



# HHS Public Access

Author manuscript

*Parent Sci Pract.* Author manuscript; available in PMC 2017 April 27.

Published in final edited form as:

*Parent Sci Pract.* 2016 ; 16(3): 164–186. doi:10.1080/15295192.2016.1158600.

## Comparing Multi-Informant Assessment Measures of Parental Monitoring and Their Links with Adolescent Delinquent Behavior

**Tara M. Augenstein,**

University of Maryland at College Park

**Sarah A. Thomas,**

University of Maryland at College Park

**Katherine B. Ehrlich,**

University of Maryland at College Park

**Samantha Daruwala,**

University of Maryland at College Park

**Shelby M. Reyes,**

University of Maryland at College Park

**Jeffrey S. Chrabaszcz, and**

University of Maryland at College Park

**Andres De Los Reyes**

Comprehensive Assessment and Intervention Program, Department of Psychology, University of Maryland at College Park, Biology/Psychology Building College Park, MD 20742

Andres De Los Reyes: adlr@umd.edu

### SYNOPSIS

**Objective**—Parents' poor monitoring of adolescents' whereabouts and activities is commonly linked to adolescents' increased engagement in delinquent behaviors. Yet, different domains of parental monitoring (parental monitoring behaviors vs. parental knowledge) and reports from multiple informants (parent vs. adolescent) may vary in their links to delinquent behavior.

**Design**—Seventy-four parental caregivers and 74 adolescents completed survey measures of parental monitoring and knowledge, and adolescents completed self-report surveys of delinquent behavior.

**Results**—We observed low-to-moderate magnitudes of correspondence between parent- and adolescent-reports of parental monitoring behaviors and parental knowledge. Adolescent self-reported delinquent behavior related to parent and adolescent reports of parental monitoring behaviors and parental knowledge, with adolescents who self-reported engagement in delinquent behaviors evidencing lower levels of parental knowledge and higher levels of poor monitoring compared to adolescents who did not self-report engagement in delinquent behaviors. Adolescent

---

To whom correspondence should be sent: Andres De Los Reyes, Comprehensive Assessment and Intervention Program, Department of Psychology, University of Maryland at College Park, Biology/Psychology Building, College Park, MD 20742, adlr@umd.edu, Office: 301-405-7049; Fax: 301-314-9566.

self-reported engagement in delinquent behaviors evidenced stronger links to parental monitoring when based on adolescent reports of monitoring (relative to parent reports), whereas stronger links held between adolescent self-reported delinquent behavior and parental knowledge when based on parent reports of knowledge (relative to adolescent reports).

**Conclusions**—Links between monitoring and adolescents' delinquent behavior vary by the kind of monitoring measure completed as well as the informant completing the measure. These findings inform measurement selection in research and clinical assessments of parental monitoring and adolescent delinquent behavior.

---

## INTRODUCTION

Parental monitoring encompasses the behaviors parents actively employ to track their adolescents' whereabouts, activities, and peer associations (Dishion & McMahon, 1998). These behaviors range from setting explicit rules to restrict adolescents' engagement in certain activities (e.g., "You can't go out with your friends tonight.") to structuring adolescents' environments to assist in tracking their whereabouts (e.g., parents driving their adolescents to activities vs. giving them the car keys). Low levels of parental monitoring robustly predict increased risk of adolescents' engagement in maladaptive behaviors (e.g., early-onset substance use and severe antisocial behaviors; Smetana, 2008). Thus, prevention programs for adolescent delinquent behavior and substance use commonly seek to increase parental monitoring behaviors (e.g., Pantin et al., 2009; Stanton et al., 2000, 2004; Wu et al., 2003).

Yet, researchers have called into question the relation between adolescent delinquent behaviors and parental monitoring (Stattin & Kerr, 2000). Specifically, surveys developed to measure parental monitoring largely consist of items that probe for information about the processes leading to low versus high parental monitoring (e.g., parents' *knowledge* of their adolescent's actions or whereabouts; adolescents' propensity to *disclose* information to parents about their whereabouts), rather than information about specific parenting behaviors indicative of *monitoring* (e.g., limit setting; Kerr & Stattin, 2000). That is, some measures of parental monitoring actually tap *parental knowledge* about adolescents' activities, whereas other measures assess specific *behaviors a parent engages in* to monitor the adolescent.

Researchers often use the same term – *parental monitoring* – to describe the seemingly distinct constructs of parental monitoring behaviors and parental knowledge, leading to inconsistencies across studies in operational definitions of parental monitoring. In fact, a review of 46 "parental monitoring" studies found that roughly one-quarter assessed parental knowledge, but incorrectly defined their assessments as reflecting parental monitoring behaviors; only seven of the 46 studies correctly labeled their measures as assessments of parental monitoring behaviors (Racz & McMahon, 2011). Such inconsistencies in operational definitions result in a reduced capacity to accurately estimate the relation between parental monitoring and adolescent delinquent behavior, thus hindering the identification of effective delinquency prevention programs.

The distinction between parental monitoring and parental knowledge is important for two reasons. First, the constructs have led to the development of distinct measures. For example,

items comprising the Poor Monitoring/Supervision subscale of the Alabama Parenting Questionnaire (APQ; Frick, 1991) assess overt parental monitoring behaviors (e.g., “You don't check that your child comes home at the time she/he was supposed to.”). In contrast, the Parenting Practices Scales (PPS; Stattin & Kerr, 2000) contain items that assess parental knowledge (e.g., “Do you know what your child does during his/her free time?”). In fact, some researchers suggest that measures of *parental monitoring* should assess specific, active behaviors reflecting monitoring of adolescents' actions and whereabouts (e.g., rule-setting; Dishion & McMahon, 1998; Stattin & Kerr, 2000). Other researchers propose that the measures of *parental knowledge* should assess mechanisms through which parents gain knowledge of their adolescent's activities or whereabouts (e.g., an adolescent's disclosure of their activities to a parent; Stattin & Kerr, 2000).

The second rationale for clarifying the distinction between parental monitoring behaviors and parental knowledge is that the two constructs represent correlated but separate domains. That is, increased adolescent disclosure to parents about whereabouts and activities longitudinally predicts increased parental knowledge (Kerr, Stattin, & Burk, 2010). Yet, increased adolescent disclosure also longitudinally predicts increased parental solicitation, or parents actively seeking information about adolescents' whereabouts from friends and friends' parents (Keijsers, Branje, VanderValk, & Meeus, 2010). Thus, the interrelations among parental monitoring behaviors and parental knowledge support the need to examine similarities and differences among measures of these constructs and their links to adolescent delinquent behavior.

### **Multi-Informant Assessment of Parental Monitoring Behaviors and Parental Knowledge**

Common practices within psychological assessment further complicate our understanding of the relation between adolescent delinquent behavior and parental monitoring behaviors and parental knowledge. Researchers frequently collect information about adolescent and family functioning from multiple informants' perspectives (De Los Reyes, 2011; Hunsley & Mash, 2007). Typical informants include adolescents, their parents, and their teachers, although clinician ratings and record reviews (e.g., police and school records) may augment assessments (De Los Reyes, 2013). Taking a multi-informant approach to assessing parental monitoring behaviors and parental knowledge carries with it both strengths and challenges. Specifically, a key strength of this approach is that it informs our understanding of an adolescent's behavior from multiple perspectives and contexts (De Los Reyes, Thomas, Goodman, & Kunder, 2013; Dirks, De Los Reyes, Briggs-Gowan, Cella, & Wakschlag, 2012). That is, adolescents may behave differently across contexts and informants differ in how or under what circumstances they observe adolescents. Thus meta-analytic reviews of over 50 years of research find that reports gathered from multiple informants yield only low-to-moderate magnitudes of correspondence (see Achenbach, McConaughy, Howell, 1987; De Los Reyes, Augenstein, Wang et al., 2015; De Los Reyes & Kazdin, 2005).

Not surprisingly, parent and child/adolescent reports of parental monitoring behaviors and parental knowledge also evidence low-to-moderate correspondence levels (e.g., De Los Reyes, Ehrlich, et al., 2013; De Los Reyes, Goodman, Kliewer, & Reid-Quinones, 2008, 2010; De Los Reyes, Salas, Menzer, & Daruwala, 2013; Lippold, Greenberg, & Feinberg,

2011; Reynolds, MacPherson, Matusiewicz, Schreiber, & Lejuez, 2011). Several theoretical explanations have also been proposed to explain low correspondence between parent and adolescent reports of parental monitoring behaviors and parental knowledge. For instance, a key factor underlying these correspondence levels is that, on average, parents tend to view domains of family functioning, such as those reflected in parental monitoring behaviors and parental knowledge, in far more positive terms relative to adolescents (Fung & Lau, 2010; Gaylord, Kitzmann, & Coleman, 2003). In turn, as adolescents progress from early to middle and late adolescent periods, they tend to view the family in increasingly negative terms relative to parents (Ohannessian & De Los Reyes, 2014; Ohannessian, Lerner, Lerner, & von Eye, 2000). Researchers surmise that adolescents' increasingly negative views reflect normative developmental processes (Blakemore, 2007, 2008; Collins, 1991; Smetana & Villalobos, 2009). Specifically, these changes may be adaptive in that they potentially contribute to adolescent development of autonomy from the family (Zimmer-Gembeck & Collins, 2003). In contrast, low correspondence between parent and adolescent reports of parental monitoring behaviors and parental knowledge may be indicative of increased parent-adolescent conflict or dysfunction within the family (De Los Reyes & Kazdin, 2006). Although prior theoretical work has sought to conceptualize the reasons why informants disagree in their reports of parental monitoring behaviors and parental knowledge, little is known about whether the selection of informants to provide reports of parental monitoring behaviors and parental knowledge has implications for detecting links between such constructs and adolescent delinquent behavior.

