous research shows that adolescent's level of distrust can affect interpersonal interactions (e.g., social

exclusion, non-engagement, cooperative behavior), aggressive and externalizing behaviors, and social distress (Malti et al., 2013; Rotenberg et al., 2014). The current study adds to this body of research by showing how specifying environmental contexts, in this case, affiliation with deviant peers, may be crucial for elucidating when distrust is an adaptive versus maladaptive behavior. For adolescents who had greater levels of deviant peer affiliation, the buffering effect of distrust appears to be the strongest. It is possible that being surrounded by peers who are engaging in risky or rule-breaking behaviors contributes to an adaptive tendency of suspecting others' intentions and motives. Distrusting others may protect individuals from following their peers and engaging in deviant behaviors themselves. For some individuals, distrust might be a lens through which they view some people or some interactions, but not all. However, having more frequent exposure to environmental conditions that reflect potential risk (i.e., greater deviant peer affiliation) might promote the application of being distrusting of others for self-protection or self-preservation.

Research in cognitive psychology shows that effects of distrust can result in consideration of alternative information and reasoning strategies that involve examination of disconfirming information (Mayo et al., 2014). Extending the effects of distrust to social interactions, imagine a peer attempting to persuade an adolescent to break a rule by downplaying potential negative consequences (e.g., "there is no way we will get caught"). An adolescent with high distrust might be suspicious of the intentions of this peer and more likely to recall incongruent associations, such as examples of when breaking the rules did lead to negative consequences. Thus, in the context of having many deviant peers, being wary of others' intentions can interrupt default modes of thinking and encourage consideration of possibilities beyond the expressed information, which may promote adaptive behavioral avoidance and protect against further engagement in externalizing behaviors.

The reasons an individual has higher levels of distrust can vary (Weiss et al., 2020). Two notable influences on the level of distrust include historical experiences that marginalize individuals, as well as practices preached and rehearsed by specific social groups. In the current study, it appeared that Black adolescents compared to their White counterparts were more likely to be distrusting of others, which protected against deviant peer affiliation and the development of externalizing. In the United States, Black adolescents are disproportionately exposed to threatening, disadvantaged, and discriminatory structural and social conditions (Geller, 2021; Williams & Mohammed, 2009). In these conditions, being distrustful of others is quite adaptive, and, in fact, can be deliberately taught for physical and psychological self-protection (Hughes et al., 2006; Nordberg et al., 2018; Okonofua & Eberhardt, 2015). For

Fig. 2 Predicted count of externalizing behavior as a function of distrust and deviant peer affiliation for White, Black, and Hispanic adolescents. Note: Error bands indicate 95% confidence intervals. Low distrust represents 1 SD below the mean, average distrust represents the mean, and high distrust represents 1 SD above the mean.
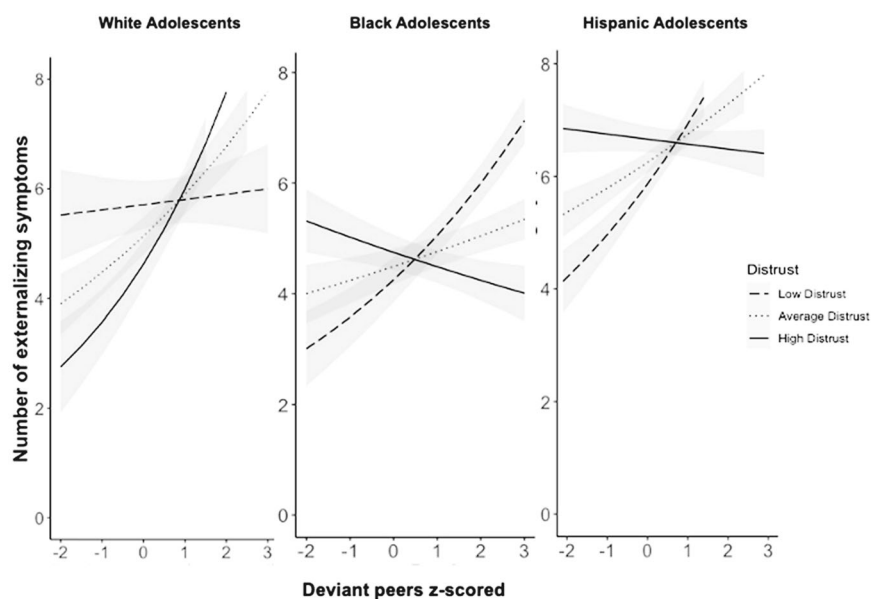
instance, if an adolescent lives in a neighborhood with high levels of crime, assuming others' intentions are self-serving and dishonest can protect them from potential exploitation. Similarly, if an adolescent is surrounded by peers who engage in deviant behaviors, being wary of the intentions of their peers, can mitigate against the social pressures to engage in externalizing behaviors. Notably, in neighborhoods that are more disadvantaged, association with deviant peers might arise out of necessity for physical protection (Sharkey, 2006), but tendencies to distrust others might prevent adolescents from becoming fully ensnared in the deviancy training of their peers. Although distrust might support adaptation to a specific, stressful environment, it is unclear if across environments, social relationships, and development, if distrust may hinder the formation of or quality of relationships.

