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# Discrepancy between Mother and Child Reports of Parental Knowledge and the Relation to Risk Behavior Engagement

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## Abstract

The study examined discrepancies in mother and child reports of parental knowledge (PK) of a child's whereabouts, activities, and companions, as well as the extent to which discrepancies in reports of PK are related to child risk-taking behavior concurrently and prospectively across two time points. The sample consisted of 219 mother and early adolescent youth (*M*n age = 11.0, *SD* = .8) dyads. Mother and child reports of PK significantly differed and, at both waves, scores on the risk taking composite related negatively to both mother and child reports of PK and positively to the discrepancy between the two reports. A significant interaction between mother and child reports was found at wave 2, such that the relation between child reported PK and risk behavior was stronger when mothers reported high levels of parental knowledge versus low levels of parental knowledge. Prospective analyses indicated a main effect of mother report.

### Keywords

Parental Knowledge; Discrepancy; Risk Behavior; Early Adolescence

Early adolescence, typically defined as ages 10 to 14 years, is a critical developmental period during which engagement in risky behaviors emerges. In particular, there often is a significant increase in the onset of substance use (Donovan, 2007), delinquency (Moffitt, Caspi, Harrington, & Milne, & 2002), and other health-compromising behaviors (DiClemente, Hansen, & Ponton, 1996; Smith-Khuri et al., 2004). Both concurrently and prospectively, one factor consistently associated with and considered to be an important predictor of the emergence of risk behavior engagement is parental knowledge, defined as knowledge of a child's whereabouts, activities, and companions (Stattin, & Kerr, 2000). It is notable that the term parental monitoring initially was the commonly accepted term for this variable but Stattin and Kerr (2000) argued that unless active parental monitoring was measured (i.e., tracking and surveillance), the narrower construct of "parental knowledge" is more appropriate.

Studies examining the relation between parental knowledge and adolescent risk behavior have shown that lower levels of parental knowledge are associated with alcohol and illicit drug use (Chilcoat & Anthony, 1996; DiClemente, et. al., 2001; Lahey, Van Hulle, D'Onofrio, Rodgers, & Waldman 2008), cigarette smoking (Lahey et. al., 2008), risky sexual behaviors (DiClemente, et. al., 2001; Sneed, Strachman, Nguyen, & Morisky, 2009)

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and aggression (Slovak & Singer, 2001). It is possible that parental knowledge is not as much a byproduct of parental practices (e.g., tracking, surveillance) but that parents receive information about their adolescent's activities through the adolescent's self-disclosure (Kerr & Stattin, 2000). Consequently, higher levels of child disclosure have been found to correspond with lower levels of rule breaking among adolescents (Stattin & Kerr, 2000), later initiation to and lower rates of substance use (Westling, Andrews, Hampson, & Peterson, 2008), and less risky sexual behaviors (Lohman & Billings, 2008) among early adolescents.

Parental knowledge has been assessed most commonly using only a single report, with the majority of studies using only child report (e.g., Beck, Boyle, & Boekeloo, 2003; Borawski, Ievers-Landis, Lovegreen, & Trapl, 2003; Li, Feigelman, & Stanton, 2000; Parker & Benson, 2005; Romero & Ruiz, 2007; Yang, Stanton, Li, Cottrel, Galbraith, & Kaljee, 2007; Yu et al., 2007), and a limited number of studies using only parent report (Kerr & Stattin, 2000; Pettit, Laird, Dodge, Bates, & Criss, 2001; Yang et al., 2006). In the few studies that have included both parent and child reports, the focus largely has been on whose report provides a better indicator of adolescent risk behavior. For example, Cottrell and colleagues (2003) found that both child and parent perception of parental knowledge were related to adolescent smoking, but that child report also was related to drinking, marijuana use, and sexual involvement. Others have found both child and parent perception of parental knowledge to be associated with adolescent risk behavior (Kerr, Stattin, & Burk, 2010; Stanton et al., 2000; Yu et al., 2006).

Although a direct comparison of child and parental knowledge may have utility for assessing adolescent risk behavior, it may be useful to consider an expanded perspective that also captures the extent to which child and parent reports differ. Indeed, previous research has found that parent and child reports of knowledge is often discrepant, such that the child perceives the parent to have less knowledge (Cottrell et al., 2003; Kerr et al., 2010; Stanton et al., 2000; Yu et al., 2006). Discrepancy in how parents and youth perceive and rate a child's social, emotional and behavioral problems is common (Achenbach, 2006; De Los Reyes & Kazdin, 2005; Grills & Ollendick, 2002). In this vein, discrepancies among informants' ratings of child symptoms have been studied extensively to understand what corresponds with the discrepancies, whether discrepancies are more common with some behaviors/disorders than others (e.g., internalizing versus externalizing), and whether one report (e.g., mother or child) is more useful/informative than the other (De Los Reyes & Kazdin, 2005).

Understanding the discrepancy in reporting between child and parent has been identified as more than measurement error. That is, discrepant reports are thought to not simply be the result of flawed assessment practices, but rather be indicative of clinically meaningful data in their own right, as they have been found to correspond with the way in which reporters relate to each other (e.g., dysfunctional interactions between the informants providing the information), and to be negatively associated with psychosocial functioning (Beck, Hartos, & Simons-Morton, 2006; Ferdinand, van der Ende, & Verhulst, 2004; Kiecolt-Glaser, et. al., 2005). For example, De Los Reyes, Goodman, Kliewer, and Reid-Quiñones (2008) examined whether mothers' and children's depressive symptoms were each uniquely related to mother–child rating discrepancies of parental monitoring. Results suggested that both informants' depressive symptoms meaningfully contributed to perceived discrepancies in parental monitoring. In terms of reporter discrepancies predicting negative outcomes, Ferdinand, van der Ende, and Verhulst (2004) found that discrepancies in child and parent scores on the Child Behavior Checklist have predicted adolescent's engagement in a wide range of risk behaviors, including substance use, school expulsion, and self harming behaviors. Thus, consideration of multiple informants' perspectives and the discrepancy

between these reports is thought to lead to a more comprehensive picture than provided by individual reports, as well as to be related to important youth outcomes.