Previous studies examining the role of multi-informant assessments in the connections between parental monitoring behaviors and parental knowledge and adolescent delinquent behavior (e.g., Keijsers et al., 2010; Kerr et al., 2010) have key limitations. Specifically, prior work primarily relied on a single measure to examine parental monitoring behaviors and parental knowledge, namely the PPS (Stattin & Kerr, 2000). Although the PPS is a widely used measure, certain measurement characteristics, such as the type of response scale provided, the type of behaviors or symptoms assessed, and the wording of specific items, have been shown to affect individuals' reports on their own behaviors (Schwarz, 1999). The potential consequences of relying on a single measure and its unique measurement effects hold clear implications for the assessment of parental monitoring behaviors and parental knowledge. For instance, items on commonly used measures of parental monitoring behaviors and parental knowledge may differ in whether the valence of the question is perceived positively or negatively. In light of the developmental literature discussed previously, it is possible that parents and adolescents may respond differently to positively versus negatively valenced items (see also De Los Reyes, Ehrlich et al., 2013).

Beyond issues of the valence of the questions, parents' report of their own monitoring of their adolescents may be influenced by the way items are worded on the measure the parents complete. Although the wording differences are sometimes subtle, a parent may respond differently when asked "How often do you forget to ask your child about where he/she is going before he/she leaves the house?" versus "Do you ask your child to tell you where he/she is going before he/she leaves the house?" Stated another way, informants may respond differently to the same items, depending on the perspective through which they provide item responses. Indeed, informant discrepancies may commonly arise in part

because informants vary in their perspectives on observing the behaviors assessed (see Kraemer et al., 2003). Consequently, this study involved assessing parental monitoring behaviors and parental knowledge using parent and adolescent reports across two commonly used scales of parental monitoring and parental knowledge. Specifically, we used the Poor Monitoring/Supervision subscale of the APQ (Frick, 1991), and the Parental Knowledge and Adolescent Disclosure subscales of the PPS (Stattin & Kerr, 2000). Numerous additional measures are available to assess parental monitoring behaviors and parental knowledge (e.g., the Solicitation subscale of the PPS; Stattin and Kerr, 2000). However, we chose to limit our examination to two independent measures, thus minimizing the impact of shared measurement variance.

### **Purpose and Hypotheses**

The purpose of this study was to extend the literature on informant discrepancies in the assessment of parental monitoring behaviors and parental knowledge and links between such constructs and adolescent delinquent behavior. Prior research has incorporated numerous approaches to examining issues surrounding informant discrepancies and cross-informant correspondence (e.g., De Los Reyes & Kazdin, 2005). To this end, we took a multi-method approach to testing two primary hypotheses and addressing a series of exploratory research aims. First, we assessed cross-informant correspondence between parent and adolescent reports on measures of parental monitoring behaviors, parental knowledge, and adolescent disclosure. Furthermore, we examined between-informant mean differences within each domain of interest. Consistent with prior work (e.g., Fung & Lau, 2010; Ohannessian & De Los, Reyes, 2014), we expected to observe both low-to-moderate levels of parent-adolescent correspondence with parents reporting lower mean levels of poor parental monitoring and higher levels of parental knowledge relative to adolescents.

Second, we examined adolescents' self-reported delinquent behavior in relation to parental monitoring behaviors and parental knowledge. We hypothesized that increased adolescents' self-reported delinquent behavior would relate to both adolescents and parents reporting greater levels of poor parental monitoring (i.e., APQ) and lower levels of parental knowledge (i.e., PPS).

In addition to these two primary research hypotheses, we conducted exploratory tests to examine whether the magnitudes of relations between adolescents' delinquent behavior status and reports of parental monitoring behaviors and parental knowledge varied as a function of the type of monitoring domain assessed (i.e., parental monitoring, parental knowledge) and the informant providing the report (i.e., parent, adolescent). The lack of prior literature exploring the complex nature of the relations among informant, domain of monitoring, and delinquent behavior in predicting parental monitoring behaviors and parental knowledge results in difficulty generating specific hypotheses. However, one possible outcome is that relations among these constructs do not differ based on informant or measure completed. Alternatively, the magnitude of the relation between adolescents' self-reported delinquent behavior and measures of parental monitoring behaviors and parental knowledge might differ based on informant. For instance, adolescent delinquent behaviors might evidence stronger-magnitude links with adolescent reports of poor monitoring

behaviors (i.e., scores on the APQ) relative to links observed with adolescent reports of parental knowledge (i.e., scores on the PPS). Specifically, the APQ's focus on negative or poor monitoring behaviors may be a better fit for the adolescent's perspective, given adolescents' relatively negative views of the family relative to parents' more positive views of the family. Thus, a specific measure may evidence a strong relation to delinquent behavior, but only if a specific informant completes the measure (e.g., parent versus adolescent). Consequently, in our exploratory tests we focused on whether the domain of parental monitoring (i.e., parental monitoring, parental knowledge) and information source (i.e., parent, adolescent) moderated the relation between adolescent delinquent behavior and parental monitoring. Additionally, prior work has yielded mixed findings on the extent to which adolescent age and gender differences among adolescents impacts the relation between adolescent delinquent behavior and parental monitoring behaviors and parental knowledge (e.g., Laird, Pettit, Bates, & Dodge, 2003). Consequently, we controlled for both adolescent age and gender within our exploratory analyses.

## METHOD

### Participants

Participants included 74 caregiver and adolescent (28 boys, 46 girls) dyads who each participated in one of two community studies within which participants completed similar measures and tasks (De Los Reyes, Salas et al., 2013; De Los Reyes, Thomas et al., 2012). Each participating caregiver self-identified as the participating adolescent's primary caregiver. The sample consisted of 5 male primary caregivers and 69 female primary caregivers who self-identified as the adolescent's biological mother/father (93%) or another caregiver (7%; e.g., adoptive, step, or grandparent, aunt, or cousin). For the purposes of this report, we refer to these caregivers as "parents." The adolescent participants ranged in age from 14–17 years ( $M = 15.3$ ,  $SD = 1.05$ ), and self-identified as African American or Black (52.7%), European American (39.2%), Latino/a American (6.8%), Asian American (2.7%), American Indian (1.4%), or Other (2.7%). (These values surpass 100% because some parents self-identified as more than one racial/ethnic category.)

Parents' reported marital status varied with 60.8% married, 20.3% divorced, 6.8% never married, 5.4% living together, 4.1% widowed, and 2.7% separated. All parents completed at least a high school education, and the majority of the parents (95.9%) had completed some higher education beyond high school (e.g. associate's, vocational, or bachelor's degree). Parents reported weekly household income across 10 categories that varied by \$100 increments (i.e., *Less than \$100 per week* through *901+ per week*). Based on this scale, 13.7% of the families had a weekly household income of \$500 or less, 24.4% had a weekly income between \$501 and \$900, and 61.6% earned \$901 or more per week.

### Procedures

We recruited participants through community agencies, events, and via advertisements posted online (e.g., Craigslist.org) in qualifying neighborhoods (i.e., neighborhoods targeted because of demographic variability). To participate, families had to: (1) speak English, (2) understand the consenting and interview process, (3) have an adolescent between the ages 14

and 17 years currently living in the home whom the parent did not report as having a history of learning or developmental disabilities, and (4) have completed information on all constructs.

Before participating, parents completed a phone screen for eligibility with a trained member of the research team. After the respondents were deemed eligible, parents and adolescents were invited to the research facility to complete the interviews and measures. After providing informed consent and assent, in a single laboratory visit participants completed a counter-balanced battery of measures, which included the parent and adolescent survey reports of parental monitoring and adolescent self-report of delinquent behavior described previously. We recorded survey responses using IBM SPSS Data Collection survey administration software (Version 5.6; IBM Corporation, 2009).

## Measures

Adolescents and parents completed measures assessing domains of adolescent and family demographics and a counter-balanced battery of measures assessing parental monitoring behaviors and parental knowledge. Table 1 reports means, standard deviations, and internal consistency ( $\alpha$ ) estimates for the measures. Additionally, adolescents self-reported on their engagement in delinquent behaviors.

**Adolescent and family demographics**—Demographic data were obtained through parent reports of adolescent age and gender, family ethnicity, and family income via a computerized demographics questionnaire.

**Parental monitoring behaviors and parental knowledge**—To assess perceived parental monitoring behaviors, parents and adolescents provided independent reports on parallel versions of the Poor Monitoring/Supervision subscale of the Alabama Parenting Questionnaire (APQ; Frick, 1991). The Poor Monitoring/Supervision subscale consists of 10 items (example item: *You go out without a set time to be home.*) rated on a 5-point scale ranging from 1 (*never*) to 5 (*always*), with greater scores reflecting poorer monitoring. In the current study, one item was excluded from the measure (*You hit your child with a belt, switch, or other object when he/she has done something wrong*, for the parent report; *Your parents hit you with a belt, switch, or other object when you have done something wrong*, for the adolescent report) due to ethical and confidentiality considerations.

