



Low positive affectivity and behavioral inhibition in preschool-age children: A replication and extension of previous findings

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ARTICLE INFO

Article history:

Received 24 June 2009

Received in revised form 21 October 2009

Accepted 2 December 2009

Available online 29 December 2009

Keywords:

Positive affect

Behavioral inhibition

Temperament

Children

ABSTRACT

The present report replicates and extends our previous study using a laboratory assessment of child temperament and behavior to distinguish the affective component, low positive affect (PA), of the broader positive emotionality construct from behavioral inhibition (BI) in a larger, independent sample. Additionally, we examined whether laboratory-assessed traits could be distinguished on parent/teacher-reports of related constructs. Low positive emotionality and BI share the core feature of low approach/engagement and are often not distinguished in the literature, despite presumed differences in underlying motivation. We examined these traits in novel and non-novel laboratory contexts. Similar to previous findings, we found that in novel situations, children with low PA and children with high BI exhibited similar levels of approach, and both groups exhibited lower approach than controls. In contrast, in non-novel situations, children with low PA exhibited significantly lower levels of approach than children with high BI and controls. Finally, we also found external evidence for the distinction between laboratory-defined low PA and high BI on parent- and teacher-reports of child temperament.

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1. Introduction

Temperament has been defined as biologically-based individual differences in reactivity and regulation that are relatively stable over time and shape the way individuals adapt (Clark & Watson, 1999; Rothbart & Bates, 2006). Research has focused on the broad constructs of positive emotionality (PE) and negative emotionality (NE) (Clark & Watson, 1999; Rothbart & Bates, 2006) as well as behavioral inhibition (BI) (Fox, Henderson, Marshall, Nichols, & Ghera, 2005; Kagan, 1997). Although these constructs have distinct features, they share behavioral traits that create difficulties in distinguishing between them. Specifically, low PE and high BI share the feature of low behavioral approach (Durbin, Klein, Hayden, Buckley, & Moerk, 2005; Pfeifer, Goldsmith, Davidson, & Rickman, 2002).

PE encompasses positive mood states, sociability, and engagement with the environment (Clark & Watson, 1999). For this paper, we use PE to refer to the temperament construct of positive emotionality, and we use “positive affect (PA)” to refer specifically to the affective component of the broader PE construct. Thus, children with low PE exhibit low levels of PA, social interactions, and appetitive behavior. BI includes high negative affect (especially fear), low approach, and high constraint (Kagan, 1997). Children with high BI are wary, hesitant, and fearful in unfamiliar contexts and

with unfamiliar people. Both constructs share low approach as a core feature but are presumed to differ in the underlying motivation and eliciting contexts. In low PE, low approach reflects chronically low levels of motivation to engage. In BI, low approach is presumed to reflect conflicted motivation, such that children desire to engage but are blocked by anxiety/fear. Hence, low approach in behaviorally inhibited children should be limited to unfamiliar situations that generate a sense of novelty and threat.

1.1. Differentiation of temperament traits

Two recent studies have examined this distinction. Putnam and Stifter (2005) examined approach versus inhibition, positive affect, and negative affect in 126 toddlers in both high intensity (i.e. high novelty/threat) and low intensity situations. They reported that both positive and negative affect were significantly but differentially associated with approach in high intensity situations whereas positive affect was more strongly associated with approach in low intensity situations. In a sample of 100 preschoolers, Laptook et al. (2008) used laboratory measures to differentiate the low positive affective component of the broader PE construct and high BI. Results indicated that both traits were associated with low approach in novel contexts but only low PA was distinguished by low approach in non-novel situations.

Unfortunately, low PE and BI are not always distinguished methodologically or conceptually. Laboratory observation measures of BI frequently include markers of PA, such as smiling and

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laughter (e.g., Gest, 1997; Kagan, Snidman, & Arcus, 1998). Many studies have also conceptualized BI and PE as opposite ends of a single dimension, defined by high BI at one end and high PE/exuberance at the other (Polak-Toste & Gunnar, 2006). However, BI and PE have been empirically differentiated in studies using laboratory observations of young children, with correlations between the two ranging from $-.09$ (Pfeifer et al., 2002) to $-.28$ (Durbin et al., 2005).

Failure to distinguish these traits complicates the interpretation of findings and exploration of their possible differential trajectories. For example, BI and PE may have different influences on the development of psychopathology, such that low PE may be a specific precursor/predisposing factor for depression (Clark & Watson, 1999), whereas BI may be an early temperamental precursor of later anxiety (Fox et al., 2005; Hirshfeld-Becker et al., 2008; Kagan, 1997).

