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Shifting gears: Coping flexibility in children with and without ADHD

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This study examined developmental differences in, and cognitive bases of, coping flexibility in children with and without ADHD. Younger (age 7 to 8) and older (age 10 to 11) children with and without ADHD (N = 80) responded to hypothetical vignettes about problematic interactions with peers that shifted from controllable to uncontrollable over time. We assessed children’s coping strategies, perceptions of controllability, coping repertoire size, and executive function. Coping flexibility was defined as reporting more strategies directed toward adjusting to, rather than changing, situations as they became uncontrollable. Older children without ADHD demonstrated greater coping flexibility than did younger children without ADHD or either age group with ADHD. The age difference in coping flexibility was mediated by older children’s greater accuracy in perceiving decreases in controllability. Children with ADHD (both younger and older) reported more antisocial strategies than did children without ADHD, a difference that was accounted for by their smaller repertoire of coping strategies. Programs directed toward enhancing coping flexibility may need to target different cognitive skills for children with and without ADHD.

Keywords: ADHD; children; cognition; coping; coping flexibility

Coping flexibility

Lazarus and Folkman (1984) define successful coping as the ability to continuously adjust cognitive and behavioral efforts in order to manage demands that are appraised as taxing a person’s resources. The present study used the primary-secondary control model of coping (Rothbaum, Weisz, & Snyder, 1982; Weisz, Rothbaum, & Blackburn, 1984) for classifying coping strategies. This model proposes that individuals cope with stressful situations either by making efforts to control the objective situation or event (primary control coping strategies) or by adapting to situations as they currently stand (secondary control coping strategies). Relinquished control is the third type of strategy in the model that consists of giving up or making no attempt to deal with a situation.

Researchers have long sought to understand how children cope with stressful situations. One important component of this process is flexibility – the ability to shift to new coping strategies when current strategies no longer fit the demands of the situation. Coping flexibility is thought to be important to positive social relations in children, but few studies have adequately measured this ability or assessed how it changes with development. Further, little is known about the coping flexibility of children who typically have difficulties dealing with peer conflict, such as children with Attention-Deficit/Hyperactivity Disorder (ADHD). The aim of the present study was to examine the development, and cognitive bases, of coping flexibility in children with and without ADHD.

Primary control coping strategies (hereafter referred to as primary coping) are thought to be adaptive responses to most stressful situations because they allow individuals to shape their environments to meet their goals, and they promote a sense of self-efficacy (Heckhausen & Schulz, 1995). When it is not possible to attain a goal, however, primary coping is maladaptive. When circumstances are uncontrollable, persisting in attempts to control the environment is futile and leads to feelings of low self-efficacy (Bandura, 1982; Heckhausen & Schulz, 1995). Secondary control coping strategies (hereafter referred to as secondary coping) are more beneficial during uncontrollable situations because they facilitate emotional recovery from failure to attain a goal and help to preserve perceived self-efficacy for future attempts at primary coping (Heckhausen & Schulz, 1995; Wrosch, Scheier, Carver, & Schulz, 2003).

Research on children’s social relationships and emotion regulation strategies indicates that effective coping skills are associated with positive social outcomes (e.g., Compas et al., 2001; Hubbard & Coie, 1994; Kalpidou, Power, Cherry, & Gottfried, 2004; Kopp, 1989; McDowell, O’Neil, & Parke, 2000; Mize & Cox, 1990; Saarni, 1999). Flexible navigation through stressful situations has long been considered a hallmark of these adaptive coping abilities (e.g., Compas, Worsham, & Ey, 1992; Lazarus & Folkman, 1984; Saarni, 1999) and is frequently mentioned as an important part of social competence (e.g., Eisenberg & Fabes, 1992; Halberstadt, Denham, & Dunsmore, 2001; Saarni, 1999). Empirical evidence also suggests that coping inflexibility leads to problematic social functioning. For example, boys in kindergarten...
through fifth grade who were rated by their teachers and peers as aggressive or isolated tended to generate fewer appropriate solutions to conflict situations (Mayeux & Cillessen, 2003; Richard & Dodge, 1982). Additionally, in comparison to 8- to 11-year-old children who scored high in social competence, same-aged children who scored low in social competence demonstrated more inappropriate persistence with primary forms of coping, as well as more repetitions of strategies over time (D’Amico, 1995). Thus, problems with coping flexibility may contribute to the problematic peer relations of rejected children.