To assess perceived parental knowledge, parents and adolescents completed parallel versions of two validated and widely used scales, each of which contain items that are scored on a 5-point Likert scale ranging from 1 to 5 (e.g., De Los Reyes, Goodman et al., 2008, 2010; De Los Reyes, Salas et al., 2013; Kerr & Stattin, 2000). The Parental Knowledge scale consists of 9 items (example item: *Do your parents know what you do during your free time?*), with greater scores indicating greater parental knowledge. The Adolescent Disclosure scale consists of 5 items (example item: *Do you keep a lot of secrets from your parents about what you do during your free time?*) and was chosen for the current study due to prior evidence suggesting adolescent disclosure significantly predicts parental knowledge to a greater extent than other knowledge-relevant domains (e.g., parental solicitation; see Kerr et al., 2010).

**Adolescent self-reports of delinquent behavior**—Adolescents completed reports of delinquent behavior using the Problem Behavior Frequency Scales (PBFS; Farrell, Kung, White, & Valois, 2000). The PBFS includes 51 items representing a variety of problem behavior domains including drug use; physical, nonphysical, and relational aggression; and delinquent behaviors. On the PBFS, adolescents provide reports based on behaviors within the previous 30 days. For the current study, we examined self-reported scores on the Delinquency subscale ( $\alpha = .70$ ). The Delinquency subscale consists of 8 items (example item: *In the last 30 days, how often have you skipped school.*) assessing both illegal behaviors, such as shoplifting, and school-related problems, such as truancy. Items are rated on a 6-point response scale reflecting frequency of delinquent behaviors, with response options ranging from 0 (*never*) to 5 (*20 times or more*) and higher scores reflecting greater engagement in delinquent behavior. Prior research has demonstrated that the PBFS displays construct validity across numerous, related variables such as parental-monitoring (e.g., Farrell et al., 2012).

### Data-Analytic Plan

We conducted preliminary analyses to test for deviations from normality. Additionally, we calculated internal consistency estimates for parental monitoring behaviors and parental knowledge for both adolescent self-report and parent-report (see Table 1).

**Testing primary hypotheses**—In light of work reviewed previously on low informant correspondence in reports, we computed between-subject correlations to examine the correspondence between parent and adolescent reports to test our first primary hypothesis (Table 2). Furthermore, we conducted paired samples *t*-tests to assess mean differences between parent and adolescent reports (Table 1). To test our second hypothesis, we compared means of parent and adolescent reports on the APQ Poor Monitoring/Supervision, Parental Knowledge, and Adolescent Disclosure scales (Table 3) based on adolescent delinquent behavior status. Specifically, we conducted independent samples *t*-tests to examine mean differences between parent and adolescent reports for adolescents who did not report engaging in delinquent behavior compared to adolescents who did report engaging in delinquent behavior (Table 3).

**Scoring for adolescents' self-reported delinquent behavior**—Adolescent-reported scores on the Delinquency subscale of the PBFS ( $M = 0.23$ ,  $SD = 0.40$ ) exhibited significant skewness (skewness = 2.35). This positive skew reflected the modal endorsement of no engagement in delinquent behaviors. Prior research has demonstrated that transforming skewed data wherein zero represents the majority of responses fails to adequately correct resulting skewness (Atkins & Gallop, 2007). Therefore, adolescents were grouped dichotomously into those who self-reported no engagement in delinquent behaviors ( $n = 40$ ) during the preceding 30 days and those who reported any engagement in delinquent behaviors ( $n = 34$ ). This dichotomous variable served as the key independent variable used in tests of the main hypotheses. To provide a more conservative calculation of reported delinquent behavior, in secondary analyses we created a grouping variable composed of (1) adolescents endorsing the largest amount of delinquent behavior (i.e., the top 23%;  $n = 17$ ) and (2) adolescents endorsing less or no reported engagement in delinquent behavior (i.e.,



the bottom 77%;  $n = 57$ ). All analyses reported below were repeated with this coding scheme, and the results from these secondary analyses remained consistent with findings reported below.

**Composite scoring for parental knowledge**—We observed significant and positive relations between/among within-informant reports of domains of parental knowledge (i.e., parental knowledge, adolescent disclosure). Specifically, within-informant reports of parental knowledge and adolescent disclosure yielded large-magnitude Pearson  $r$  correlations of .51 (parent reports) and .62 (adolescent reports; Table 2) as per effect size conventions by Cohen (1988). In contrast, tests of between-informant correspondence in reports of parental knowledge and adolescent disclosure yielded moderate-magnitude correlations of .41 (parental knowledge) and .42 (adolescent disclosure; Table 2). As mentioned previously, adolescent disclosure plays a key role in informing parents' knowledge about adolescents' whereabouts and activities (Smetana, 2008). In line with prior work, our preliminary analyses supported integrating the Adolescent Disclosure and the Parental Knowledge subscales developed by Stattin and Kerr (2000) into a comprehensive assessment of parental knowledge. Specifically, the moderate correlations between parent and adolescent reports of parental knowledge confirmed that, although the cross-informant reports were correlated, the information provided by each informant was not redundant with that endorsed by the additional informant. Therefore, to create our criterion variables of parental knowledge for our exploratory analyses, we created composite scores by first converting the within-informant scores of parental knowledge and adolescent disclosure into  $z$ -scores and then averaging these scores into a single composite score for each participant. The aim of this composite variable was to capture the full extent of parents' knowledge of their adolescent's activities by including scores of parental knowledge as well as additional information about parental knowledge gained by measuring adolescent disclosure. To confirm that neither the parental knowledge nor the adolescent disclosure subscale was driving any subsequent statistical effects, in secondary analyses we also ran all parental knowledge composite analyses with the parental knowledge and adolescent disclosure subscales individually. Of note, the general pattern of results we observed when examining the composite variable remained the same when examining the individual subscales separately. (For a full report of these secondary analyses, contact the corresponding author.)

**Testing exploratory aims**—Our exploratory research aims involved examining multiple informants' parallel reports of parental monitoring behaviors and parental knowledge to assess the extent to which the relation between these constructs and adolescent delinquent behavior varied as a function of informant providing the report and/or the domain of monitoring (i.e., parental monitoring behaviors, parental knowledge) measured. It would be difficult to assume these measures to be independent observations. That is, parent and adolescent reports of parental monitoring behaviors and parental knowledge often disagree yet still correlate in the low-to-moderate range (e.g., De Los Reyes, Ehrlich et al., 2013; De Los Reyes, Goodman et al., 2008, 2010; De Los Reyes, Salas et al., 2013; Lippold et al., 2011; Reynolds et al., 2011). Thus, this correlated data structure violated key assumptions underlying general linear modeling (GLM) of data. Consequently, we tested our exploratory aims regarding links between adolescent delinquent behavior and parental monitoring

behaviors and parental knowledge using generalized estimating equations (GEE), an extension of the GLM that assumes correlated observations of dependent and/or independent variables (Hanley, Negassa, Edwardes, & Forrester, 2003). Consistent with prior work using GEE to examine dichotomous, repeated-measures dependent variables (e.g., De Los Reyes, Alfano, Lau, Augenstein, & Borelli, 2016; De Los Reyes, Augenstein, Aldao et al., 2015), for GEE modeling we used an identity binary logistic link function with an unstructured correlation matrix. The binary logistic link function reflected the dichotomous repeated-measures dependent variable, described next. We employed an unstructured correlation matrix in light of the small number of dependent variables used in each analysis and the fact that we obtained complete data on all constructs for all 74 families.

To further examine relations between adolescent's self-reported delinquent behavior and parental monitoring behaviors and parental knowledge, we entered delinquency status as an independent variable, with parental monitoring behaviors and parental knowledge measures acting as a repeated-measures dependent variable. Specifically, GEE requires a repeated-measures variable to function as the dependent variable; therefore, we created a nested, repeated-measures (i.e., two informants per dyad provided reports for the two domains of parental monitoring behaviors and parental knowledge) dependent variable consisting of measures of parental monitoring behaviors and parental knowledge. These measures used different scaling methods and thus resulted in different response value ranges and estimates of central tendency. To place these measures on the same scale, we created median splits for each parent and adolescent measure of parental monitoring behaviors and parental knowledge. Of note, the measures of parental monitoring behaviors and parental knowledge assessed these constructs in opposing directions. Thus, we reverse-coded all measures, so that relatively high monitoring/knowledge (i.e., positive monitoring levels, greater levels of parental knowledge and disclosure) was coded "0" and relatively low monitoring/knowledge (i.e., poor monitoring levels, lower levels of parental knowledge and disclosure) was coded "1".

Specifically, to test our exploratory aims, we statistically modeled the dependent variable as a function of the following independent variables: (1) adolescent age, (2) adolescent gender, (3) informant (parent coded as 0 and adolescent coded as 1), (4) domain of the measure (parental monitoring behaviors coded as 0 and parental knowledge coded as 1), (5) adolescent self-reported delinquent behavior status (no reported delinquent behavior as 0 and any delinquent behavior as 1), (6) all possible 2-way interactions, and (7) all possible 3-way interactions.