Discrepancy research largely has focused on discrepant reports of child psychopathology and their correlates. Yet examining reporting discrepancies and their relation to outcomes can have utility outside of assessments of child psychiatric symptoms. A fertile area in which to examine discrepancies is in the link between parental knowledge and adolescent risk taking behavior (Kerr et al., 2010). In particular, discrepancy in parent and child reports of parental knowledge may reflect important information about youth risk behavior involvement. For example, if a child is reporting low levels of parental knowledge and the mother is reporting high levels, this discrepancy may be indicative of a lack of involvement by the parent, poor parental control, and/or lack of communication between the parent and the youth, all of which are associated with risk behavior (Barber, Olsen, & Shagle, 1994; Fors, Crepaz, & Hayes, 1999; Fulkerson, Story, Mellin, Leffert, & Neumark-Sztainer, 2006; Guilamo-Ramos, Jaccard, Dittus, & Bouris, 2006; Resnick et al., 1997; Roche, Saiffudin, & Blum, 2008). Conversely, agreement on high levels of knowledge may be indicative of a healthy mother-child relationship and thus would be related to low levels of youth risk behavior involvement (Branstetter, Furman, & Cottrell, 2009; Schinke, Fang, & Cole, 2008). Yet, it is also important to consider contrasting discrepancies; that is, when the mother and child agree on low levels of knowledge and when the child reports high levels of knowledge and the mother reports low levels. It remains unknown if discrepancy in parental knowledge in general, regardless of the direction (mother or child report higher), is indicative of poor child outcomes and further whether agreement in general (regardless of whether at the lower or higher end of the knowledge spectrum) is related to lower levels of child risk behavior engagement. It may be that agreement at the lower end of the scale, that is both mother and child report low levels of parental knowledge suggesting no discrepancy, is simply reflective of a lack of important parental knowledge taking place. Thus, understanding child and parent reports of parental knowledge and how each relates both independently and in conjunction with one another may have important implications in understanding risk behavior engagement.

To study these differences in reporting, previous research has primarily evaluated discrepancy in two ways: correlations (i.e., degree to which parents and children agree on some rating) and difference scores (i.e., the actual difference between parent and child total scores) (Carlston & Ogles, 2009). There are limitations inherent in both approaches. For the correlation, differences in magnitude are masked. So in considering a severity rating, the actual degree of severity reported by either the parent or the child has a less of an impact on the obtained correlation coefficient than does the relative ranking of the severity rating (Carlston & Ogles, 2009). In terms of a difference score, three methods have been used: raw difference, standardized difference, and residual difference score. De Los Reyes and Kazdin (2004) have advocated for the use of the standardized difference score (SDS; the subtraction of one informant's standardized rating from another informant's standardized rating), as it is the only difference score measure that correlates equally with each of the informants' ratings, produces the most consistent estimates among informant discrepancies and informant characteristics, and is statistically distinguishable from the informant's ratings from which it was created. Although this approach is useful, it is limited in differentiating where on the scale the individual mother and child ratings fall. It also may have limitations for understanding how and where differences in reports predict outcomes. For example, in reference to parental knowledge, parent-child agreement at the upper end of a scale (both mother and child indicate high knowledge and the difference between their scores is one) would be scored identically to parent-child agreement at the bottom of the scale (both mother and child indicate an absence of knowledge and the difference between their scores is one). Thus, the SDS demonstrates the magnitude of the difference between reports but it

does not allow for an understanding of where along the continuum of a scale the discrepancy occurs. Moreover, because the SDS uses the difference of the child and parent reports, it is not possible to control for the individual reports and to determine the contribution of SDS above and beyond such reports. Thus as a complement to SDS, testing the interaction of parent and child reports may prove useful.

As such, the current study examined discrepancies in mother and child reports of parental knowledge (using multiple statistical methods including correlation, SDS, and interaction) as well as the extent to which mother-child reporting discrepancies are related to child risk-taking behavior engagement (e.g., substance use, delinquency, and safety behaviors) concurrently and prospectively across two time points. Specifically, we proceeded with several hypotheses. First, we expected that child and mother reports of parental knowledge would differ both concurrently and prospectively over the one year follow-up. Second, we expected that discrepancy in reports would show concurrent and prospective relationships with youth risk behavior engagement. This study builds upon previous research by examining the relations between child and mother reports and exploring the association of discrepancies in reported parental knowledge with child engagement in risk behavior.

