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Constructing tailored parental monitoring strategy profiles to predict adolescent disclosure and risk involvement

Lesley A. Cottrell [a,*], Christa A. Lilly [b], Aaron Metzger [c], Scott A. Cottrell [d], Andrew D. Epperly [e], Carrie Rishel [f], Bo Wang [g], Bonita F. Stanton [h]

[a] Department of Pediatrics, West Virginia University School of Medicine, Morgantown, WV, United States
[b] Department of Biostatistics, West Virginia University School of Public Health, Morgantown, WV, United States
[c] Department of Psychology, West Virginia University, Morgantown, WV, United States
[d] Department of Medical Education, West Virginia University School of Medicine, Morgantown, WV, United States
[e] Statler College of Engineering and Mineral Resources, West Virginia University, Morgantown, WV, United States
[f] School of Social Work, West Virginia University, Morgantown, WV, United States
[g] Prevention Research Center, Department of Pediatrics, Wayne State University, Detroit, MI, United States
[h] Office of Dean of Research, School of Medicine, Wayne State University, Detroit, MI, United States

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For more than two decades, parental monitoring has been negatively associated with adolescent risk behavior (de Winter et al., 2016; DiClemente et al., 2001; Li et al., 2000).Specifically, the likelihood that adolescents would engage in risky behaviors declined as parents could identify their adolescents' location, peers, and activities. Although researchers continued to collect evidence supporting parental monitoring as a protective factor, the conceptual definition of monitoring changed with Kerr and Stattin's quintessential piece that separated *how much information had been gathered* by parents from *the approach used to obtain that information* and source of the information(Kerr and Stattin, 2000; Soenens et al., 2006; Crouter and Head, 2002).

Various parental monitoring strategies have been identified from previous work (Solís et al., 2015; Criss et al., 2013; Huebner and Howell, 2003). Not all monitoring strategies offer positive effects on adolescent outcomes or for the parent-adolescent relationship. Parents may use of rule-based monitoring by implementing rules intended to restrict adolescents' activities, peers, and plans (Dittus et al., 2013; Tilton-Weaver et al., 2013; Tornay et al., 2013). Parents may also utilize other adults or adolescents from the surrounding neighborhood to gather information about their adolescents' whereabouts and activities (Ceballo et al., 2012; Smetana and Daddis, 2002; Barber, 1996). These strategies, also characterized as behavioral control strategies, can be associated with increased adolescent risk in many situations as opposed to open discussions between parents and adolescents based on trust. This, and other work in this area, highlights the mutual contribution of both the parent and adolescent to parental monitoring processes and outcomes.

* Corresponding author at: One Medical Center Drive, PO Box 9214-RCBHSC, Department of Pediatrics, – WVU School of Medicine, Morgantown, WV 26506-9214, United States.
E-mail address: lcottrell@hsc.wvu.edu (L.A. Cottrell).

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Our own work has identified three general types of monitoring strategies used by parents in rural Appalachia. These strategies include a direct strategy in which the parent directly solicits information from the adolescent, an indirect strategy in which the parent utilizes the adolescents' friends, other parents, and other individuals in the proximal environment, and finally, a restrictive strategy in which the parent uses privacy invasion means to obtain the information such as reading an adolescent's journal or listening to conversations (Metzger et al., 2012; Cottrell et al., 2007). Our initial findings demonstrated that the direct strategy (and in some cases the indirect strategy) was most successful in preventing adolescent risk behavior and that the restrictive strategy was predictive of increased adolescent risk involvement.

The purpose of the present study was to identify monitoring strategies parents use to obtain information about their adolescents and explore how the separate strategies may be used independently, or in combination with, one another. This tailored approach would be used to outline protective parental monitoring profiles that could be useful for increasing adolescent self-disclosure of activities and preventing adolescent risk. Researchers and providers could use this approach to tailor recommendations to parents and adolescents designed to strengthen the parent-adolescent relationship and prevent risk behavior.