Despite the evidence for the important role of coping flexibility in children’s social functioning, coping flexibility is rarely assessed directly. Compas and his colleagues (1992) note that researchers typically ask participants to report how they cope “in general” or in a single context at a single point in time. Few studies examine how individuals’ coping strategies change over the course of a single stressful situation (Compas et al., 1992; Rudolph, Dennig, & Weisz, 1995). Moreover, those studies that have assessed flexibility in coping differ in how they define the construct, making it difficult to generalize across studies. In some studies, coping flexibility has been defined as the number of strategies used to deal with stressful situations (e.g., Mize & Cox, 1990), whereas others have examined cross-situational use of primary and secondary strategies (e.g., Band & Weisz, 1988; Folkman & Lazarus, 1983; Sorgen & Manne, 2002).

One of the few researchers to take on the task of operationalizing coping flexibility was Cecilia Cheng, who proposed a theory-based conceptualization of coping flexibility based on the goodness-of-fit of strategies to situations. Cheng examined how adults coped with a variety of situations (Cheng, 2001, 2003). Participants who had the most successful outcomes used a wide variety of coping strategies and the strategies they selected depended on their perceptions of the controllability of the situation. Specifically, successful copers were those who used problem-focused (primary) strategies when they perceived a situation to be controllable and emotion-focused (secondary) strategies when they perceived a situation to be uncontrollable. Cheng thus proposed that coping flexibility is characterized by: (a) having a variety of coping strategies to choose from; (b) having individuals’ strategy choices match the controllability of the situation; and (c) using strategies that are effective for achieving coping goals. Cheng’s work provides an excellent framework for understanding and operationalizing coping flexibility. It is not yet known, however, whether her findings on adult coping apply to children’s coping. In addition, Cheng’s work focused primarily on how individuals change their coping strategies in response to different situations. Because stressful situations are typically dynamic, it is also important to investigate how coping flexibility operates within a single changing stressful event that a child might encounter in everyday life (Rudolph et al., 1995).

The present study defined coping flexibility as the ability to shift strategies in response to changes in the demands of a stressful situation. One aspect of a stressful event that can change quickly and unexpectedly is its controllability. In our study, younger children (ages 7 to 8) and older children (ages 10 to 11) were asked to describe how they would cope with a stressful situation as their ability to attain a goal changed from controllable to uncontrollable. Thus, coping flexibility was operationalized as an increase in the frequency of reporting secondary coping strategies as situations decreased in controllability.1

Developmental change in coping flexibility

Research on the emergence of primary and secondary coping strategies provides clues as to how coping flexibility may develop. Primary coping is thought to emerge in infancy as children begin to understand contingencies between their behavior and outcomes, and to engage in behaviors directed toward attaining their goals (Heckhausen & Schulz, 1995). During the preschool years, children become more self-sufficient in their coping efforts and begin to use more varied types of primary strategies. On the whole, though, preschool-aged children tend to use more primary than secondary strategies (Compas, Banes, Malcarne, & Worsham, 1991; Compas et al., 1992).

Conflicting findings exist concerning the age at which children begin to spontaneously use secondary coping strategies. Many studies suggest that children do not spontaneously employ secondary strategies until approximately age 7 or 8 (e.g., Flavell, Flavell, & Green, 2001; Lagattuta & Wellman, 2001; Pincus & Friedman, 2004; Rice, Levine, & Pizarro, 2007). Other studies suggest, however, that secondary strategies may be used by children as young as 5 or 6 years (Altschuler & Rube, 1989; Band & Weisz, 1988; Blair, Denham, Kochanoff, & Whipple, 2004). As children develop, the frequency of using secondary coping strategies appears to increase (Band & Weisz, 1988; Compas, Malcarne, & Fondacaro, 1988; Harris & Lipian, 1989), whereas the frequency of using primary strategies stays roughly the same (Compas et al., 1988) or decreases (Band & Weisz, 1988).

As children become practiced at using both types of strategies in different contexts, they have more options to draw on when a situation arises that requires a shift between strategies. Therefore, children’s coping flexibility would be expected to increase even after they are capable of generating secondary strategies. The present study compared the coping flexibility in children aged 7 to 8, who could be expected to have begun using secondary strategies, with coping flexibility in children aged 10 to 11, who presumably have had more experience using both primary and secondary strategies.