## Method

### Participants

This study employed data from a community sample of children and early adolescents ($n$ = 277) ages 9 to 13 at initial enrollment participating in a larger prospective study of behavioral, environmental, and genetic mechanisms of risk for HIV-related risk behaviors in youth. Follow-up assessments were conducted at yearly intervals for 2 consecutive years and are ongoing. Participants included in the present analyses were youth who came for their assessment with their mother and completed both the baseline and the first annual follow-up assessments (waves 1 and 2). Participants were excluded from the present analyses if they did not complete the second wave of data collection ($n$ = 33), did not come to the assessment with their mother as their primary caregiver ($n$ = 10), or were missing data on the risk behavior dependent variable at wave 1 ($n$ = 13) or wave 2 ($n$ = 2). Participants lost to attrition included those who had moved from the area, could not be located, or did not respond to phone or letter inquiries. Excluded participants ($n$ = 58) did not differ significantly on gender, age, ethnicity, parental knowledge (mother and child reports), or risk behavior ($p$'s >.10). The resultant sample of 219 youth included participants who at study enrollment were on average 11.0 years of age ($SD$ = .8), 47.0% female, 52.5% non-Hispanic White, 32.9% African-American, 2.3% Latino, 12.3% of another ethnicity (including mixed ethnicity), and 67.9% with the biological father living in the home.

### Procedures

Permission to conduct research was obtained from the University of Maryland Institutional Review Board (IRB). Participants were a convenience sample of youth and their mothers recruited in the greater metropolitan Washington, D.C. area via media outreach and mailings with area schools, libraries, and Boys and Girls Clubs. Recruitment lasted approximately two years and was open to all youth in the 5$^{th}$ and 6$^{th}$ grades who were proficient in English; no other exclusion criteria were used. Interested families who met inclusion criteria were invited to come to the Center for Addictions, Personality, and Emotion Research (CAPER) located at the University of Maryland campus and accessible by public transportation.

Upon arrival at the baseline assessment session, a more detailed description of the study procedures was provided and the mother and youth signed informed consent/assent. The youth and mother were then accompanied to separate rooms to complete the assessments.

Standardized specific instructions were given separately to the mother and youth. These procedures were repeated at all subsequent interview points.

## Measures

**Demographics—**The mother completed a basic demographics form for personal information, as well as information about the child. The form included age, gender, ethnicity, annual family income, and the presence of the biological father in the home. The annual family income variable was collapsed into quartiles (0–48,000, 48,001–85,000, 85,001–120,000, 120,001–highest).

**Parental Knowledge—**This five-item measure inquires about parents' knowledge of the youth's activities and the child's perception of their parents' knowledge. This is an abbreviated version of the Stattin and Kerr (2000) measure. Given the lack of consistency with parental knowledge measures (Lahey et al., 2008), the five items that were selected from the Stattin and Kerr (2000) measure were based on prior research and items thought to be most relevant and least redundant for this age group. Supporting this approach, several other studies have utilized a similar set of items and have shown relationships with risk behavior engagement in adolescence (Brown, Mounts, Lamborn & Steinberg 1993; Barber, 1996; Jacobson & Crockett, 2000; Roche & Levethal, 2009; Wang, Simons-Morton, Farhart, & Lik, 2009). The measure was completed independently by both mother and child. Participants were asked to rate each item according to the extent to which it accurately describes their experience using a 5-point Likert scale (0 = *never*; 4 = *always*). Items include, "Do your parent(s) know what you do during your free time?," "Do your parent(s) know who you have as friends during your free time?," "Do your parent(s) usually know what type of homework you have?," "Do your parent(s) know where you go when you are out?," and "Do your parent(s) normally know where you go and what you do after school?" Mothers answered the same questions, with minor changes to the wording e.g. "Do you know what your child does during his or her free time? Items were summed to create a total parental knowledge score for mother report and a total score for child report. Internal consistency within this sample of youth was adequate at both wave 1 ($\alpha = .65$) and wave 2 ($\alpha = .82$) for mother report and at both wave 1 ($\alpha = .63$) and wave 2 ($\alpha = .77$) for child report.

**Self-Reported Risk Behaviors—**Consistent with our previous work in examining risk behaviors in youth (Aklin, Lejuez, Zvolensky, Kahler, & Gwadz, 2005; Lejuez, Aklin, Daughters, Zvolensky, Kahler, & Gwadz, 2007), we used a modified version of the Youth Risk Behavior Surveillance System (YRBSS; Centers for Disease and Control Prevention, 2001) in order to create a risk behavior composite score. Previous research by Cooper, Wood, Orcutt, and Albino (2003) has demonstrated that covariation among diverse behaviors (e.g., delinquent behavior and substance use) can be adequately modeled by a single higher order factor. The YRBSS assesses past year engagement in the following behaviors: a) drank alcohol, b) smoked a cigarette, c) used any illicit drug, d) been in a physical fight, e) gambled for real money, f) rode a bicycle or motorcycle without a helmet, g) rode in a car without wearing a seatbelt, h) crossed the street recklessly, i) carried a weapon, j) stole from a store, and k) stole from a person. Youth reported the frequency of past year engagement for these risk behaviors on a likert-type scale with the following response options: a) *Zero*, b) *Once*, c) *A few times*, d) *1–3 times per month*, e) *1–3 times per week*, and f) *Almost every day or more*. At wave 1, four risk behaviors (smoked a cigarette, used any illicit drug, carried a weapon, and stole from a store) were highly truncated with over 93% of youth reporting they had not engaged in this behavior. At wave 2, the distribution of these risk behaviors remained truncated with the exception of carrying a weapon and stealing from a store which both increased in prevalence to above 10%.

Consequently, cigarette smoking and illicit drug use were excluded from further analysis as they contributed no variability; stealing from a store and carrying a weapon were included, but in wave 2 analyses only. This approach to using a different number of risk behaviors in different waves to allow for the most psychometrically sound scale at each wave is recommended by Cooper et al. (2003) and has been used in our previous work (MacPherson et al., in press).