1. Methods

1.1. Sample characteristics and recruitment

Five hundred nineteen adolescent-parent dyads (39% of eligible students) participated in this study. Adolescent self-report of risk involvement and disclosure was compared to parent report of monitoring strategies used. Adolescents enrolled in this study were between 12 and 17 years of age (X = 15 years). The majority of the sample (68.5%) were female and lived with a biological parent/guardian (91.1%). Similar to the ethnic characteristics of the recruitment area, 93.8% of the participants were Caucasian. Parents who completed the study with their adolescents had a mean age of 37 years. Slightly <20% of the sample (18.4%) reported household incomes less than $15,000.

Early approval from middle and high school administrators throughout West Virginia was obtained prior to going into the schools via an assembly format to discuss the purpose and design of this study. Eligible adolescents (any adolescent who was 12 to 17 years old) were given a packet (cover letter, consent and assent forms, and FAQ study description). Adolescents were encouraged to discuss the study with their parents prior to returning completed forms if they and one parent who was willing to participate. If an adolescent had two legal guardians who shared caregiving responsibilities in the same household equally, the adolescent was asked to choose only one parent who would be willing to participate in the study.

Upon consent, adolescent-parent dyad contact information was collected. All participants were then mailed the study surveys, two return postage-paid envelopes, and a reimbursement form for $25 once received. Any questionnaires received without the seal or a broken seal were not included in the study ($n = 2$). Adolescents additionally could report directly to the study team if they felt their responses had been reviewed by a parent or other adult without their consent. This study was approved by the West Virginia University Institutional Review Board.

1.2. Measures

Parent monitoring strategies. For each item, parents reported how often they engaged in different behaviors in the past four months. Responses were recorded on a 4-point rating scale (0 to 5+ times). Three items assessed *direct solicitation,* or how often parents directly asked their child for information about their activities or whereabouts (e.g., "*How many times have you talked to child about what he/she had planned?*", $\alpha = 0.81$ for direct solicitation subscale). Seven items measured parents' use of *indirect monitoring* strategies involving relying on other individuals for information (e.g., "*In the past 4 months, how many times have you talked to other parents about your child's activities and whereabouts?*", $\alpha = 0.86$ for indirect monitoring strategies). Finally, three items assessed parents' engagement in *restrictive monitoring* behaviors such as looking through their adolescents' personal belongings (e.g., "*In the past 4 months, how many times have you listened to your child's phone conversations without telling him/her?*", $\alpha = 0.72$ for restrictive monitoring subscale). An average for each group was used in this study[17].

Parental monitoring knowledge was measured using a modified version of Silverberg's Parental Monitoring Knowledge Scale (Silverberg and Small, 1991). Parents' reported how often, on an average day, parents knew with whom their adolescents spent time, where they were, and what they were doing at different times throughout the day (e.g., afternoons, evenings, weekends). For each item, participants could choose "never" (de Winter et al., 2016), "a few times" (DiClemente et al., 2001), "several times" (Li et al., 2000), or "all the time" (Kerr and Stattin, 2000). An average was calculated for this scale. The Cronbach's alpha reliability for this composite scale was 0.95.

Adolescent disclosure was examined using an averaged 3-item composite variable (Smetana et al., 2006). Adolescents responded to the following items, "I tell my parent what I am doing before he/she has to ask," "I tell my parent who I am going to be with before he/she has to ask," and "I talk to my parent about plans with friends before he/she has to ask" based on a 4-point rating scale where 1 represented "strongly disagree" and 4 represented "strong agree". Adolescents chose the response that best represented their self-disclosure to their parents on an average basis. The Cronbach's alpha reliability for this disclosure composite score was 0.75. An average was calculated for this scale.

Adolescent risk involvement was assessed by asking adolescents how frequently they engaged in a range of potentially risky or risky behaviors in the past four months[20]. Response options for all but the sexual risk items ranged from "0 times" (de Winter et al., 2016) to "5 or more times" (Kerr and Stattin, 2000). Adolescent involvement across 10 areas were included: alcohol, tobacco, marijuana and other drugs, skipped school, any suspensions from school, vandalizing behaviors, and other behaviors including staying out past curfew and working with friends to get around their parents' rules were assessed in this study. Adolescent sexual intercourse with and without condoms as well as adolescent engagement in other sexual behaviors while still a virgin was also assessed but as dichotomized variables (yes/no) rather than in terms of frequency. Three subscales were developed using the collected items: adolescent delinquent activity (skipped school, suspensions from school, vandalizing), adolescent substance use (alcohol, tobacco, marijuana and other drugs), and adolescent problem behavior (staying out past curfew, working with friends to get around the rules, and engaging in sexual intercourse). In order to calculate a total for each subscale, all of the rating scale responses were recoded into 0 times = "no" and ≥1 = "yes". Once recoded, all items were summed and used to create the specific subscale scores.