Children with ADHD and coping flexibility

In addition to examining developmental differences, we also compared the coping flexibility of children with and without ADHD. The social difficulties of children with ADHD are well documented (e.g., Barkley, 1998; Bloomquist, August, Cohen, Doyle, & Everhart, 1997; De Boo & Prins, 2007; Whalen &

1 Although we have adopted the primary-secondary control model of coping in our study’s operational definition of coping flexibility, other models also are compatible with this conceptualization of coping flexibility. Many models specify types of coping that are thought to be adaptive in situations with particular levels of controllability. For example, in the ways-of-coping model (Folkman & Lazarus, 1983; Lazarus & Folkman, 1984), the category of problem-focused coping includes attempts at controlling the stressor and is thought to be most adaptive in controllable situations. Its counterpart, emotion-focused coping, includes ways of managing the emotional response to the stressor and is considered to be more adaptive in uncontrollable situations. The key element in coping flexibility is the goodness-of-fit between the coping strategy and the controllability of the situation. Therefore, other coping categories that allow for this comparison also could be used to determine coping flexibility.
Henker, 1985), but research on the types of coping strategies used by children with ADHD has generated somewhat mixed findings. In many situations, children with ADHD tend to exhibit more primary coping strategies, such as dominating or re-directing the flow of social interactions (Whalen & Henker, 1998). For example, compared to children without ADHD, 9- to 13-year-old children with ADHD were found to endorse more aggressive and problem-solving strategies in vignettes about stressful social situations (Gallen, 1998). Other studies, however, have shown that children with ADHD are capable of using secondary coping strategies in uncontrollable situations. For example, 5- to 6-year-old children with ADHD were found to use secondary coping strategies, such as behavioral distraction, in a delay-of-gratification task (Schweitzer & Sulzer-Azaroff, 1995). One factor that could contribute to the differences seen between the coping strategies of children with and without ADHD is that many children with ADHD also have comorbid disorders that are characterized by aggressive or dominating behavior, such as Oppositional Defiant Disorder. Thus, it is important for studies of coping to take into consideration whether comorbidity is a factor in the coping choices of children with ADHD.

Although studies demonstrate that children with ADHD are capable of engaging in situationally-appropriate coping strategies, research suggests that they may have difficulty enacting them in an appropriate and flexible manner (Whalen & Henker, 1985). To investigate this issue, we compared children with and without ADHD with respect to their performance on a coping flexibility task. Because children with ADHD typically have been found to use more inappropriate aggressive and controlling strategies when dealing with stressful situations than children without ADHD, we would expect children with ADHD to be less flexible in their coping choices and to report more antisocial and self-initiated primary strategies as situations change from controllable to uncontrollable.

**Cognitive correlates of coping flexibility**

The key to understanding differences in coping flexibility is knowing which cognitive abilities are associated with flexible coping. Three cognitive abilities may underlie this skill. The first is the ability to accurately perceive the extent to which one has control over a situation. When control is high, primary strategies are likely to be most useful; when control is low, secondary strategies are more adaptive (Sorgen & Manne, 2002). Young children may lack coping flexibility because they do not correctly perceive their level of control over a situation, often overestimating their control (Compas et al., 1991; Weisz, 1986), or because they do not understand the link between controllability and the adaptiveness of a strategy. Perceptions of control become increasingly realistic with age and appear to reach maturity at around age 12 (Compas et al., 1991). As the ability to accurately perceive control over a situation matures, we would expect corresponding changes in a child’s ability to evaluate the appropriateness of primary and secondary coping strategies.

In addition to accurately perceiving the controllability of situations, a second cognitive ability that may underlie coping flexibility is maintaining a large and diverse repertoire of coping strategies. Having a variety of primary and secondary coping strategies from which to choose is essential for being able to appropriately shift to a new strategy when a situation changes. Because children’s repertoires of primary and secondary coping strategies have been shown to become more diverse with age (e.g., Compas et al., 1988; Pincus & Friedman, 2004), we expect their ability to flexibly use these strategies would also increase with age.

A third cognitive ability that may be related to effective coping flexibility is the ability to avoid perseveration and switch flexibly between cognitive activities (hereafter referred to as cognitive switching). For coping flexibility, it is not enough to have a varied repertoire of coping strategies; an individual also must actively monitor the effectiveness of the current strategy and change strategies as the demands of a stressful situation change. Executive functions, the regulators of mental activities pertaining to planning and self-control (Barley, 2000), are thought to be responsible for this cognitive switching. Executive functions are controlled by the frontal cortex, one of the last areas of the brain to fully develop and mature with age (Romine & Reynolds, 2004). Thus, cognitive switching between primary and secondary coping strategies would be expected to become more flexible with age.