Because of the nonnormality of the risk behaviors distributions, we dichotomized each behavior to keep all variables on a relatively equal metric in order to combine these items into a single factor (cf. Aklin et al., 2005; Lejuez et al., 2007). Five risk behavior variables were truncated with greater than 50% of responses being zero (crossed street, been in a physical fight, stolen from a person, gambled, drank alcohol) and were subsequently dichotomized as yes/no engaged in the behavior. For the other two variables with a less truncated distribution (helmet, and seatbelt, with under 30% reporting no engagement in that risk behavior in each case), a median split was used to classify each participant as either high or low on the risk-related behavior. Distributions of the risk behaviors did not substantively change from wave 1 to wave 2, except for an increase in crossing the street recklessly which was thus subjected to a median split, and the inclusion of both carrying a weapon and stolen from a store which were both dichotomized. The same method of dichotomizing or using a median split was applied for all other behaviors at both waves of data.

In the seven wave 1 risk behaviors, results of an iterated principal factor analysis of tetrachoric correlations with robust weighted least squares estimation indicated a dominant first factor with an eigenvalue of 2.71, and accounting for 39% of the common variance among the items. Item loadings ranged from .43 (been in a fight) to .66 (stolen from a person), suggesting that all items loaded adequately on this factor. The seven items were then summed into a risk behavior composite with a scale mean of 2.81 (*SD* = 1.73) with a range of 0 to 7. Internal consistency for the scale was comparable to other studies of early adolescent risk behavior (Cronbach's $\alpha = .57$) and no items detracting from alpha. Other composites of similar risk behaviors in youth have ranged from alpha = .38 to alpha = .78 (e.g., Donovan, Jessor, & Costa, 1991; Lejuez et al., 2007). In the nine wave 2 risk behaviors, conducting the same factor analyses as wave 1, a dominant first factor with an eigenvalue of 3.55 was identified, accounting for 39% of the variance. Item loadings ranged from .43 (been in a fight) to .67 (seatbelt). The wave 2 risk behavior composite consisting of nine items had a scale mean of 3.26 (*SD* = 2.05) with a range of 0 to 9. Internal consistency for the scale was slightly higher than in wave 1 (Cronbach's $\alpha = .62$), and again no items detracting from alpha.

## Data Analyses

Analyses, conducted at both waves of data collection unless otherwise specified, were conducted in the following steps. First, the distributional properties of all noncategorical variables were assessed to determine whether they met the statistical assumptions for the analyses. Second, correlations among measures, means, standard deviations, and changes from wave 1 to wave 2 were examined.

Third, ANOVAs were conducted to determine whether a significant relationship existed between risk taking behavior composite at each wave and income, ethnicity, and presence of the biological father in the home. Of note, age and gender were included as covariates because of their relation to risk behavior in the current data. Ethnicity group differences were not significant for wave 1 ($F(3, 218) = .98$, $p = .43$) or wave 2 ($F(3, 218) = .50$, $p = .78$). Income group differences were also not significant for wave 1 ($F(3, 218) = .08$, $p = .97$) or wave 2 ($F(3, 218) = .63$, $p = .60$). Presence of the biological father in the home was not

significant for wave 1 ($F(1, 218) = 2.87$, $p = .09$) or wave 2 ($F(1, 218) = .27$, $p = .61$). Ethnicity was not significantly related to child and mother reports of parental knowledge at either wave (*p*s > .05). Higher income was related to higher mother report of parental knowledge at wave 1 ($r_s = .18$, p < .01) but not at wave 2 nor for child report at either wave (*p*s > .05). Presence of the biological father in the home was related to higher mother report of parental knowledge at wave 1 ($r_{pb} = .18$, $p < .01$) and child ($r_{pb} = .15$, $p < .05$) and mother ($r_{pb} = .26$, $p < .001$) report of parental knowledge at wave 2. Ethnicity, income, and presence of the biological father were not included as covariates as they were unrelated to the outcome variable.

Fourth, to examine the discrepancy between mother and child reports of parental knowledge, we utilized the SDS, created based on De Los Reyes and Kazdin (2004). The SDS was created by first converting each child rating and his or her mother's ratings of parental knowledge at wave 1 and 2 into z scores and then subtracting the child's z score from the mother's z score. Although useful and in line with previous research, as described above, this approach is limited to differentiating where on the scale the individual mother and child ratings fall. Therefore, we also calculated interactions between mother and child reports.

Fifth, hierarchical linear regressions were conducted to examine the relative contributions of covariates (i.e., age and gender), independent variables (e.g., mother and child reports of parental knowledge), and the interactions between mother and child reports in their concurrent relations to risk behavior engagement within each assessment wave. Variables were centered prior to creation of their interaction terms, and significant interactions were further explored, based on procedures recommended by Aiken and West (1991) and Holmbeck (2002). Finally, all of the above analyses were repeated examining the prospective relation between wave 1 predictors and wave 2 risk behavior engagement.

## Results

### Descriptive Statistics and Intercorrelations among Predictors

Distributional properties of all noncategorical variables were assessed; all variables met the statistical assumptions for the analyses. Descriptive statistics are presented for wave 1 and wave 2 in Table 1. Point biserial and Pearson correlations among the variables at each wave were examined and are presented in Table 2; wave 1 correlations are displayed below the diagonal, wave 2 correlations are presented above the diagonal. Child and mother reports of parents' knowledge were significantly related at wave 1 and wave 2 (*r*s = .29 and .42 respectively). Greater risk behavior was associated with lower child report ($r = -.34$) and mother report ($r = -.16$) of parental knowledge at wave 1. These correlations with risk behavior are significantly different ($z = -2.32$, $p < .05$). At wave 2, greater risk behavior was also associated with lower child report ($r = -.38$) and mother report ($r = -.19$) of parental knowledge. These correlations with risk behavior are significantly different ($z = -2.74$, $p < .01$). SDS was not related to child age and gender but it was significantly related to risk behavior at wave 1 and wave 2 (*r*s = .15 and .17 respectively).