1.3. Statistical analyses

Descriptive statistics for each study variable and for each of the established parental monitoring strategies were calculated for the present sample. The established strategies were submitted to cluster analysis to establish profiles where multiple combinations of parental monitoring strategies were used. First, Ward's hierarchical agglomerative cluster analysis was run to aid in the determination of the number of clusters in the dataset. This technique provides numerous stopping rules including graphical displays of solutions (dendograms) and is recommended for determining the number of clusters present in a data set (Henry et al., 2005; Lorr, 1994). Next, a nonhierarchical, *K*-means

Table 1
Descriptive statistics for primary study variables.

Study variable	X (SD)	Range
Parental monitoring knowledge	3.86 (0.37)	1–4
Adolescent disclosure	1.84 (0.61)	1–4
Reported adolescent delinquent activity	1.12 (0.25)	1–4
Adolescent-reported illicit substance use	1.29 (0.55)	1–4
Adolescent reported problem behavior	1.36 (0.43)	1–4
Direct monitoring strategies	3.33 (0.79)	1–4
Indirect monitoring strategies	1.91 (0.74)	1–4
Restrictive monitoring strategies	3.33 (0.80)	1–4

analysis was utilized. *K*-means procedures utilize an iterative approach to assign cases to a predetermined number of clusters. Separate *K-means* analyses were then run assuming both a three- or four-cluster solution. Additional validation analyses (Lorr, 1994) were conducted on both the resulting three- and four-cluster solutions including splitting the sample and re-running the cluster analyses on both halves.

Once established, we calculated chi-square analyses to examine potential differences in monitoring profiles based on child gender, parent marital status, and relationship with child. A MANOVA was conducted to compare potential differences in monitoring profiles based on child age and parent-reported family income. Finally, a MANOVA with the monitoring strategy profiles as independent variables and dependent variables including: adolescent disclosure, parental monitoring knowledge, and adolescent risk was conducted to examine potential differences in the outcomes based on the particular monitoring profile used within the home.

2. Results

In the present sample (Table 1), parents, on average, believed they had obtained a considerable amount of truthful information about their adolescents (parental monitoring knowledge - X = 3.86, SD = 0.37, range 1 to 4). Adolescents in this sample, on average, noted limited disclosure (X = 1.84, SD = 0.61, range 1 to 4). Adolescent risk behavior was also limited in terms of delinquent activity (X = 1.12, SD = 0.25, range 1 to 4), illicit substance use (X = 1.29, SD = 0.55, range 1 to 4), and cumulative problem behaviors (X = 1.36, SD = 0.43, range 1 to 4). Direct (X = 3.33, SD = 0.79, range 1 to 4) and restrictive (X = 3.33, SD = 0.80, range 1 to 4) monitoring strategies were the most commonly endorsed monitoring strategies based on parent report.

2.1. Parental monitoring strategy profiles

Evidence from the Ward's hierarchical agglomerative cluster analysis, including a visual inspection of the resulting dendogram and the obtained pseudo-F scores, pointed to either a three- or four- cluster solution. The validation indices indicated that the four-cluster solution was the more stable solution. In addition, the four-cluster solution was more theoretically meaningful and provided additional nuance regarding patterns parental monitoring over the 3-cluster solution. The four-cluster solution included the following profiles/groups: 1) a low monitoring group; 2) a multi-strategy group; 3) a non-restrictive group; and 4) a direct solicitation only group.

Monitoring profiles were significantly different from one another based on the original monitoring strategies produced in our earlier work (Table 2) (Cottrell et al., 2007). One group of participants (n = 119, 22.9%) were relatively *low monitoring* parents, as they engaged in the lowest levels of all three parental monitoring strategies (i.e., direct, indirect, restrictive). In contrast, a small group of parents were *multiple strategy* (n = 64, 12.3%) monitoring parents, who engaged in relatively high levels of all three forms of parental monitoring (direct, indirect, restrictive). A third group of parents reported greater use of both indirect and direct parental monitoring but less use of restrictive monitoring (n = 104, 20.0%). We labeled these parents *non-restrictive* monitoring parents. Finally, the fourth profile of *direct soliciting only* engaged in relatively high levels of direct monitoring from solicitation of information from the adolescent but reported limited use of both restrictive and indirect monitoring (n = 232, 44.7%).