Cognitive switching also may underlie potential coping flexibility differences between children with and without ADHD. Recent neurologically-based theories of ADHD suggest that lack of inhibition and self-regulation (governed by executive functions) are the core deficits of this disorder (Barley, 1998, 2000). Deficits have been shown in the performance of children with ADHD on a variety of tasks that assess cognitive switching, such as inhibition and set shifting in a stop-signal paradigm (e.g., Nigg, 1999; Oosterlaan, Logan, & Sergeant, 1998; Oosterlaan & Sergeant, 1996; Overtom et al., 2002; Stevens, Quittner, Zuckerman, & Moore, 2002; Willcutt, Doyle, Nigg, Faro, & Pennington, 2005; but see Alderson, Rapport, & Kofler, 2007; Kuntsi, Oosterlaan, & Stevenson, 2001; Pick, Dyck, Francis, & Connell, 2007). With cognitive switching problems, we would expect children with ADHD to default to primary coping in stressful situations, regardless of the context, because it is the most readily accessible option (Heckhausen & Schulz, 1995). Therefore when faced with a situation that shifts from controllable to uncontrollable, children who have ADHD would be less likely to select a secondary strategy and more likely to endorse a less appropriate primary strategy, indicating less coping flexibility.

Some investigators have proposed that the ability to consider a situation from multiple perspectives and the ability to consider alternative solutions for dealing with situations underlie coping flexibility (e.g., Cheng, 2003; Cheng & Cheung, 2005). In the present study, we chose to focus on more basic cognitive abilities that may allow these higher-level processes to operate. Specifically, we assessed perceived controllability and cognitive switching, as well as the number and types of unique strategies that children generated in response to a situation.

In sum, the present study examined the development and cognitive correlates of coping flexibility in children with and without ADHD. Children described how they would cope with three stressful social situations that decreased in controllability as the situations unfolded. Coping flexibility was defined as whether children used secondary strategies more frequently when the situation became uncontrollable. We hypothesized that: (a) older children would demonstrate greater coping flexibility than younger children; (b) children without ADHD would demonstrate greater coping flexibility than children with ADHD; (c) children with ADHD would report more antisocial and self-initiated primary strategies; and (d) greater coping
flexibility would be mediated by a greater ability to perceive decreases in controllability, a larger repertoire of coping strategies, and greater cognitive switching ability.

Method

Participants

Participants included children with ADHD \( (n = 22) \) and children without ADHD \( (n = 58) \). Initially, 89 children were recruited from local schools, day-care centers, counseling centers, and programs for parents and their children with ADHD in Orange County, California. Children were classified as having ADHD if they were identified by parents as having been diagnosed with ADHD and if this parent identification was then confirmed through measures assessing the 18 symptoms of ADHD described in the DSM-IV (American Psychiatric Association, 2000). Specifically, the children classified as having ADHD first were identified by parents on a background questionnaire that contained questions about their child’s demographic characteristics, including ADHD status and whether or not their child had been diagnosed with any other clinical disorder. Some 59% of the children who were identified by parents as having been diagnosed with ADHD had previously been identified as having this disorder in a separate study which included a multi-informant assessment of ADHD. In that study, the children and their parents participated in a clinical interview with a child psychologist or child psychiatrist. The parents were administered the Diagnostic Interview Schedule for Children – IV (DISC-IV; Shaffer, Fisher, Lucas, Dulcan, & Schwab-Stone, 2000) and both the children and parents were administered the Schedule for Affective Disorders and Schizophrenia for School Aged Children – Present and Lifetime Version (Kiddie-SADS-PL; Kaufman, Birmaher, Brent, Rao, & Ryan, 1996) in order to establish the presence of DSM-IV symptoms for ADHD and rule out the presence of autistic spectrum disorders and psychotic disorders. Additionally, both parents and teachers of these children completed the Swanson, Nolan, and Pelham rating scale of psychopathology (SNAP; Swanson, 1992) and the Conners Rating Scales – Revised (CPRS-R & CTRS-R; Conners, 1997), which provided ratings of the children’s ADHD symptom severity. Severity ratings for this group of children were at least 1 standard deviation above average or children had a mean score of 1.5 or greater for at least one of the ADHD-Inattentive or ADHD-Hyperactive subtypes.