## RESULTS

### Preliminary Analyses

**Normality assumptions and internal consistency**—Before testing the main hypotheses, we tested for deviations from normality. With the exception of the PBFS Delinquency Subscale mentioned previously, all measures conformed to normality assumptions (i.e., skewness and kurtosis; see Tabachnick & Fidell, 2001). Both parent and adolescent reports of parental monitoring behaviors and parental knowledge exhibited acceptable levels of internal consistency (i.e.,  $>.70$ ; Nunnally & Bernstein, 1994), with the

exception of the adolescent-reported Adolescent Disclosure subscale of the PPS ( $\alpha = .68$ ). See Table 1 for a complete list of internal consistency estimates by informant and measure completed.

**Correspondence between parent and adolescent reports of parental monitoring behaviors and parental knowledge**—To examine correspondence among informants' reports of parental monitoring behaviors and parental knowledge, we conducted bivariate correlations between informants' reports on the APQ Poor Monitoring/Supervision, Parental Knowledge, and Adolescent Disclosure scales (Table 2). We observed low-to-moderate correspondence between parent and adolescent reports of parental monitoring behaviors and parental knowledge.

**Differences between Parent and Adolescent Reports of Parental Monitoring Behaviors and Parental Knowledge**—In addition to examining between-informant correspondence, we examined mean differences between informants' reports of parental monitoring behaviors and parental knowledge. Specifically, we conducted paired-sample *t*-tests to compare means of parallel parent and adolescent reports on the APQ Poor Monitoring/Supervision, Parental Knowledge, and Adolescent Disclosure scales (Table 1). Parents reported lower mean levels of poor monitoring than adolescents reported, and parents reported higher levels of both parental knowledge and adolescent disclosure than adolescents reported.

**Differences in Parent and Adolescent Reports of Parental Monitoring Behaviors and Parental Knowledge as a Function of Adolescent Delinquent Behavior**—We also examined mean differences between reports of parental monitoring behaviors and parental knowledge for adolescents who did not report engaging in delinquent behavior and for adolescents who did report engaging in delinquent behavior (Table 3). Specifically, we conducted independent samples *t*-tests to compare means of parent and adolescent reports on the APQ Poor Monitoring/Supervision, Parental Knowledge, and Adolescent Disclosure scales (Table 3). Relative to adolescents who did not report engaging in delinquent behavior, adolescents who reported engaging in delinquent behavior evidenced poorer monitoring and lower levels of both parental knowledge and adolescent disclosure, regardless of parental monitoring informant. The one exception to these findings was for adolescent reports of adolescent disclosure, which did not differ by adolescent delinquent behavior status. Effect sizes of these differences indicate that measures of parental monitoring evidenced medium effects based on parent reports and large effects based on adolescent reports, based on Cohen's (1988) effect size conventions (i.e., small:  $d = 0.2$ ; medium:  $d = 0.5$ ; large:  $d = 0.8$ ). Conversely, effect sizes for parental knowledge measures indicated medium-to-large effects for parent reports and small-to-medium effects for adolescent reports. These findings provide further justification for testing our main research aims.

**Exploratory Test of Informant and Domain as Moderators of the Relations Among Parental Monitoring Behaviors and Parental Knowledge and Adolescents' Delinquent Behavior Status**—We conducted the GEE modeling

procedures described previously to examine the extent to which the relations among parental monitoring behaviors and parental knowledge and adolescents' self-reported delinquent behavior were moderated by the informant completing monitoring measures and the monitoring domain (Table 4). Consistent with the findings reported in Table 3, we observed a significant main effect of adolescent delinquent behavior status. This effect indicated that, relative to adolescents who did not report engaging in delinquent behavior, adolescents who reported engaging in delinquent behavior had parents who evidenced a greater likelihood of relatively poor levels of parental monitoring behaviors and relatively low parental knowledge. However, the main effect of adolescent delinquent behavior status was qualified by a significant Informant  $\times$  Domain  $\times$  Adolescent delinquent behavior status interaction. Specifically, for reports of parental monitoring behaviors and parental knowledge provided by *parents*, adolescents' self-reported delinquent behavior related to measures of parental knowledge at greater magnitudes relative to measures of parental monitoring behaviors. In contrast, for reports of parental monitoring behaviors and parental knowledge provided by *adolescents*, adolescents' self-reported delinquent behavior related to measures of parental monitoring behaviors at greater magnitudes relative to measures of parental knowledge (Figure 1). We also examined the potential impact of demographic factors such as adolescent age and gender. However, no other main effects or interactions were significant.

We are not aware of any "gold standard" or established method for conducting post-hoc probing of significant moderator effects in GEE models using binary dependent variables, compared to methods currently available for probing significant moderator effects in linear regression (see Aiken & West, 1991; Holmbeck, 2002). Consistent with prior work (e.g., De Los Reyes, Reynolds, Wang, MacPherson, & Lejuez, 2010), we used the dichotomized independent and dependent variables to further investigate the nature of the observed interaction. Specifically, we examined the proportion of low levels of poor parental monitoring and parental knowledge accounted for by parent and adolescent reports of poor monitoring and parental knowledge as a function of adolescent delinquent behavior status. These additional analyses provide a useful aid in illustrating the nature of the interaction effects reported in Table 3 (see Figure 2). Relative to adolescents who did not endorse any recent engagement in delinquent behavior, adolescents who reported engagement in delinquent behavior evidenced relatively higher proportions of poor monitoring (relative to low knowledge) when based on adolescent reports (relative to parent reports). In contrast, relative to adolescents who did not endorse any recent engagement in delinquent behavior, adolescents who reported engagement in delinquent behavior evidenced relatively higher proportions of low knowledge (relative to poor monitoring) when based on parent reports (relative to adolescent reports).

These post-hoc probing tests were further supported by differences in magnitude between the observed Phi coefficients, or effect size, for relations between parent and adolescent reports of parental monitoring behaviors and parental knowledge and adolescents' engagement in delinquent behavior. The Phi coefficient is typically used to estimate the magnitude of associations within  $2 \times 2$  Chi-squared analyses and are interpreted consistent with Cohen's (1988) criteria for interpreting effect size magnitudes using the  $r$  metric (Kotrlík, Williams, & Jabor, 2011). Within the post-hoc analyses, we observed a small effect ( $\Phi = .26, p < .05$ ) relation between adolescent-reported delinquent behavior and parent-

reported parental monitoring, compared to a medium effect ( $\Phi = .38, p < .05$ ) relation between delinquent behavior and parent-reported parental knowledge. In contrast, we observed a medium effect relation between adolescent-reported delinquent behavior and adolescent-reported parental monitoring ( $\Phi = .45, p < .05$ ), compared to a small effect ( $\Phi = .21, p = .06$ ) relation between delinquent behavior and adolescent-reported parental knowledge.

## DISCUSSION

### Main Findings

The purpose of this study was to extend the literature on the assessment of parental monitoring and the relation between adolescent delinquent behavior and parental monitoring behaviors and parental knowledge. Our study yielded three primary findings. First, consistent with previous literature (e.g., De Los Reyes, 2011, 2013), we observed low-to-moderate correspondence rates between parent and adolescent reports of parental monitoring and parental knowledge. As hypothesized, parent and adolescent reports also differed based on the monitoring domain assessed. Specifically, parents reported lower mean levels of poor monitoring and higher levels of both parental knowledge and adolescent disclosure compared to adolescent reports. Second, consistent with prior work (e.g., Smetana, 2008), adolescent self-reported delinquent behavior was related to parent and adolescent reports of parental monitoring behaviors and parental knowledge in that adolescents who self-reported no engagement in delinquent behaviors evidenced higher levels of parental monitoring behaviors and parental knowledge compared to adolescents who did self-report engagement in delinquent behaviors. Third, the relation between adolescent self-reported engagement in delinquent behaviors and parental monitoring behaviors and parental knowledge depended on the monitoring domain assessed and the informant completing the measure. Specifically, for parent reports, adolescent delinquent behavior related to measures of parental knowledge at greater magnitudes than measures of parental monitoring behaviors. Conversely, for adolescent reports, adolescent delinquent behavior related to measures of parental monitoring behaviors at greater magnitudes than measures of parental knowledge.

Our findings on the cross-informant correspondence of parental monitoring behaviors and parental knowledge are consistent with prior work (e.g., De Los Reyes, Ehrlich, et al., 2013), and the multi-informant differences based on the domain assessed may submit to different interpretations. First, as mentioned previously, measurement characteristics, such as the valence of questions on a self-report questionnaire, may influence reporting patterns (Schwarz, 1999). For instance, adolescents and parents may differ in their endorsement of positively versus negatively valenced items. Therefore, these results may simply be a function of measurement characteristics, and future research should examine informant differences of parental monitoring behaviors and parental knowledge using multiple measures with both positively and negatively valenced questions. Alternatively, these discrepancies may highlight different perspectives held by parents and adolescents regarding parents' active monitoring behaviors and their knowledge of adolescents' activities. Specifically, assuming both parent and adolescent reports of parental monitoring behaviors and parental knowledge are valid, these results highlight that parents may believe they are

engaging in more monitoring behaviors and have more knowledge of their adolescents' activities than their adolescents believe. A parent's inflated belief in the amount of their monitoring and knowledge may ultimately decrease the likelihood that the parent will initiate increased monitoring efforts or actively seek additional knowledge. In other words, if parents believe they are already engaging in a large amount of monitoring behaviors and are knowledgeable about their adolescents' activities, the parents may be less motivated to increase their monitoring efforts. Previous literature suggests that informant discrepancies in the assessment of parental monitoring behaviors and parental knowledge remain consistent over time and predict poor childhood outcomes over and above a single informant's reports alone (De Los Reyes, Goodman et al., 2010). Prior research suggests that differences in magnitude and direction of informant discrepancies of parental monitoring behaviors and parental knowledge may hold important implications for our interpretation of informant discrepancies and their relation to various outcomes. Specifically, some studies find that larger discrepancies and parent reports of negative variables that exceed adolescent reports predict negative adolescent outcomes (e.g., Mounts, 2007). However, large discrepancies may also be indicative of adaptive autonomy development over time (e.g., Blakemore, 2007, 2008). Unfortunately, we know little about how to distinguish when informant discrepancies reflect maladaptive functioning versus typical autonomy development. Investigating the underlying processes guiding discrepant reports of parental monitoring behaviors and parental knowledge lies beyond the scope of the current study. However, given the implications mentioned previously and the remaining questions about how best to interpret the informant discrepancies observed in this study, future research would benefit from further investigating the mechanisms underlying discrepancies between parent and adolescent reports of parental monitoring behaviors and parental knowledge.