Several limitations of the study should be noted. First, the measure of distrust was a broad scale constructed from items on the Youth Self-Report (Achenbach & Edelbrock, 1983), which was not a measure specifically developed to tap distrust. However, the items identified on the Youth Self-Report scale are face valid based on the conceptualization of distrust in other work (Rose et al., 2004; Ross et al., 2001; Terrell & Terrell, 1981).

Second, the focus of the current study was on a broad measure of distrust given the interest in peer relationships, and not in distrust of particular entities (e.g., police). Research shows that trust in others and the government has been declining in recent years (Rainie et al., 2019), therefore complementary work on understanding the effects of trust and distrust on behavior in different contexts appears increasingly important.

Third, due to when specific measures were administered in the PHDCN protocol, we were not able to determine potential bidirectional relationships among deviant peer affiliation, distrust, and externalizing behaviors. Longitudinal research indicates a reciprocal relationship between deviant peer affiliation and externalizing behavior (Samek et al., 2016; Van Ryzin & Dishion, 2014). It is reasonable to think that distrust and externalizing can co-evolve, such that youth with higher externalizing tendencies have more social conflict with peers or institutions that increases distrust. Thus, it would be interesting for future research to investigate the role of distrust in the formation and maintenance of relationships with deviant peers and ultimately externalizing behaviors.

Fourth, the control measure at Wave 1 relied on parent report and was different from the outcome measure of externalizing at Wave 2. The difference in measures impacts the interpretability of our results as a true change in the measure of externalizing behavior. However, the outcome measure of externalizing at Wave 2 positively correlated with other validated measures of externalizing, suggesting that the construct validity of our measure of externalizing behavior is adequate.

Fifth, the data from the PHDCN study are dated given that the study was conducted between 1994 and 2001. On the one hand, changes that potentially impact the applicability of the results to current day are inevitable, such as reported increases in distrust in others over the past 20 years (Pew Research Center, 2019). On the other hand, research also indicates that beliefs about change, such as the linear progress towards racial equality over history are incorrect (Kraus et al., 2019). Ultimately, more research needs to be