Differences in reports of child and mother report at wave 1 and wave 2 were examined. Individual repeated measures ANOVA indicated a significant difference between mother and child reports at wave 1 ($F(1, 218) = 25.33$, $p = .001$; $eta^2 = .10$) and wave 2 ($F(1, 218) = 40.75$, $p = .001$; $eta^2 = .16$). In both cases mothers' report of parental knowledge was higher than children's report of parental knowledge but the effect was more robust in wave 2. In examining changes over the year, a repeated measures ANOVA indicated a significant decrease in child ($F(1, 218) = 37.11$, $p = .001$; $eta^2 = .14$) and mother ($F(1, 218) = 46.09$, $p = .001$; $eta^2 = .18$) reports of parental knowledge across the two years. In addition there was a significant interaction ($F(1, 218) = 5.84$, $p = .02$; $eta^2 = .03$) such that the child report

decreased more so than mother report. When controlling for age and gender in this analysis, the interaction remained significant ($F(1, 216) = 6.42$, $p = .01$; $eta^2 = .03$).

### Concurrent Relations with Risk Behavior Engagement

Hierarchical linear regressions were conducted for the dependent variable of risk taking behavior at each wave, with age and gender entered in the first block, child and mother reports of parental knowledge entered in the subsequent block, and the interaction between child and mother reports of parental knowledge entered in the final block. Standardized betas and changes in $R^2$ are presented in Table 3. Other two-way (e.g., child report of parental knowledge by gender) and three-way interactions not hypothesized in the present study were examined but were not significant at either wave and thus models are presented without these effects.

At wave 1, risk behavior engagement was predicted by child report of parental knowledge, but not parental report or any other variable including the 2-way interaction of child and mother reports. The overall model explained 14% of the variance in wave 1 risk behaviors engagement. At wave 2, the main effects of gender and child report of parental knowledge were significant predictors of risk behavior engagement. Unlike wave 1, this wave 2 analysis evidenced the hypothesized significant two-way interaction between child and mother reports of parental knowledge in the relation with risk behavior engagement. The overall model explained 23% of the variance in involvement in wave 2 risk behaviors ($\Delta R^2$ for the interaction variable = .02).

The significant two-way interaction was explored in line with procedures outlined by Aiken and West (2001) and Holmbeck (2002). Two new conditional moderator variables were created (mother report of parental knowledge, MRPK, was assumed to be the moderator); 1) HighMRPK = MRPK – *SD* (high mother report of parental knowledge; *SD* = 2.24) and 2) LowMRPK = MRPK – −*SD* (low mother report of parental knowledge; *SD* = 2.24). Then the cross-product of each new variable with wave 2 child report of parental knowledge was computed to create interaction terms. Finally, engagement in risk taking behaviors was regressed on child report of parental knowledge, the conditional values of mother report of parental knowledge (i.e., HighMRPK, LowMRPK), and each cross-product in two separate regression analyses. The resulting *t* tests for the betas indicated the slope for the high mother report of parental knowledge group was significantly different from zero ($B = -.24$, $\beta = -.45$, $t(213) = -5.10$, $p = .001$) as was the slope for the low mother report of parental knowledge group ($B = -.14$, $\beta = -.26$, $t(213) = -3.65$, $p = .001$). Thus, the relation between child reported parental knowledge and risk behavior was significant for both low and high mother reported parental knowledge. However, the significant interaction from the regression indicated that the relation between child reported parental knowledge and risk behavior is stronger when mothers report high levels of parental knowledge versus low levels of parental knowledge. The interaction of child by mother report of parental knowledge is depicted in Figure 1 by plotting the regression of risk behavior engagement (dependent variable) on child report of parental knowledge (independent variable) as a function of mother report of parental knowledge.

**SDS—**A hierarchical linear regression was conducted for the dependent variable of risk taking behaviors with age and gender entered in the first block as covariates and the SDS entered in the second block. The SDS was significant at wave 1 and ($B = .21$, $SE = .09$, $\beta = .15$, $p = .02$; left column of Table 4) wave 2 ($B = .29$, $SE = .12$, $\beta = .16$, $p = .02$; middle column of Table 4).

### Prospective Relation between Wave 1 Predictors and Wave 2 Risk Behavior Engagement

We also examined univariate relations between proposed predictors assessed at wave 1 and risk behavior engagement at wave 2. Univariate linear regressions indicated that older age at baseline ($B$ = .33, $SE$ = .16, β = .14, $p$ = .045), male gender ($B$ = 1.34, $SE$ = .25, β = .34, $p$ = .001), lower child report of parental knowledge ($B$ = −.17, SE = .05, β = −.23, $p$ = .001), and lower mother report of parental knowledge ($B$ = −.26, $SE$ = .07, β = −.24, $p$ = .001) predicted wave 2 risk behaviors.

Next hierarchical linear regressions were conducted for the dependent variable of wave 2 risk taking behavior, with age, gender, and wave 1 risk taking behavior entered in the first block, wave 1 child and mother reports of parental knowledge entered in the subsequent block, and the interaction between wave 1 child and mother reports of parental knowledge entered in the final block. As reported in Table 3 (right column), wave 2 risk behavior engagement was predicted by gender, wave 1 risk behavior composite, and unlike the cross sectional analyses at each wave, mother report of parental knowledge but not child report. The 2-way interaction of child and mother reports was not significant. The overall model explained 38% of the variance in wave 2 risk behaviors engagement. As described in the measurement section, the wave 1 and wave 2 risk behavior composites consisted of different number of risk behaviors (7 for wave 1 and 9 for wave 2) to allow for the most psychometrically sound measurement at each wave. Providing some assurance that the difference in included behaviors was not confounding the analyses, the outcome of the prospective analyses did not change if we limited our assessment to the same 7 behaviors in each wave.