Consistent with our hypothesis, our findings also support the previously reported links between parental monitoring and adolescent delinquent behavior. However, these results extend previous literature by demonstrating significant links between adolescent delinquent behavior and parental monitoring behaviors and parental knowledge and by highlighting the importance of considering parental monitoring and parental knowledge as separate but related constructs.

Last, our exploratory analyses yielded a significant three-way interaction among the domain measured (i.e., parental monitoring behaviors vs. parental knowledge), the informant, and adolescent delinquent behavior that further clarified the extent to which informant and domain moderate the relation between adolescent delinquent behavior and parental monitoring behaviors and parental knowledge. As adolescents increase in age, adolescents and parents tend to exhibit greater reporting discrepancies on aspects of family-related functioning (e.g., family satisfaction, communication; De Los Reyes, Ohannessian, & Laird, 2016). Additionally, adolescents have been shown to view family-related factors more negatively than their mothers (Ohannessian & De Los Reyes, 2014), and these differing perspectives held by adolescents and their parents on levels of family functioning may help explain the informant effects observed in this study. Specifically, our findings indicate that adolescents endorse decreased parental engagement in parental monitoring behaviors and less overall parental knowledge than parents, whereas parents endorse more engagement in positive parental monitoring behaviors and overall more parental knowledge relative to

adolescent reports. Therefore, different reporting patterns on the measures between parent and adolescent reports may reflect differences in parents and adolescents observing or recognizing positive versus negative monitoring-related patterns. Perhaps adolescents are more likely than parents to attend to the lack of parental monitoring behaviors being enforced, whereas parents are more likely than adolescents to attend to the amount of knowledge they have about their adolescent's whereabouts and activities? In sum, these findings indicate that adolescent delinquent behavior relates to measures of parental monitoring behaviors and parental knowledge, but that the nature and extent of these relations depend on the domain of monitoring assessed and the informant providing monitoring reports.

### Limitations and Future Directions

There are a few limitations to this study that warrant consideration. First, we used a single adolescent self-report measure on engagement in delinquent behavior during the 30 days preceding the assessment. This measure yielded scores that exhibited significant skewness, with the majority of adolescents in the sample endorsing no engagement in delinquent behaviors. Consequently, we dichotomized the reports to test our main hypotheses. The observed effects held when delinquent behavior status was dichotomized using a more conservative approach (i.e. the top 23% versus the bottom 77%). However, the relatively low reports of delinquent behavior within our sample make it difficult to predict whether the findings would generalize to samples recruited from more severely delinquent populations. Similarly, prior research has demonstrated the increased validity of adolescent-reported adolescent engagement in delinquent behaviors relative to parent reports (Laird et al., 2003). Yet, it is unclear whether the current findings would generalize to (1) other methods of assessing adolescent delinquent behavior, including more objective measures, such as official records (e.g., police contacts, arrest records); (2) older adolescents (e.g., older than 17 years); or (3) larger windows of time for reported behaviors (e.g., greater than 30 days). As such, we encourage future research that augments the assessment of adolescent delinquent behavior by including both self-report measures and measures not reliant on self-report. We also encourage future research that considers broadening the age range of adolescent participants to investigate the extent to which the relations found in this study persist across adolescence. Furthermore, future research on these issues ought to assess adolescent engagement in delinquent behaviors across a broader duration of time than the current measure allowed (e.g., 30 days) to maximize the likelihood of collecting a more comprehensive assessment of an adolescent's delinquent behavior throughout the adolescent period.

Second, we used a cross-sectional study design to address our research aims. Specifically, parental monitoring behaviors and parental knowledge have been robustly identified as risk factors for the development of delinquent behaviors (Racz & McMahon, 2011). Unfortunately, prior studies have also largely ignored the reciprocal nature of the relation between adolescent delinquent behavior and parental monitoring behaviors and parental knowledge. Most studies examining these relations have primarily explored how parental monitoring behaviors or knowledge predict increased delinquent behavior. However, relations between adolescent delinquent behaviors and parental monitoring behaviors and

parental knowledge appear to be dynamic. In other words, as mentioned previously, adolescent disclosure predicts both parental knowledge and subsequent parental monitoring (Keijsers et al., 2010; Kerr et al., 2010), suggesting that adolescents' behaviors may also predict subsequent parental behavior. Furthermore, researchers tend to focus their attention on testing whether parental knowledge predicts an adolescent's engagement in future delinquent behaviors. Yet, a previous study suggests a bi-directional pathway wherein over time decreased parental knowledge predicts increased adolescent delinquent behavior, and increased adolescent delinquent behavior also predicts decreased parental knowledge (e.g., Laird et al., 2003). Although this prior study presents an exciting first step in addressing issues of the bidirectionality of relations between adolescent delinquent behavior and monitoring domains, researchers only examined adolescent reports of parental knowledge. Consistent with prior studies (e.g., Laird et al., 2003), findings from the current study support the potential of adolescent delinquent behavior in predicting parental monitoring behaviors and parental knowledge. However, the cross-sectional design of the current study limits our ability to examine the temporal relations among these domains (Cole & Maxwell, 2003). Consequently, a key issue is whether these findings extend to the use of these measures and informants within longitudinal studies. Investigating these relations over time will clarify potential causal relations between parental monitoring behaviors and parental knowledge and the development of adolescent delinquent behavior or vice versa. Thus, we encourage future research to use these promising findings as a resource for conducting prospective longitudinal research on relations between multi-informant assessments of parental monitoring behaviors and parental knowledge and the development of delinquent behaviors during adolescence.

Last, although these results conform to developmental theory explaining how adolescents view family-related factors more negatively than their parents (e.g., Ohannessian et al., 2000), certain measurement characteristics of this study warrant further examination. Specifically, the valence differences between items on the APQ (i.e., negatively valenced) and the PPS (i.e., positively valenced) introduce some confusion when interpreting the three-way interaction. In particular, it is unclear whether the observed reporting differences are confounded by measurement effects caused by the differences in the valence of the items. Are the reporting differences solely attributable to the perspectives held by each informant, or are valence differences between measures affecting the results as well? We relied solely on two independent measures of parental monitoring behaviors and parental knowledge to avoid potential shared measurement variance; however, several additional measures are available to assess parental monitoring behaviors and parental knowledge (e.g., Solicitation scale; Stattin & Kerr, 2000). Future research should replicate and extend our findings to include additional measures of parental monitoring behaviors and parental knowledge. For example, do findings we observed in the current study generalize to study circumstances in which parental monitoring is assessed with positively valenced items in lieu of the negatively valenced items comprising the APQ?

In sum, adolescents' self-reported delinquent behavior related to measures of parental monitoring behaviors and parental knowledge. However, links between adolescents' delinquent behavior and parental monitoring behaviors and parental knowledge varied by the type of monitoring domain assessed and the informant completing monitoring measures.



Specifically, for adolescent reports, adolescents' delinquent behavior related more strongly to measures of parental monitoring behaviors than to measures of parental knowledge. For parent reports, adolescents' delinquent behavior related more strongly to measures of parental knowledge than to measures of parental monitoring behaviors. We encourage future research aimed at exploring the mechanisms underlying the observed three-way interaction

## IMPLICATIONS FOR THEORY AND PRACTICE

Our findings have implications for assessing the relation between adolescent delinquent behaviors and parental monitoring behaviors and parental knowledge. Indeed, prior research consistently supports the link between poor parental monitoring and adolescent delinquent behavior (Smetana, 2008). Yet, our findings indicate that use of measures that tap into parental monitoring behaviors versus parental knowledge may dictate the magnitude of the relation between parental monitoring behaviors and parental knowledge and delinquent behavior. Furthermore, the relation between adolescent delinquent behaviors and parental monitoring behaviors and parental knowledge may vary by informant. That is, different informants may hold unique perspectives on parental monitoring behaviors and parental knowledge (e.g., De Los Reyes, Ehrlich et al., 2013; De Los Reyes, Goodman et al., 2008, 2010; De Los Reyes, Salas et al., 2013; Lippold et al., 2011; Reynolds et al., 2011). Consequently, measures of parental monitoring behaviors and parental knowledge may vary on whether their focus on a particular aspect of monitoring (e.g., monitoring behaviors vs. parental knowledge) "fits" the perspective of the informant completing the measure. The result is that a specific measure may evidence a strong relation to delinquent behavior, but only if a specific informant completes the measure (e.g., parent versus adolescent). Therefore, we encourage researchers to take a multi-informant, multi-method approach to assessing parental monitoring behaviors and parental knowledge. Specifically, researchers studying links between adolescent delinquent behavior and monitoring behaviors may observe greater statistical power when relying on adolescent reports to assess monitoring behaviors relative to parent reports. Conversely, when examining links between adolescent delinquent behavior and parental knowledge, researchers may observe greater statistical power when relying on parent reports to assess parental knowledge relative to adolescent reports.