For the 41% of children in the ADHD group for whom these data were not available, we had parents submit professional diagnostic reports for the children indicating a diagnosis of ADHD and/or obtained teacher ratings using the Strengths and Weaknesses of ADHD-Symptoms and Normal-Behavior (SWAN; Swanson et al., 2001), an established research measure derived from the SNAP for assessing the 18 symptoms of ADHD (e.g., Abikoff et al., 2007; Cornish et al., 2005; Cornish, Wilding, & Hollis, 2008; Wilding & Burke, 2006). All but three children had SWAN scores above 1 on at least one of the two ADHD subtypes, indicating that these children scored above the normative range for inattentive and/or hyperactive/impulsive behaviors. The three children who had scores less than 1 had evidence of their ADHD status through professional diagnostic reports.

Within the ADHD group, 45% of the children had been diagnosed with the combined subtype of ADHD, 32% with the inattentive-only subtype, and 9% with the hyperactive-only subtype. The parents of 14% of the children did not know the subtype of ADHD with which their child had been diagnosed. These subtype percentages were very similar for the younger and older groups. In addition, nearly two-thirds of the children with ADHD (64% in both the younger and older groups) did not have a comorbid diagnosis. For those who did, comorbid disorders included Learning Disabilities, Oppositional Defiant Disorder, Anxiety Disorder, Bipolar Disorder, and Tourette’s Syndrome.
Procedure and measures

Prior to the study session, parents were asked if their children were currently taking medication. Seven younger and eight older children with ADHD were taking medication. Those who were taking medication for their behavioral symptoms were asked to refrain from taking that medication at least 24 hours prior to the study, so that their responses would not be influenced by the effects of the medication. When they arrived for testing, parents also were asked to confirm that their children had not taken their medication in the past 24 hours. Twenty-four hours is generally considered to be a sufficient wash-out period for most of the common medications for ADHD and has been used successfully in many studies (e.g., Cadesky, Mota, & Schachar, 2000; Hinshaw, Buhrmester, & Heaton, 1989). To reduce the impact of being off the medication, these children were tested during school holidays and weekends. In most cases, these times coincided with their regularly-scheduled medication holidays.

Children were interviewed individually by one of four female undergraduates who had completed over 40 hours of intensive protocol training. Interviews took place at children’s schools or at a research lab at the University of California, Irvine. Sessions were audio-taped, and it took approximately 40 minutes for children to complete all tasks.

Cognitive switching measure. Cognitive switching was assessed through the 64-card version of the Wisconsin Card Sorting Task (WCST-64; Kongs, Thompson, Iverson, & Heaton, 2000). In this task, children are asked to match 64 cards with figures that vary in color, shape, and number of shapes to one of four “key” cards that also vary along these dimensions. The active rule for sorting the cards (e.g., “match by color”) is never explicitly stated by the examiner and changes throughout the task, thus requiring children to actively learn, maintain, and switch rules. The WCST-64 has been shown to have good construct validity and good to excellent test–retest reliability coefficients (averaging between .57 to .90; Kongs et al., 2000). Children’s total number of perseverative errors (poorer performance on switching between rules during the task) was used as the measure of cognitive switching. Specifically, more perseverative errors indicated greater problems with cognitive switching.

To maximize children’s attentiveness to the WCST-64, we presented this task first rather than counterbalancing it with the more engaging vignette coping interview (described below). While minimizing fatigue, a possible consequence of this standardized presentation was that negative emotion in response to perceived failure on this task could carry over and affect children’s performance on the coping interview. To minimize any carryover of negative emotion to the coping interview, after the completion of the WCST-64, interviewers told children they had done a very good job, and as a reward for doing so well on the task, they received a colorful folder.

Vignette coping interview. To assess coping flexibility, children were asked to imagine themselves as the protagonist in three emotion-eliciting situations involving goal failure. All vignettes involved a protagonist and a second child who was present at the time of the goal failure. Vignettes were worded, however, so that they did not specifically state that the other child caused or intended to cause goal failure. All three vignettes were designed to describe situations that were familiar and understandable to children of the ages included in the study: (a) a child’s sandwich falls on the ground; (b) a child has to clean up a mess; (c) a picture that a child was going to enter into a drawing contest gets ruined. These vignettes were pilot tested to ensure that they were effective at presenting situations that shifted from controllable to uncontrollable. All children heard the vignettes in the order presented above. We used a set order, rather than counterbalancing, so that the final vignette was the same for all participants. We asked an additional question about the final vignette at the end of the interview to assess the depth of children’s coping repertoire.