Table 5 Zero-Inflated Negative Binomial Regression Results for Model 2

Logit Model	B(SE)	z	OR
Variable			
Intercept	5.79 (1.43)	4.05	325.39
Age (wave 2)	−0.29 (0.08)	−3.38***	0.75
Male	0.27 (0.25)	1.05	1.31
Black	0.39 (0.47)	0.83	1.48
Hispanic	0.41 (0.41)	0.99	1.51
Externalizing (parent-report CBCL; wave 1)	−0.32 (0.11)	−2.83**	0.72
DPA	−0.57 (0.31)	−1.81	0.57
Distrust	−0.11 (0.34)	−0.33	0.89
DPA*Distrust	0.42 (0.30)	1.42	1.53
DPA*Black	0.22 (0.37)	0.59	1.24
DPA*Hispanic	0.33 (0.36)	0.92	1.39
Distrust*Black	−0.18 (0.41)	−0.43	0.84
Distrust*Hispanic	−0.14 (0.38)	−0.38	0.87
DPA*Distrust*Black	−0.26 (0.35)	−0.75	0.77
DPA*Distrust*Hispanic	−0.22 (0.33)	−0.66	0.80
Family socioeconomic status	−0.08 (0.10)	−0.79	0.92
Neighborhood disorder	−0.09 (0.15)	−0.57	0.92
Predominantly White Neighborhood	0.39 (0.43)	0.90	1.47
Predominantly Black Neighborhood	0.62 (0.42)	1.49	1.86
Predominantly Hispanic Neighborhood	−0.00 (0.43)	−0.01	1.00

Negative Binomial Model	B(SE)	z	RR
Variables			
Intercept	2.05 (0.64)	3.19**	7.75
Age (wave 2)	−0.03 (0.04)	−0.68	0.97
Male	−0.08 (0.11)	−0.68	0.93
Black	−0.13 (0.20)	−0.63	0.88
Hispanic	0.19 (0.19)	1.00	1.21
Externalizing (parent-report CBCL; wave 1)	0.03 (0.04)	0.66	1.03
DPA	0.14 (0.10)	1.38	1.15
Distrust	−0.11 (0.14)	−0.76	0.90
DPA*Distrust	0.12 (0.11)	1.15	1.13
DPA*Black	−0.08 (0.12)	−0.66	0.92
DPA*Hispanic	−0.06 (0.12)	−0.50	0.94
Distrust*Black	0.16 (0.16)	0.99	1.17
Distrust*Hispanic	0.18 (0.16)	1.14	1.20
DPA*Distrust*Black	−0.24 (0.12)	−1.99*	0.79
DPA*Distrust*Hispanic	−0.21 (0.12)	−1.77	0.81
Family socioeconomic status	0.02 (0.04)	0.56	1.03
Neighborhood disorder	0.07 (0.06)	1.11	1.07
Predominantly White Neighborhood	−0.25 (0.18)	−1.36	0.78

Table 5 (continued)

Negative Binomial Model	B(SE)	z	RR
Predominantly Black Neighborhood	0.19 (0.18)	1.03	1.21
Predominantly Hispanic Neighborhood	0.02 (0.19)	0.12	1.02
Log(theta)	16.41 (31.26)	0.53	

AIC = 892.43

CBCL child behavior checklist, *DPA* deviant peer affiliation, *OR* odds ratios, *RR* rate ratios

*p < 0.05; **p < 0.01; ***p < 0.001

done to understand how the results apply to the experiences of current day adolescents.

Finally, PHDCN focused on urban neighborhoods, with sufficient representation of Black, Hispanic, and White adolescents, but not rural communities or adolescents of other racial/ethnic groups. Social experiences of adolescents in other types of communities and of other racial/ethnic groups may differ from those represented in the PHDCN study. Given the opposing patterns in effect of distrust on deviant peer affiliation and externalizing behavior in Black and Hispanic versus White adolescents observed in this study, future research should continue to investigate how and why distrust affects racial/ethnic groups and the development of externalizing behavior differently.

Conclusion

Externalizing behaviors are costly acts that are increasingly being viewed as a public health problem (Leadbeater & Ames, 2017). Deviant peer affiliation is a robust predictor of increased and more severe externalizing behavior (Chen et al., 2015), yet knowledge about individual differences, specifically a tendency to distrust others, that may moderate this relationship remains limited. Findings showed that higher levels of distrust buffer against the effects of deviant peer affiliation on increasing externalizing behavior 3 years later, and that this effect is specific to Black adolescents compared to their White counterparts. These results highlight how integrating environmental-level and person-level factors refine identification of who might be most at risk for engaging in externalizing behaviors during adolescence. Further, results highlight the importance of considering culturally sensitive or tailored programming for adolescents in order to more effectively disrupt long-term engagement in and consequences of externalizing behavior.

Compliance with Ethical Standards

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