Our findings also have important clinical implications. Indeed, different perspectives held by the adolescent and parent on the relation between adolescent delinquent behavior and aspects of parental monitoring may hold valuable information for treatment planning for the adolescent. For example, if adolescents and their parent provide discrepant reports of parental monitoring behaviors and parental knowledge, the clinician can use this information to probe for the aspects of monitoring or knowledge that the adolescent and parent report as being present versus absent. The clinician can then use this information to foster consensus on treatment goals and on aspects of the parent-adolescent relationship that might be most amenable to change from the perspectives of both the parent and adolescent (e.g., increasing parent-adolescent communication). Indeed, parents are more likely than adolescents to be the source of clinical referral for adolescents' mental health concerns (Hunsley & Lee, 2014). Therefore, discrepant information gathered from reports of parental monitoring behaviors and parental knowledge completed by the parent and adolescent may prove

especially useful in providing the clinician with valuable insight into the areas of concern specific to the adolescent's perspective, in addition to the referral concerns initially identified by the parent. These findings hold important implications for the clinical assessment of parental monitoring and its links with adolescents' delinquent behavior, as the findings may inform how clinicians tailor treatment planning to the specific perspectives held by family members. These findings also inform our understanding of important parameters that may affect the links between adolescent delinquent behavior and parental monitoring behaviors and parental knowledge.

## Acknowledgments

We thank Carl W. Lejeuz and Andrea Chronis-Tuscano for their extremely helpful comments on previous versions of this article.

**FUNDING:** This work was supported, in part, by an internal grant from the University of Maryland (College of Behavioral and Social Sciences Emerging Scholars Program), awarded to Andres De Los Reyes. This work was also partially supported by an NRSA Predoctoral Award to Sarah Thomas from the National Institute on Drug Abuse (F31-DA033913).

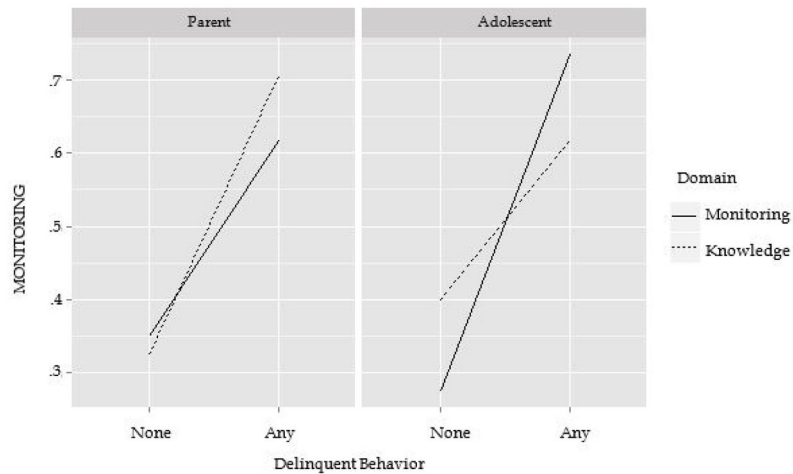
## References

- Achenbach TM, McConaughy SH, Howell CT. Child/adolescent behavioral and emotional problems: Implications of cross-informant correlations for situational specificity. *Psychological Bulletin*. 1987; 101:213–232. DOI: 10.1037/0033-2909.101.2.213 [PubMed: 3562706]
- Aiken, LS.; West, SG. Multiple regression: Testing and interpreting interactions. Newbury Park, CA: Sage; 1991.
- Atkins DC, Gallop RJ. Rethinking how family researchers model infrequent outcomes: A tutorial on count regression and zero-inflated models. *Journal of Family Psychology*. 2007; 21:726–735. DOI: 10.1037/0893-3200.21.4.726 [PubMed: 18179344]
- Blakemore SJ. The social brain of a teenager. *The Psychologist*. 2007; 20:600–602.
- Blakemore SJ. The social brain in adolescence. *Nature Reviews Neuroscience*. 2008; 9:267–277. DOI: 10.1038/nrn2353 [PubMed: 18354399]
- Cohen, J. *Statistical power analysis for the behavioral sciences*. 2. Hillsdale, NJ: Lawrence Erlbaum; 1988.
- Cole DA, Maxwell SE. Testing mediational models with longitudinal data: Questions and tips in the use of structural equation modeling. *Journal of Abnormal Psychology*. 2003; 112:558–577. DOI: 10.1037/0021-843X.112.4.558 [PubMed: 14674869]
- Collins WA. Shared views and parent–adolescent relationships. *New Directions for Child Development*. 1991; 51:103–110. DOI: 10.1002/cd.23219915108
- De Los Reyes A. Introduction to the special section. More than measurement error: Discovering meaning behind informant discrepancies in clinical assessments of children and adolescents. *Journal of Clinical Child and Adolescent Psychology*. 2011; 40:1–9. DOI: 10.1080/15374416.2011.533405 [PubMed: 21229439]
- De Los Reyes A. Strategic objectives for improving understanding of informant discrepancies in developmental psychopathology research. *Development and Psychopathology*. 2013; 25:669–682. DOI: 10.1017/S0954579413000096 [PubMed: 23880384]
- De Los Reyes A, Alfano CA, Lau S, Augenstein TM, Borelli JL. Can we use convergence between caregiver reports of adolescent mental health to index severity of adolescent mental health concerns? *Journal of Child and Family Studies*. 2016; 25:109–123. DOI: 10.1007/s10826-015-0216-5
- De Los Reyes A, Augenstein TM, Wang M, Thomas SA, Drabick DAG, Burgers D, Rabinowitz J. The validity of the multi-informant approach to assessing child and adolescent mental health. *Psychological Bulletin*. 2015; 141:858–900. DOI: 10.1037/a0038498 [PubMed: 25915035]

- De Los Reyes A, Augenstein TM, Aldao A, Thomas SA, Daruwala SE, Kline K, Regan T. Implementing psychophysiology in clinical assessments of adolescent social anxiety: Use of rater judgments based on graphical representations of psychophysiology. *Journal of Clinical Child and Adolescent Psychology*. 2015; 44:264–279. DOI: 10.1080/15374416.2013.859080 [PubMed: 24320027]
- De Los Reyes A, Ehrlich KB, Swan AJ, Luo TJ, Van Wie M, Pabón SC. An experimental test of whether informants can report about child and family behavior based on settings of behavioral expression. *Journal of Child and Family Studies*. 2013; 22:177–191. DOI: 10.1007/s10826-012-9567-3
- De Los Reyes A, Goodman KL, Kliewer W, Reid-Quiñones K. Whose depression relates to discrepancies? Testing relations between informant characteristics and informant discrepancies from both informants' perspectives. *Psychological Assessment*. 2008; 20:139–149. DOI: 10.1037/1040-3590.20.2.139 [PubMed: 18557691]
- De Los Reyes A, Goodman KL, Kliewer W, Reid-Quiñones K. The longitudinal consistency of mother-child reporting discrepancies of parental monitoring and their ability to predict child delinquent behaviors two years later. *Journal of Youth and Adolescence*. 2010; 39:1417–1430. DOI: 10.1007/s10964-009-9496-7 [PubMed: 20020188]
- De Los Reyes A, Kazdin AE. Informant discrepancies in the assessment of childhood psychopathology: A critical review, theoretical framework, and recommendations for further study. *Psychological Bulletin*. 2005; 131:483–509. DOI: 10.1037/0033-2909.131.4.483 [PubMed: 16060799]
- De Los Reyes A, Kazdin AE. Informant discrepancies in assessing child dysfunction relate to dysfunction within mother-child interactions. *Journal of Child and Family Studies*. 2006; 15:643–661. DOI: 10.1007/s10826-006-9031-3 [PubMed: 21243074]
- De Los Reyes A, Ohannessian CM, Laird RD. Developmental changes in discrepancies between adolescents' and their mothers' views of family communication. *Journal of Child and Family Studies*. 2016; 25:790–797. DOI: 10.1007/s10826-015-0275-7
- De Los Reyes A, Reynolds EK, Wang F, MacPherson L, Lejuez CW. Discrepancy between how children perceive their own alcohol risk and how they perceive alcohol risk for other children longitudinally predicts alcohol use. *Addictive Behaviors*. 2010; 35:1061–1066. DOI: 10.1016/j.addbeh.2010.07.006 [PubMed: 20705398]
- De Los Reyes A, Salas S, Menzer MM, Daruwala SE. Criterion validity of interpreting scores from multi-informant statistical interactions as measures of informant discrepancies in psychological assessments of children and adolescents. *Psychological Assessment*. 2013; 25:509–519. DOI: 10.1037/a0032081 [PubMed: 23544400]
- De Los Reyes A, Thomas SA, Goodman KL, Kundey SMA. Principles underlying the use of multiple informants' reports. *Annual Review of Clinical Psychology*. 2013; 9:123–149. DOI: 10.1146/annurev-clinpsy-050212-185617
- De Los Reyes A, Thomas SA, Swan AJ, Ehrlich KB, Reynolds EK, Suarez L, ... Pabón SC. "It depends on what you mean by 'disagree'"; Differences between parent and child perceptions of parent-child conflict. *Journal of Psychopathology and Behavioral Assessment*. 2012; 34:293–307. DOI: 10.1007/s10862-012-9288-3 [PubMed: 25210227]
- Dirks MA, De Los Reyes A, Briggs-Gowan M, Cella D, Wakschlag LS. Annual research review: Embracing not erasing contextual variability in children's behavior- theory and utility in the selection and use of methods and informants in developmental psychopathology. *Journal of Child Psychology and Psychiatry*. 2012; 53:558–574. DOI: 10.1111/j.1469-7610.2012.02537.x [PubMed: 22360546]
- Dishion TJ, McMahon RJ. Parental Monitoring and the prevention of problem behavior: A conceptual and empirical reformulation. *Clinical Child and Family Psychology Review*. 1998; 1:61–75. [PubMed: 11324078]
- Farrell AD, Bettencourt A, Mays S, Kramer A, Sullivan T, Kliewer W. Patterns of adolescents' beliefs about fighting and their relation to behavior and risk factors for aggression. *Journal of Abnormal Child Psychology*. 2012; 40:787–802. DOI: 10.1007/s10802-011-9609-0 [PubMed: 22307443]