2.2. Monitoring strategy profiles and pertinent outcomes

Parental monitoring profiles did not significantly differ based on youth gender, though a marginal chi-square (χ^2 (3) = 6.65, p = 0.05) indicated that compared to parents of boys, parents of girls were more likely to be in the multiple monitoring strategy group (14.6% vs. 7.1%) and less likely to be in the low monitoring group (21.2% vs. 26.9%). Profiles did not differ by adolescent age, parental marital status, parental relationship to the child (e.g., step-parent, biological) or number of either adults or children in the home. Finally, parents in the four parenting groups differed in parent-reported family income, F (3, 506) = 4.69, p < 0.01. Post hoc tests revealed that direct soliciting parents reported significantly higher income (X = 2.89, SD = 1.20) than low monitoring parents (X = 2.43, SD = 1.23).

Parents in the four monitoring groups differed significantly in their self-reported knowledge of their teens' behavior, F (3, 514) = 2.62, p = 0.049. Post hoc analyses revealed that although all parents reported high levels of parental knowledge (Full sample X = 3.86, SD = 3.7), direct soliciting parents reported greater levels of knowledge (X = 3.91, SD = 0.18) than did low monitoring parents (X = 3.81, SD = 0.49).

A difference in adolescent reported self-disclosure was found among the established monitoring profiles [F (3, 514) = 4.37, p = 0.005]. Adolescents of the direct soliciting group reported greater levels of self-disclosure (X = 3.24, SD = 0.60) than adolescents of parents who were low monitoring (X = 3.02, SD = 0.58). The multi-strategy (X = 3.06, SD = 0.73) and non-restrictive groups (X = 3.21, SD = 0.54) did not significantly differ from the other groups.

Youth reports of both delinquency and substance use did not differ across the four parental monitoring profiles. However, there was a

Table 2
Characteristics of the four monitoring strategy profiles based on the inclusion of the three original monitoring strategy groups in the Ward's hierarchical cluster analysis.

Original monitoring strategy groups*	Total sample N = 519	Low monitoring n = 119	Multi-strategy n = 64	Non-restrictive n = 104	Direct soliciting only n = 232	F statistic sig.
Direct monitoring	3.33 (0.79)	2.09[c] (0.51)	3.67[b] (0.45)	3.89[a] (0.26)	3.63[b] (0.39)	F(3515) = 495.09 p < 0.001
Indirect monitoring	1.91 (0.73)	1.32[d] (0.55)	2.53[b] (0.72)	2.85[a] (0.48)	1.60[c] (0.35)	F(3515) = 292.70 p < 0.001
Restrictive monitoring	1.48 (0.66)	1.32[b] (0.55)	2.80[a] (0.52)	1.37[b] (0.37)	1.25[b] (0.34)	F(3515) = 235.97 p < 0.001

Note. Means with different superscripts are significantly different at 0.05 level (Bonferonni post hoc test).
[a] = .01.
[b] = .05.
[c] = .05
[d] = .05
* Original monitoring strategy groups cited in Cottrell et al., 2007.

significant difference in youth-reported, problem behavior at baseline [$F(3, 514) = 3.39$, $p = 0.018$]. Adolescents whose parents engaged in multiple monitoring strategies self-reported greater levels of problematic behavior (X = 1.47, $SD = 0.45$) than adolescents whose parents were in the low monitoring group (X = 1.427, $SD = 0.34$). non-restrictive: (X = 1.37, $SD = 0.36$), direct soliciting (X = 1.37, $SD = 0.48$).

3. Discussion

The present findings reflect the first attempt to use a tailored approach for examining parents' monitoring strategies and associated outcomes. A variety of monitoring strategy profile groups was used by parents to obtain information about their adolescents. While slightly less than half of parents primarily used one strategy (direct solicitation with adolescent), close to one quarter of the parents sampled were classified into other profiles after using varied combinations of other strategies. This finding warrants additional research and could illustrate some caution to confining parents to one static type of monitoring in future research.