**SDS—**At a univariate level, the wave 1 SDS was not significantly associated with wave 2 risk behavior engagement ($B$ = −.02, $SE$ = .11, β = −.01 $p$ = .86), and it was not significant above the covariates in a hierarchical linear regression ($B$ = −.02, $SE$ = .11, β = −.01, $p$ = .85; right column of Table 4).

## Discussion

This study examined risk behavior in early adolescence in relation to child and mother reports of parental knowledge, both in terms of individual scores as well as discrepancy between reports concurrently and prospectively across two time points. This study builds upon previous research, which commonly attends to a single informant's report and more specifically child report, by examining the relations between child and mother reports and exploring the association of discrepancies in reports of parental knowledge with child engagement in risk behavior. To our knowledge, this is the first study to evaluate multiple indices of discrepancy in child and mother reports of parental knowledge and to examine current and prospective relationships between discrepancy and risk behavior engagement in early adolescents. Findings provide insight into the relation of mother and child reports of parental knowledge as they relate to the emergence and maintenance of risk behavior in a sociodemographically diverse sample of early adolescents.

Child and mother reports of parental knowledge were modestly correlated at each wave, with mothers reporting significantly greater parental knowledge than children reported at both wave 1 and wave 2. While both mother and child reports of parental knowledge decreased from wave 1 to wave 2, child report decreased to a greater extent and mother report was more stable (of note this effect was small). The smaller decrease in mother report in comparison to child report led to a greater discrepancy between mother and child reports of parental knowledge at wave 2. The decrease in child and mother report is consistent with previous studies indicating a decrease in parental knowledge as youth age (Kerr et al., 2010;

Rai et al., 2003; Li, Stanton, & Feigelman, 2000). Although the decrease in mother report was less robust than for child report, it was a significant decrease nonetheless.

Consistent with our hypotheses, univariate analyses indicated that mother and child reports of parental knowledge were related to risk behavior at both waves, such that both lower child and mother reported parental knowledge were associated with greater engagement in risk behavior. With regard to discrepancy, the SDS predicted risk behavior in the primary univariate analyses, and remained a significant predictor at both waves after controlling for demographic factors (although accounting for a modest amount of variance). The findings related to SDS suggest that larger differences in child and mother reports of parental knowledge (with mother reporting greater levels than child) are associated with greater engagement in risk behavior, regardless of where on the scale the discrepancy takes place.

Further, at wave 2, a hierarchical linear regression predicting the risk taking composite revealed a significant interaction between mother and child reports. The interaction of child and mother reports allowed us to identify how level of mother report of parental knowledge alters the relationship between child reported parental knowledge and risk behavior involvement. The relation between child reported parental knowledge and risk behavior was significant for both low and high mother reported parental knowledge. The significant interaction from the regression indicates that the relation between child reported parental knowledge and risk behavior was stronger when mothers reported high levels of parental knowledge versus low levels of parental knowledge. The absence of this finding at wave 1 and its presence at wave 2 was somewhat unexpected. At one level it could be a result of methodological/reporting issues as the alphas for both child and mother reports of parental knowledge were somewhat higher in year 2 as compared to year 1. While speculative, this result also may be related to the greater difference between child and mother reports overall at wave 2 compared to wave 1 (allowing for a greater impact of discrepancy), as well as greater risk behavior engagement. Indeed as adolescents age and spend increasing amounts of time away from home, parents may have less knowledge of activity of their adolescent. As such, parents are less likely to have direct information about the child's activities from active monitoring and are more likely to have to rely on alternative methods such as asking their child directly about their whereabouts, activities, friends etc. These differences in information may lead to the possibility of a greater discrepancy between parent and child's reports of parental knowledge. If this differentiation between mother and child reports continues to widen, the explanatory power of this interaction may become more robust in additional waves of data. Future work will allow us to more clearly identify empirically if increasing discrepancies are part of a developmental trend. Together these findings highlight the utility of gathering data from multiple informants, and evaluating multiple indices of discrepancy, as these approaches provide both unique and complementary information about the relationship of reported parental knowledge and risk behavior engagement.

Building from prior work it is possible to speculate that a mother reporting higher levels of parental knowledge than the child may be indicative of a parent/child disconnect or fracture in the relationship (e.g., lack of communication, parental non-involvement), thus leading to the discrepancy and risk behavior. Yet, it is important to note that it is not *any* discrepancy that leads to increased risk behavior engagement. For example, when the child reports higher levels of parental knowledge and the mother reports lower levels, a moderate level of risk behavior engagement is observed. This finding as well as the finding of convergence of reports of low levels of parental knowledge showing high levels of risk behavior engagement speaks to the importance of the need for higher levels of parental knowledge and particularly from the child's perspective. It will be important for future work to examine what may cause the discrepancy in reports of parental knowledge when the child reports

lower levels and the mother reports higher levels and how these factors may be specifically tied to risk behavior engagement.