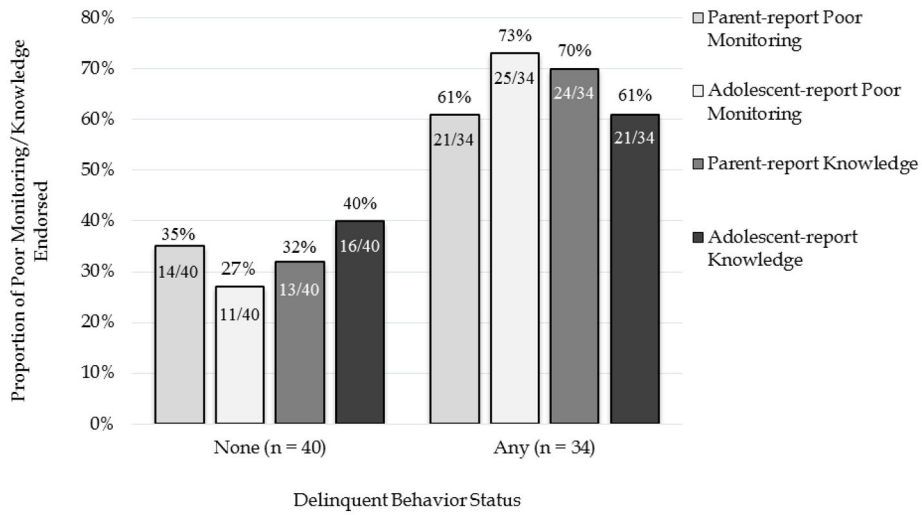
- Farrell AD, Kung EM, White KS, Valois R. The structure of self-reported aggression, drug use, and delinquent behaviors during adolescence. *Journal of Clinical Child Psychology*. 2000; 29:282–292. DOI: 10.1207/S15374424jccp2902\_13 [PubMed: 10802836]
- Frick, PJ. The Alabama Parenting Questionnaire. University of Alabama; 1991. Unpublished rating scale
- Fung JJ, Lau AS. Factors associated with parent-child (dis)agreement on child behavior and parenting problems in Chinese immigrant families. *Journal of Clinical Child & Adolescent Psychology*. 2010; 39:314–327. DOI: 10.1080/15374411003691693 [PubMed: 20419573]
- Gaylord NK, Kitzmann KM, Coleman JK. Parents' and children's perceptions of parental behavior: Associations with children's psychosocial adjustment in the classroom. *Parenting: Science and Practice*. 2003; 3:23–47. doi:10.1207/S15327922PAR0301\_02.
- Hanley JA, Negassa A, Edwardes DB, Forrester JE. Statistical analysis of correlated data using generalized estimating equations: an orientation. *American Journal of Epidemiology*. 2003; 157:364–375. DOI: 10.1093/aje/kwf215 [PubMed: 12578807]
- Holmbeck GN. Post-hoc probing of significant moderational and mediational effects in studies of pediatric populations. *Journal of Pediatric Psychology*. 2002; 27:87–96. DOI: 10.1093/jpepsy/27.1.87 [PubMed: 11726683]
- Hunsley, J.; Lee, CM. *Introduction to clinical psychology*. 2nd. Hoboken: Wiley & Sons; 2014.
- Hunsley J, Mash EJ. Evidence-based assessment. *Annual Review of Clinical Psychology*. 2007; 3:29–51. DOI: 10.1146/annurev.clinpsy.3.022806.091419
- IBM Corporation. IBM SPSS Data Collection (version 5.6) [computer software]. Somers, NY: IBM Corporation; 2009.
- Keijsers L, Branje SJT, VanderValk IE, Meeus W. Reciprocal effects between parental solicitation, parental control, adolescent disclosure, and adolescent delinquency. *Journal of Research on Adolescence*. 2010; 20:88–113. DOI: 10.1111/j.1532-7795.2009.00631.x
- Kerr M, Stattin H. What parents know, how they know it, and several forms of adolescent adjustment: Further support for a reinterpretation of monitoring. *Developmental Psychology*. 2000; 36:366–380. DOI: 10.1037/0012-1649.36.3.366 [PubMed: 10830980]
- Kerr M, Stattin H, Burk WJ. A reinterpretation of parental monitoring in longitudinal perspective. *Journal of Research on Adolescence*. 2010; 20:39–64. DOI: 10.1111/j.1532-7795.2009.00623.x
- Kotrlik JW, Williams HA, Jabor MK. Reporting and interpreting effect size in quantitative agricultural education research. *Journal of Agricultural Education*. 2011; 52:132–142. DOI: 10.5032/jae.2011.01132
- Kraemer HC, Measelle JR, Ablow JC, Essex MJ, Boyce WT, Kupfer DJ. A new approach to integrating data from multiple informants in psychiatric assessment and research: Mixing and matching contexts and perspectives. *American Journal of Psychiatry*. 2003; 160:1566–1577. DOI: 10.1176/appi.ajp.160.9.1566 [PubMed: 12944328]
- Laird RD, Pettit GS, Bates JE, Dodge KA. Parents' monitoring-relevant knowledge and adolescents' delinquent behavior: Evidence of correlated developmental changes and reciprocal influences. *Child Development*. 2003; 74:752–768. DOI: 10.1111/1467-8624.00566 [PubMed: 12795388]
- Lippold MA, Greenberg MT, Feinberg ME. A dyadic approach to understanding the relationship of maternal knowledge of youths' activities to youths' problem behavior among rural adolescents. *Journal of Youth and Adolescence*. 2011; 40:1178–1191. DOI: 10.1007/s10964-010-9595-5 [PubMed: 20936499]
- Mounts NS. Adolescents' and their mothers' perceptions of parental management of peer relationships. *Journal of Research on Adolescence*. 2007; 17:169–178. DOI: 10.1111/j.1532-7795.2007.00517.x
- Nunnally, JC.; Bernstein, IH. *Psychometric theory*. 3. New York: McGraw-Hill; 1994.
- Ohannessian CM, De Los Reyes A. Discrepancies in adolescents' and their mothers' perceptions of the family and adolescent anxiety symptomatology. *Parenting: Science and Practice*. 2014; 14:1–18. DOI: 10.1080/15295192.2014.870009
- Ohannessian CM, Lerner RM, Lerner JV, von Eye A. Adolescent-parent discrepancies in perceptions of family functioning and early adolescent self-competence. *International Journal of Behavioral Development*. 2000; 24:362–372. DOI: 10.1080/01650250050118358