The four monitoring profile groups found in this study ranged from utilizing no strategies (low monitoring), to implementing all three strategies (i.e., direct, indirect, and restrictive) on a regular basis (multi-group). Using more strategies did not always equate to better outcomes in this study. As noted, parents who used multiple monitoring strategies had adolescents who endorsed greater risk than other adolescents – even more than parents who did not use any monitoring strategy. This is an interesting finding that serves as a good example for how monitoring strategies are not all protective when used alone, or in combination with one another (Fagan et al., 2013; Pettit et al., 2001). Further research is needed to understand the causal order of this relationship to begin to explore if, and how multiple monitoring strategies might be problematic with regard to adolescent risk behavior. Parents may use multiple monitoring strategies for different reasons. Parents may be confused about what strategies would be most protective due to recent changes in the parent-adolescent relationship, limited parent-adolescent communication, and/or a lack of consistent use of strategies over time. Alternatively, parents may also be reacting to adolescent risk events and, in turn, try any strategy at their disposal to try to reduce the risk. The sequential order of events is difficult to decipher given the cross-sectional nature of this study.

Parents who directly solicited information from their adolescents and only used this one strategy reported greater monitoring knowledge than parents who did not use any monitoring strategies, combined direct solicitation with indirect monitoring means, or used all three strategies equally over time. Similar results were found for adolescent report of self-disclosure. These findings collectively support the importance of adolescent self-disclosure in the monitoring process and the potential for obtaining more information through parent solicitation. However, the causal order of these variables may again be slightly varied as these adolescents may have deceived their parents to provide a false sense of security and greater report of monitoring knowledge. Incorporating indirect strategies with direct solicitation may dilute any positive effect direct communication with one's adolescent may have on the parent-adolescent relationship and self-disclosure of risk (Soenens et al., 2006).

While we highlight the innovation in the monitoring profile approach, there are limitations noted with this study. First, our study sample represents families living in a rural region that is predominantly Caucasian, from Appalachia. Monitoring strategies and adolescent risk may differ greatly compared to urban samples. Second, the majority of parents enrolled in this study were female. Very few fathers (13%) participated. While this is common in research of this nature, monitoring profiles may differ significantly between mothers and fathers. Rating scales used in the analyses were eventually dichotomized for the model, thus potentially limiting the variation and information we could obtain for these relationships. Finally, the cross-sectional design of this study limits our capacity to determine causal order in these variables. For instance, it is difficult to determine whether parents who use multiple monitoring strategies contribute to risk behavior or whether they are reacting because a risk behavior has occurred. Future time series studies are needed to determine the causal order among parental monitoring strategies, adolescent disclosure, and risk outcomes.

3.1. Implications and contribution

The present findings are the result of an initial look at a tailored approach to parental monitoring that may be quite useful to develop future best practices for parents and providers. Examining profile groups based on combinations of monitoring strategies provides additional tools to researchers and practitioners for outlining which combinations are effective versus which may undermine parents' attempts. Second, examining monitoring profiles in combination with one another provides a more detailed view of specific monitoring behaviors. For instance, researchers have consistently demonstrated that parents monitor girls more than boys. In this study, parents of girls were more likely to endorse a multi-strategy profile than parents of boys. In reaction to this finding, do respondents perceive parents monitoring girls "more" because they use more strategies to obtain the information or because one strategy is used more often than any strategy used for boys? This analytic approach allows us to not only look at quantity or use of one strategy but a combination (one that potentially changes) of multiple strategies.

With additional research, parents and providers may be able to examine parents' monitoring efforts within the context of recent events (e.g., any adolescent risk reported) and the larger parent-adolescent relationship to develop effective prevention plans. Parents may benefit from discussing their strategies with providers to learn which strategies effectively build upon, and/or contribute to, a healthy parent-adolescent relationship and which strategies defeat their intentions to protect their adolescents from future risk. Further advantages may come from parent-provider discussions about characteristics of the parent-adolescent relationship that influence parents' monitoring choices. Preventing poor monitoring choices, even in reaction to new information, would be an important lesson for sustaining effective monitoring strategies.

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