Unique associations of callous-unemotional versus oppositional and attention-deficit/hyperactive behaviors among preschool children: are there multiple domains within early-starting child behavior problems?

Key Terms Defined

**Callous-unemotional behavior** – Callous unemotional (CU) behaviors refer to behaviors such as a lack of empathy, low guilt, and shallow affect.

**Oppositional behavior** – Oppositional behaviors include behaviors such as irritable mood, defiance, vindictiveness, negative affect, and emotional dysregulation.

**Attention deficit/hyperactive behavior** - Attention deficit/hyperactive (ADH) behaviors refer to behaviors, such as attentional problems, impulsivity, lack of focus, and an inability to concentrate.

**Nomological network** - refers to the characteristics and observable behaviors that define the variables of interest in a study, including their associations with other variables and the outcomes they predict.

**Proactive aggression** - planned and goal-oriented aggressive behavior for individual gain, including material possessions or social dominance.

**Reactive aggression** - frustrated and hostile aggressive behavior in response to perceived provocation or stimulation.

**Background**

Child behavior problems (e.g., aggression, rule-breaking), beginning as early as the toddler years, are an important public health concern because of the harm they cause to the well-being of children, families, communities, and schools. In particular, early child behavior problems put children at risk of developing aggression and violence as they grow up, which is harmful to themselves, other people, and very costly to society as a whole. Thus there is a need for prevention and treatment programs that work with families and children to reduce the risk for future aggression and violence. However, an issue that complicates our ability to design effective treatments is that child behavior problems are heterogeneous in nature, differing in the age that they start (e.g., early childhood versus early adolescence), the outcomes that they are associated with, and the factors that cause them. Research is needed to identify different types of behavior problems so we can better match different treatments according to children’s individual needs.

In relation to this question, researchers have proposed three different domains within child behavior problems. The first domain is defined by high levels of oppositional behavior and includes defiance, anger, and emotional dysregulation. A second domain comprises attention-deficit/hyperactive (ADH) behavior, comprising poor inhibitory control, high impulsivity, and low attentional control. Finally, a third domain focuses on callous-unemotional (CU) behavior and includes reduced emotional responsiveness, deficits in empathy, and a lack of guilt.

Several recent studies have investigated these three domains among older children and adolescents (see a review by Frick et al., 2014), but little research has been conducted among preschool-aged samples (i.e., under 5 years old), which is a critical period for several reasons. Adults who are aggressive or violent have often shown behavior problems as young children. Thus, a focus on understanding the emergence and development of behavior problems before they become severe is important for informing interventions that could help prevent children from perpetrating subsequent violence or crime. In addition, evidence suggests that behavior...
problems are more malleable at younger ages (e.g., Dishion et al., 2008; Reid et al., 2004), allowing for greater possibility of improving children’s current and future outcomes through early-starting treatment and interventions strategies. Finally, the preschool years represent an important time of change when children undergo rapid physical, neurological, and psychological development. This period of transition is often very hard for parents to manage and a time when break-downs in the parent-child relationship can commonly occur.

The current study investigated three research questions. First, can these three domains of child behavior problems (ADH, oppositional, and CU behaviors) be measured as separate constructs at age 3? To test this question we collected parent reports on a child behavior questionnaire and used quantitative factor analytic techniques. Second, do ADH, oppositional, and CU behaviors have different nomological networks of associated behaviors? To test this question, we examined their unique associations with measures of various socio-emotional and cognitive processes. Third, do oppositional, ADH, or CU behaviors predict higher teacher-reported behavior problems from ages 3-6 years old? Overall, the aims of the study were to provide a thorough examination of the potentially distinct nomological networks of ADH, oppositional, and CU behaviors; and to evaluate which of these behaviors predicted the worst outcomes at school age.

**Study**

**Methods:** Data are from 240 children (118 girls) and their parents, who were part of a study of young children at risk for behavior problems in Michigan. Data were collected when children were 3 years old and again when they were 6 years old. Most children were of European American background (86%), with others self-identifying as African-American (5%) or biracial (8%). We collected data from mothers and fathers in family homes. Parents answered questions about their children’s ADH behavior (e.g., ‘he/she can’t stand to wait’), oppositional behavior (e.g., ‘he/she is defiant’), and CU behavior (e.g., ‘he/she shows a lack of guilt after misbehaviour’). Parents also completed questionnaires assessing children’s anger/frustration, fear, ability to control their attention, guilt, moral understanding, and empathy towards others. We also collected questionnaire data from teachers who reported on children’s general behavior problems, as well as their proactive aggression (e.g., ‘he/she bullies others’) and reactive aggression (e.g., ‘when teased, he/she strikes back’). Finally, children participated in a 4-hour laboratory session at a local preschool, during which they completed six tasks to assess their effortful control (e.g., ability to delay responses, ability to regulate their emotions) which was videotaped and then coded by researchers. To examine a measurement model for ADH, ODD, and CU behavior, we used confirmatory factor analysis. To test nomological networks and which dimension predicted future behavior problems, we used linear regression.