- Pantin H, Prado G, Lopez B, Huang S, Tapia MI, Schwartz SJ, ... Branchini J. A randomized controlled trial of Familias Unidas for Hispanic adolescents with behavior problems. *Psychosomatic Medicine*. 2009; 71:987–995. DOI: 10.1097/PSY.0b013e3181bb2913 [PubMed: 19834053]
- Racz SJ, McMahon RJ. The relationship between parental knowledge and monitoring and child and adolescent conduct problems: A 10-year update. *Clinical Child and Family Psychology Review*. 2011; 14:377–398. DOI: 10.1007/s10567-011-0099y [PubMed: 22086648]
- Reynolds EK, MacPherson L, Matusiewicz AK, Schreiber WM, Lejuez CW. Discrepancy between mother and child reports of parental knowledge and the relation to risk behavior engagement. *Journal of Clinical Child and Adolescent Psychology*. 2011; 40:67–79. DOI: 10.1080/15374416.2011.533406 [PubMed: 21229444]
- Schwarz N. Self-report: How the questions shape the answers. *American Psychologist*. 1999; 54:93–105.
- Smetana JG. “It’s 10 o’clock: Do you know where your children are?” Recent advances in understanding parental monitoring and adolescents’ information management. *Child Development Perspectives*. 2008; 2:19–25. DOI: 10.1111/j.1750-8606.2008.00036.x
- Smetana, J.; Villalobos, M. Social cognitive development in adolescence. In: Lerner, R.; Steinberg, L., editors. *Handbook of adolescent psychology*. 3. Vol. 1. New York, NY: Wiley; 2009. p. 187-228.
- Stanton B, Cole M, Galbraith J, Li X, Pendleton S, Cottrel L, Marshall S, ... Kaljee L. Randomized trial of a parent intervention: Parents can make a difference in long-term adolescent risk behaviors, perceptions, and knowledge. *Archives of Pediatrics and Adolescent Medicine*. 2004; 158:947–955. DOI: 10.1001/archpedi.158.10.947 [PubMed: 15466681]
- Stanton BF, Li X, Galbraith J, Cornick G, Feigelman S, Kaljee L, Zhou Y. Parental underestimates of adolescent risk behavior: A randomized, controlled trial of a parental monitoring intervention. *Journal of Adolescent Health*. 2000; 26:18–26. DOI: 10.1016/S1054-139X(99)00022-1 [PubMed: 10638714]
- Stattin H, Kerr M. Parental monitoring: A reinterpretation. *Child Development*. 2000; 71:1072–1085. DOI: 10.1111/1467-8624.00210 [PubMed: 11016567]
- Tabachnick, B.; Fidell, LS. *Using multivariate statistics*. 4. Boston: Allyn and Bacon; 2001.
- Wu Y, Stanton BF, Galbraith J, Kaljee L, Cottrell L, Li X, et al. Sustaining and broadening intervention impact: A longitudinal randomized trial of 3 adolescent risk reduction approaches. *Pediatrics*. 2003; 111:e32–e38. DOI: 10.1542/peds.111.1.e32 [PubMed: 12509592]
- Zimmer-Gembeck, MJ.; Collins, WA. Autonomy development during adolescence. In: Adams, GR.; Berzonsky, MD., editors. *Blackwell handbook of adolescence*. Oxford, UK: Blackwell Publishing Ltd; 2003. p. 175-204.



**Figure 1.**

Graphical representation of the interaction between informant providing the report (i.e., parent, adolescent) and domain assessed (i.e., parental monitoring behaviors, parental knowledge) on the relation between reports of parental monitoring behaviors and parental knowledge and adolescent self-reported delinquent behavior. On the y-axis, greater scores indicate greater likelihood of poorer parental monitoring and decreased or low parental knowledge. On the x-axis, adolescents' self-reported delinquent behavior based on whether the adolescent did not endorse delinquent behavior (*None*) or did endorse delinquent behavior (*Any*). Two lines represent distinctions between adolescents' delinquent behavior status and likelihood of low levels of parental monitoring. The solid lines indicate distinctions between adolescents' delinquent behavior status on likelihood of poor levels of parental monitoring when based on measures of parental monitoring behaviors. The dotted lines indicate distinctions between adolescents' delinquent behavior status on likelihood of poor levels of parental monitoring when based on measures of parental knowledge. As indicated in the figure, when based on parent reports (left column), parental monitoring knowledge measures evidence a stronger relation to adolescent delinquent behavior status than do parental monitoring behaviors measures. Conversely, when based on adolescent reports (right column), parental monitoring behaviors measures evidence a stronger relation to adolescent delinquent behavior status than do parental monitoring knowledge measures.



**Figure 2.** Graphical representation of probing of the significant interaction between informant providing the report, domain of monitoring assessed, and adolescent delinquent behavior status. On the y-axis, proportions of poor parental monitoring and decreased parental knowledge (i.e., scores above the median on poor parental monitoring and low parental knowledge). On the x-axis, adolescents’ self-reported delinquent behavior based on whether the adolescent did not endorse delinquent behavior (*None*) or did endorse delinquent behavior (*Any*). As indicated in the figure, relative to adolescents who reported no engagement in delinquent behavior in the last 30 days, for adolescents who reported any engagement in delinquent behavior we observed greater proportions of reports of poor monitoring (relative to proportions of reports of low knowledge) when based on adolescent report (relative to parent report). Alternatively, relative to adolescents who reported no engagement in delinquent behavior in the last 30 days, for adolescents who reported any engagement in delinquent behavior we observed greater proportions of reports of low knowledge (relative to proportions of reports of poor monitoring) when based on parent report (relative to adolescent report).

Means, Standard Deviations, and Internal Consistency Estimates of Survey Measures of Parental Monitoring Behaviors and Parental Knowledge ( $n = 74$ )

TABLE 1

Variable	APQ: Poor Monitoring/Supervision Subscale		Kerr and Stattin Parental Monitoring Scales		Paired <i>t</i> -test
	<i>M</i>	<i>SD</i>	$\alpha$	<i>SD</i>	
Poor parental monitoring					-6.04***
Parent report	18.90	4.58	.72		
Adolescent report	23.35	5.94	.77		
Parental knowledge					5.58***
Parent report				38.32	.80
Adolescent report				34.58	.84
Adolescent disclosure					2.77*
Parent report	18.90			3.72	.68
Adolescent report	17.50			4.32	.72

Note. APQ= Alabama Parenting Questionnaire. Higher scores on the Poor Monitoring/ Supervision Subscale represent poorer parental monitoring behaviors.

\*  $p < .05$ .

\*\*  $p < .01$ .

\*\*\*  $p < .001$



Correlations Among Survey Measures of Parental Monitoring Behaviors and Parental Knowledge ( $n = 74$ )

TABLE 2

Variable	1	2	3	4	5	6
1 Poor parental monitoring, parent report		-.62**	-.36**	.30**	-.28*	-.26*
2 Parental knowledge, parent report			.51**	-.41**	.41**	.23
3 Adolescent disclosure, parent report				-.22	.18	.42**
4 Poor parental monitoring, adolescent report					-.59**	-.44**
5 Parental knowledge, adolescent report						.62**
6 Adolescent disclosure, adolescent report						

Note. Higher scores on the Poor Monitoring/Supervision Subscale represent poorer parental monitoring behaviors;

\*  $p < .05$ ;

\*\*  $p < .01$ .

**TABLE 3**

Mean Differences on Survey Measures of Parental Monitoring Behaviors and Parental Knowledge (n = 74) as a Function of Adolescent Delinquent Behavior Status (No Self-Reported Delinquent Behavior [n = 40] vs. Self-Reported Engagement in Delinquent Behavior [n = 34])

Variable	Adolescents Not Self- Reporting Engagement in Delinquent Behavior		Adolescents Self-Reporting Engagement in Delinquent Behavior		Independent Samples <i>t</i> -test	Cohen's <i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Poor parental monitoring						
Parent report	17.65	4.13	20.38	4.69	-2.66*	-.62
Adolescent report	21.02	5.43	26.09	5.37	-4.01***	-.94
Parental knowledge						
Parent report	40.00	3.20	36.35	4.20	4.23***	.97
Adolescent report	36.07	6.44	32.82	5.14	2.37*	.56
Adolescent disclosure						
Parent report	19.95	3.50	17.67	3.65	2.73**	.63
Adolescent report	18.20	4.75	16.67	3.65	1.55	.36

Note. Higher scores on the Poor Monitoring/ Supervision Subscale represent poorer parental monitoring behaviors.

\* p < .05.

\*\* p < .01.

\*\*\* p < .001

Generalized Estimating Equations Predicting Parent and Adolescent Reports of Parental Monitoring Behaviors and Parental Knowledge as a Function of Adolescent Delinquent Behavior Status (no delinquent behavior vs. any;  $n = 74$ )

**TABLE 4**

Factor	Wald $\chi^2$	OR	B (SE)	95% CI
Main and interaction effects				
Adolescent age	1.04	1.20	.18 (.18)	[-.17, .54]
Adolescent gender	1.54	.65	-.43 (.34)	[-1.11, .25]
Informant	.85	.69	-.36 (.39)	[-1.13, .41]
Domain	.07	.89	-.11 (.41)	[-.92, .69]
Adolescent delinquent behavior status	4.25	2.77*	1.02 (.49)	[.05, 1.99]
Informant $\times$ domain	2.07	1.98	.68 (.47)	[-.25, 1.62]
Adolescent delinquent behavior status $\times$ domain	.90	1.67	.51 (.54)	[-.54, 1.58]
Adolescent delinquent behavior status $\times$ informant	2.21	2.50	.92 (.61)	[-.29, 2.12]
Informant $\times$ domain $\times$ adolescent delinquent behavior status	5.75	.19*	-1.65 (.69)	[-3.00, -.30]

*Note.* Overall Parental Monitoring was calculated by creating a within-subject composite variable combining each participant's reports of parental monitoring behaviors (i.e., poor monitoring/supervision) and parental knowledge (i.e., parental knowledge, adolescent disclosure). OR = Odds Ratio; B = Unstandardized beta; SE = Standard error; 95% CI = 95% Wald confidence interval. Factor contrasts based on comparisons in descending order, with the Informant factor coded Parent = "0" and Adolescent = "1". Domain is coded Monitoring = "0" and Knowledge = "1". Adolescent Delinquent Behavior Status is coded No Reported Engagement in Delinquent Behavior = "0" and Reported Engagement in Delinquent Behavior = "1". For statistical tests of main and interaction effects,  $p$  values and 95% CIs reported reflect significance tests for the reported unstandardized betas.

\*  $p < .05$ .