The present study is a replication and extension of Laptook et al. (2008) and seeks to test the hypothesis that low PE and high BI reflect distinct patterns of motivation as indicated by differences in their eliciting contexts. Based on our preliminary study with 100 children, we hypothesized that higher levels of BI and lower levels of PA would both be associated with low approach in novel situations, but only lower levels of PA would be associated with low approach in non-novel contexts. We tested these hypotheses in a new and much larger community sample of 559 preschool-age children using a comprehensive battery of laboratory temperament/behavior measures. Furthermore, we extended our previous study by examining whether laboratory-assessed low PA and BI are associated with differences in parent/teacher-reports of related traits. We hypothesized that laboratory-assessed PA would be associated with external PA-related variables but not with BI-related variables, and that laboratory-assessed BI would be associated with external BI-related variables but not with PA-related variables.

2. Methods

2.1. Participants

Participants included 559 children (54% male; 46% female) from a suburban community. Mean age was 42.2 months ($SD = 3.1$). Mean age for mothers was 36.0 years ($SD = 4.4$) and fathers was 38.3 years ($SD = 5.3$). Participants were recruited via a commercial mailing list. Eligible families had a child between three and four years of age, with no significant medical conditions or developmental disabilities, and at least one English-speaking biological parent. Participants were 87.1% Caucasian and came from mainly middle-class families, as measured by the Hollingshead's Four Factor Index of Social Status (Hollingshead, 1975; $M = 54.2$; $SD = 11$). The vast majority (94.2%) of children came from two-parent homes, and 51.4% of mothers worked outside the home part- or full-time. Children's mean scores on the Peabody Picture Vocabulary Test ($M = 102.8$, $SD = 14$) (PPVT; Dunn & Dunn, 1997) were in the average range.

2.2. Procedure

The study consisted of a two and a half hour visit that included participation in a structured laboratory observation of child temperament and behavior. The primary caregiver who accompanied the child completed a set of questionnaires. Most respondents were mothers (530 mothers; 25 fathers). The parent worked on the questionnaire packet during the visit but was allowed to finish uncompleted forms at home and mail them back. Parents gave consent ($N = 397$) to contact preschool/daycare teachers and send them

questionnaires; 229 teachers (57.7%) returned questionnaires. Participants were compensated monetarily for participation.

2.3. Assessment procedures

2.3.1. Laboratory Temperament Assessment

The child participated in a standardized set of twelve episodes from the Laboratory Temperament Assessment Battery (Lab-TAB; Goldsmith, Reilly, Lemery, Longley, & Prescott, 1995). Episodes were designed to elicit different behaviors and emotions. The child returned to a neutral state after each episode by taking a short play break. Each episode was videotaped through a one-way mirror and later coded. A parent remained in the room except during Stranger Approach and Box Empty. Below is a description of each episode:

Risk Room: Child explored a set of novel and ambiguous stimuli (e.g. cloth tunnel, balance beam, Halloween mask, etc.).

Tower of Patience: Child and experimenter alternated turns building a tower with large blocks. During each turn, the experimenter increased delays in adding her block.

Arc of Toys: Child was allowed to play with toys for a few minutes, after which the experimenter asked the child to clean up.

Stranger Approach: While the experimenter went to get toys, a male research assistant entered the room and spoke in a neutral tone while gradually walking closer to the child.

Car Go: Child and experimenter raced remote controlled cars.

Transparent Box: Child selected a toy, which was then locked in a transparent box. Child was left alone in the room with a set of incorrect keys. After a few minutes, the experimenter returned with the correct key, and encouraged the child to open the box and play.

Exploring New Objects: Child explored a set of novel/ambiguous stimuli, including a mechanical spider, mechanical bird, and sticky water-filled gel balls.

Pop-up Snakes: Child and experimenter surprised the mother with a can of potato chips that contained coiled toy snakes.

Impossibly Perfect Green Circles: Child was instructed to repeatedly draw a circle on a large paper. After each drawing, the circle was mildly criticized.

Popping Bubbles: Child and experimenter played with a bubble-shooting toy.

Snack Delay: Child was instructed to wait for the experimenter to ring a bell before eating a snack. Experimenter systematically delayed ringing the bell.

Box Empty: Child was given a present to unwrap, with nothing inside. After discovering the box was empty, the experimenter returned with several small toys for the child to keep.

Although all episodes were somewhat novel in that they took place in an unfamiliar laboratory setting, only three (i.e., Risk Room, Stranger Approach, Exploring New Objects) were explicitly designed to elicit wariness, hesitancy, and fear. These episodes, similar to episodes used in most laboratory studies of BI (Kagan, 1997; Pfeifer et al., 2002), were included as novel situations for this study. The remaining nine episodes, similar to situations that young children frequently participate in, were characterized as non-novel.

2.3.2. Tape coding procedures

Coding procedures were based on previous studies (Durbin et al., 2005; Pfeifer et al., 2002). Different methods were employed for BI, PA, and behavior variables. These codes have been related to independent home observations and show moderate stability over time (Durbin, Hayden, Klein, & Olino, 2007).

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