Contrary to our hypotheses, a different pattern emerged in our prospective analyses. While both child and mother reports of parental knowledge were associated with risk behavior at a univariate level, only mother report of parental knowledge prospectively predicted engagement in risk behavior beyond demographic variables and wave 1 risk behavior. Moreover, neither SDS nor the interaction of mother and child report of parental knowledge at wave 1 were significantly associated engagement in risk behavior at wave 2. The strength of mother report of parental knowledge as a prospective predictor of risk behavior was somewhat unexpected, given that child report of parental knowledge was a more robust predictor of risk behavior in our cross-sectional analyses. In considering these results, it is important to take into account that the child is the one reporting on their own risk behavior engagement. Thus, the cross sectional analyses for the child essentially include data for both risk behaviors and parental knowledge from the same informant during the same time frame. Although in the prospective analysis the child provides both reports, the fact that they occur at different time points may limit the influence of response bias and thus also explain the stronger cross-sectional findings. That is, the role of informant effects (shared method variance) likely accounted for the parent-reported knowledge variable only being significant in the longitudinal findings, as child-reported risk (i.e., child method effects) were controlled for in the longitudinal but not the concurrent analyses. Beyond methodological factors, it is notable that the child report decreased more so over the one year period than did the mother report. The more stable mother report may suggest that the mother report is less altered by proximal events and therefore more useful to predict over time. Future work is needed to understand why discrepancy was not observed prospectively. It is notable that it was a conservative test controlling for wave 1 risk behavior. Nevertheless, it will be important to examine in future years whether prospective prediction of child report and discrepancy improves or if child report and discrepancy change with risk behavior and provide little prediction from a previous time point.

Findings should be interpreted in light of the study's limitations. First, the single year follow-up is a limited period of time allowing only tentative conclusions about the relation of parental knowledge to engagement in risk behavior over the course of early adolescent development. Mother and child reports of parental knowledge are likely to fluctuate over the course of development, for example, in response to engagement in risk behavior or as developmental milestones are met (Hayes, Hudson, & Matthews, 2003; Cottrell et al., 2003). Thus, it cannot be assumed that findings from this sample of early adolescents will generalize to older adolescents. Additionally, our measure of parental knowledge, though theoretically consistent with our conceptualization of parental knowledge, consisted of only five items, which may have reduced variance among respondents (Hinkin, 1995). Similarly, we calculated our indices of discrepancy based on sum scores from the parental knowledge scales, whereas item-level analysis may have provided greater detail about the extent and nature of discrepancy in mother and child reports (Levi & Drotar, 1999). Another limitation of the measurement is that the child report of parental knowledge did not specify which parent (it asks about parents in general) and thus the child may have been averaging across parents and/or additional caretakers thus contributing to the discrepancy between the parent and child report. It will be important for future work to specify the parent on the child report. Next, the risk behavior composites presented in this study have relatively low reliability estimates. Although these reliability estimates are comparable with those based on other examinations of risk behavior within this age group (e.g., Donovan et al., 1991; Lejuez et al., 2007), further attention is needed in scale development for more reliable assessment of risk behavior engagement during this developmental period. Although we assessed a range of risk behaviors, including safety behaviors, substance use, and delinquency, there was a

clear emphasis on externalizing forms of behavior. This focus may explain the strong association of male gender with risk-taking in our sample, given that adolescent males are especially likely to engage in these forms of risk behavior (Young, Corley, Stallings, Rhee, Crowley, & Hewitt, 2002; Moffitt & Caspi, 2001). Other forms of risk behaviors such as non-suicidal self-injury (Nock, Joiner, Gordon, Lloyd-Richardson & Prinstein, 2006) should be incorporated in future research. In addition, the model included a relatively small number of covariates, ultimately accounting for 23% of the variance in risk behaviors at wave 2 (with the interaction accounting for a small amount of variance, 2%). Future research should continue to expand upon this model by incorporating interpersonal factors (e.g., peer engagement in risk behavior; Rai et al., 2003) as well as intrapersonal variables associated with risk behavior (e.g., impulsivity, negative affect regulation; Stanford, Greve, Boudreaux, Mathis & Brumbelow, 1996; Cooper et al., 2003). Finally, although much of the parental knowledge literature has emphasized the relationship between parental knowledge and engagement in various risk behaviors, there is some evidence that parental knowledge is associated with youth outcomes in other domains, including academic achievement, social adjustment and emotional well-being (Jacobson & Crockett, 2000; Brown et al., 1993). Future research specifically targeted to address these questions is needed to examine whether discrepancies in parental knowledge prospectively predicts other youth outcomes.

### Implications for Research, Policy and Practice

Keeping in mind these limitations, results of the present analyses have several implications for the study of parental knowledge and risk behavior in adolescence. Informant discrepancy is a widely acknowledged phenomenon in the pediatric clinical literature, with a growing body of research devoted to characterizing inconsistencies in informants' reports and evaluating their significance to child and adolescent clinical outcomes (De los Reyes & Kazdin, 2005). This study is among the first to apply these strategies to examine discrepancies in youth and mother reports of parental knowledge and how they relate to youth risk behavior engagement. Preliminary findings suggest that, regardless of the objective accuracy of child and mother reports of parental knowledge, there may be value in collecting data from multiple informants, and considering these reports both independently and in conjunction with one another.

The findings presented here suggest that the children whose reports of higher parental knowledge converge with their mother's report of higher parental knowledge show the lowest engagement in risk behaviors, highlighting increased knowledge and reduced discrepancy as possible targets for prevention and intervention efforts. That is, an intervention to enhance parental knowledge and reduce discrepancy between child and mother perception of parental knowledge may be helpful (e.g., expanding on the single-session intervention developed by Li, Stanton, Galbraith, Burns, Cottrell and Pack, 2002 to reduce parent-child discrepancy in reports of child risk behavior involvement). However, further research is warranted to characterize parental knowledge in general, and discrepancy in particular, over the course of adolescent development, and to understand the association of these factors with engagement in risk behavior in the short- and long-term.