**Results:** The best-fitting measurement model using items from a commonly used parent-reported behavior checklist was one where ADH, oppositional, and CU behavior were assessed as three separate factors ¹ (see Figure 1). We found that each domain was linked to a specific and distinct nomological network: oppositional behavior was strongly related to parent reports of anger and frustration; ADH behavior was related to lower observed ability to delay responses and regulate emotions as well as lower parent-reported attentional focus; and CU behavior was related to lower parent-reported moral regulation, guilt, and empathic concern (see Figure 2). We found that age 3 CU behavior predicted externalizing behavior problems and proactive aggression at age 6, as judged by teachers. This prediction was over and above earlier teacher-reports of externalizing behavior and ADH and oppositional behaviors.

Overall, results showed that consistent with theory, ADH behaviors were specifically associated with difficulty regulating attention and behavior control, oppositional behavior was associated with difficulty controlling anger and frustration, and CU behavior was related to difficulties with empathy, guilt, and moral development (data not shown). Importantly, CU behaviors were the best predictor of identifying which children had most behavior problems in schools 3 years later, even after taking into account their initial levels of behavior problems.

¹ Statistically, this model fit significantly better than a model where ADH, oppositional, or CU behavior all loaded onto one ‘problem behavior’ factor
Figure 1. Measurement of oppositional, attention-deficit/hyperactive, and callous-unemotional behaviors at age 3 based on confirmatory factor analysis. [Items are based on mother and father reports on a child behavior questionnaire; Colored arrows (←, →, and —) indicate the questionnaire items that are included in each of the three separate behavior dimensions. Black double-headed arrows (↔) indicate overlap between dimensions].

Figure 2. Differential associations of oppositional, attention-deficit/hyperactive, and callous-unemotional behaviors with relevant socioemotional and cognitive correlates suggesting distinct nomological networks of these behavioral dimensions.
Figure 3. Prediction of teacher reports of behavior problems at age 6 by teacher reports of behavior problems at age 3 and parent reports of oppositional, attention-deficit/hyperactive, and callous unemotional behaviors at age 3.

**Figure 3 Note.** All models also controlled for child gender, child age (in months), family income, and child verbal IQ. Teacher- reports of externalizing behavior problems at age 3 predicted teacher-reports of externalizing behavior problems, proactive aggression, and reactive aggression at age 6 (purple arrows →). Parent reports of CU behavior at age 3 also predicted teacher reports of externalizing behavior and proactive aggression at age 6 (blue arrows →). Neither oppositional nor ADH behaviors at age 3 predicted teacher-reported outcomes at age 6 (no arrows shown).

**Implications for Violence Prevention**

The findings of this study have important violence prevention implications that are relevant to parents, teachers, and clinicians. We showed that oppositional, ADH, and CU behaviors can be separately assessed among young children and that they have separate nomological networks: oppositional (i.e., anger/frustration), ADH (i.e., low attentional and effortful control), and CU (i.e., deficits in conscience, including low guilt and a lack of empathic concern) behaviors. We also found that CU behavior (but not oppositional or ADH behavior) uniquely predicted increases in child behavior problems at school.

These findings highlight the need for strategies to identify the different types of early behavior problems among children in order to facilitate access to appropriate treatment. More broadly, although we know that interventions that target parenting practices and skills are the most effective for reducing children’s behavior problems, the findings from this study suggest that we might have an even greater effect for reducing children’s behavior by personalizing treatments according to children’s preschool levels of oppositional, ADH, and CU behaviors. For example, because children with CU behaviors seem to have lower empathy for others, treatments could focus on increasing emotional salience of situations to help children modify their aggression. Treatment strategies that have shown promise in this area focus on promoting warmth, affect and eye contact between parents and children (see Dadds et al., 2014; Hyde, Waller, & Burt, 2014).

**Other resources for information on this topic**

This brief is a summary of research that has been published in the *Journal of Child Psychology and Psychiatry*. The paper is available at: http://onlinelibrary.wiley.com/doi/10.1111/jcpp.12326/pdf
References


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