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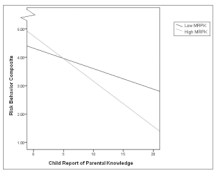


**Figure 1.**
Interaction between child and mother report of parental knowledge as it relates to risk behavior engagement in Wave 2.
*Note.* Y-axis scale has been truncated; risk behavior composite ranges from 0–9. MRPK = Mother report of parental knowledge.

**Table 1**

Descriptive Statistics for Wave 1 and Wave 2 Assessments

| | Wave 1 (n= 219) | Wave 2 (n=219) |
|---|---|---|
| Demographic Variables: | | |
| Age (*M (SD)*) | 11.03 (.82) | 12.09 (.90) |
| Gender (% Female) | 47.0 | 47.0 |
| Ethnicity (%): | | |
| White | 52.5 | 52.5 |
| Black | 32.9 | 32.9 |
| Hispanic | 2.3 | 2.3 |
| Other Ethnicity (including mixed ethnicity) | 12.3 | 12.3 |
| Annual Family Income (%): | | |
| 0–48,000 | 25.6 | 20.8 |
| 48,001–85,000 | 26.1 | 26.1 |
| 85,001–120,000 | 24.2 | 23.9 |
| 120,001-highest | 24.2 | 29.2 |
| Biological father present in the home (%) | 67.1 | 66.4 |
| Child Report Parental Knowledge *(M (SD))*[*] | 16.97 (2.66) | 15.92 (3.69) |
| Mother Report Parental Knowledge *(M (SD))*[*] | 17.90 (1.81) | 17.39 (2.24) |
| Risk Behavior Engagement *(M (SD))*[a] | 2.08 (1.61) | 2.66 (1.98) |

Note.

[*] Significant decrease in mother and child report of parental knowledge across the follow-up; $p < .001$;

[a] Risk behavior engagement is not comparable across waves due to differences in the number of behaviors comprising each composite.

**Table 2**

Intercorrelations among Variables at Waves 1 and 2 Assessments

| Variable | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| 1. Age | — | .14* | −.17** | −.09 | .08 | .18** |
| 2. Gender (0=female) | .09 | — | −.21** | −.18** | .03 | .32** |
| 3. Child Report Parental Knowledge | −.06 | −.18** | — | .42** | −.54** | −.38** |
| 4. Mother Report Parental Knowledge | −.16* | −.15* | .29** | — | .54** | −.19** |
| 5. SDS | −.09 | .03 | −.59** | .59** | — | .17** |
| 6. Risk Behavior Composite | .12 | .16* | −.34** | −.16* | .15* | — |

*Note.* Wave 1 intercorrelations are presented below the diagonal; Wave 2 intercorrelations are presented above the diagonal. SDS = standardized difference score.

* p< .05.

** p<.01.

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**Table 3**

Hierarchical Regressions examining Interaction between Mother and Child Report of Parental Knowledge in the Concurrent Relation to Risk Behavior Engagement

| | Wave 1 Risk Behaviors | | Wave 2 Risk Behaviors | | Prospective Analyses | |
|---|---|---|---|---|---|---|
| **Predictor** | **$\Delta R^2$** | **β** | **$\Delta R^2$** | **B** | **$\Delta R^2$** | **β** |
| Step 1 | .04* | | .12*** | | .37*** | |
| Age | | .11 | | .14* | | .05 |
| Gender | | .15* | | .30*** | | .25*** |
| Wave 1 Risk Behavior | | - | | - | | .50*** |
| Step 2 | .10*** | | .09** | | .01 | |
| Age | | .09 | | .09 | | .04 |
| Gender | | .09 | | .24*** | | .24*** |
| Wave 1 Risk Behavior | | - | | - | | .49*** |
| Child Report of Parental Knowledge | | −.30*** | | −.31** | | .02 |
| Mother Report of Parental Knowledge | | −.05 | | −.01 | | −.13* |
| Step 3 | .001 | | .02* | | .005 | |
| Age | | .09 | | .07 | | .04 |
| Gender | | .09 | | .24*** | | .24*** |
| Child Report of Parental Knowledge | | −.31*** | | −.36** | | .49*** |
| Wave 1 Risk Behavior | | - | | - | | .01 |
| Mother Report of Parental Knowledge | | −.06 | | −.09 | | −.15* |
| Child Report X Mother Report | | −.04 | | −.18* | | −.08 |

Note.

* p<.05.

** p<.01.

*** p<.001.

**Table 4**

Hierarchical Regressions Examining SDS in Relation to Risk Behavior Engagement

| | Wave 1 Risk Behaviors (concurrent) | | Wave 2 Risk Behaviors (concurrent) | | Prospective Analyses | |
|---|---|---|---|---|---|---|
| **Predictor** | **$\Delta R^2$** | **β** | **$\Delta R^2$** | **B** | **$\Delta R^2$** | **β** |
| Step 1 | .04* | | .12*** | | .13*** | |
| Age | | .11 | | .14* | | .11 |
| Gender | | .15* | | .30*** | | .33*** |
| Step 2 | .02* | | .02* | | .00 | |
| Age | | .12 | | .12 | | .11 |
| Gender | | .15* | | .29*** | | .33*** |
| SDS | | .15* | | .16* | | −.01 |

*Note.* SDS = Standardized Difference Score.

* p<.05.

** p<.01.

*** p<.001.