Prior to hearing the vignettes, children were trained to use a four-point emotional intensity scale with increasingly larger and darker bars labeled “not at all” to “a lot.” To make sure that the children understood the visual scale, they were asked to rate how happy and how sad they would feel about a variety of positive and negative events. A five-point scale was used to help the children answer questions about the perceived controllability of the situations in the vignettes, with response options that ranged from “definitely not” to “definitely.” Increasingly larger circles represented greater likelihood of an event occurring. To train children to use this scale, the interviewer first generated sentences using each point on the rating scale (e.g., “I will definitely not fly into outer space today”). The children were then asked to generate their own sentences until it was clear that they could distinguish between the rating points.

Following training on the rating scales, the interviewer read the first part of the first vignette. The first part of each vignette (the controllable part) described a situation in which a child’s attempt to attain a goal failed, but in which it was still possible for the child to achieve the goal. For example:

There is a picture-drawing contest. The prize for the best picture is free tickets to Disneyland. You really want to win the contest, so you work very hard on your picture. When you finish the picture, you show it to some kids. One kid takes the picture to look at it, and the picture falls into a puddle of mud. The ink on the picture is all smeared and the picture is ruined.

Children were asked, “How would this make you feel?” Then they rated the intensity of their stated emotion on a four-point scale. They were also asked, “Why would it make you feel [emotion]?” To assess their coping strategy choices, children were asked, “How could you make your [emotion] feelings go away?” To assess perceived controllability, children were asked to rate (on a five-point scale) how likely it was that they would be able to achieve the original goal (e.g., “Do you think you can win the drawing contest now?”).

Following the first set of questions, the uncontrollable part of the vignette was presented to the children. For example:

When the picture falls into the mud puddle, it gets completely ruined. The picture has to be turned in right now to enter the contest. So now you can’t enter the contest to win tickets to Disneyland because you don’t have a picture.

The second part of the vignette was designed to present the situation as beyond the child’s control. We then asked children the same set of questions that followed the first part of the vignette. In addition, to assess their ability to come up with alternate coping choices, children were told three times to imagine that the coping strategy they had just selected could not be used, and then they were asked to generate other coping
options for that situation. For example, in response to the vignette presented above, a child might initially respond to how she would make her sad feelings go away by saying, “I would get a hug from my mom.” Then the interviewer would ask the child, “What if you couldn’t get a hug from your mom, how could you make your sad feelings go away then?” After the completion of these questions, the next two vignettes were presented using the same protocol.

Following the third vignette, we asked children to report all possible coping strategies they could think of to deal with the situation, up to a maximum of 20 strategies. These responses were combined with the previous coping questions as a means of assessing the size of children’s coping repertoires. For each strategy children generated they received a ticket that they could exchange for a prize at the end of the session. In order to make sure children had reported all the strategies they could generate, a one-time prompt was given if a child stopped before reaching 20 strategies: “Can you think of anything else? Think very hard so that you can try to get more tickets.”

Debriefing. After all the tasks had been completed, children were asked if they had any questions about the session. Then the interviewer told them they had done a good job, gave them a certificate, and allowed them to exchange their tickets for a toy prize.

Coding of emotions and coping strategies. Data were coded by pairs of research assistants who were blind to the age and ADHD status of the children. The emotions that children reported in response to each part of the vignettes were coded into one of four categories: sad, angry, general negative (e.g., “bad,” “not good”), and other (e.g., one child said, “not necessarily happy, not necessarily sad”; another child said, “surprised”). The questions used to assess coping strategies were those that asked children what they would do to make their bad feelings go away, the alternate strategies, and the final question that asked children to state all the strategies they could in response to the third vignette. Children’s strategies were coded using five categories: primary, secondary, antisocial, goal forfeiture, or nonspecific.

Primary strategies involved attempts to attain the original goal in the vignette (e.g., entering the drawing contest). Primary strategies were further divided based on whether the child attempted to reinstate the goal on his or her own (e.g., “I’d tell my mom,” “Draw a new picture to enter the contest”) or with the help of another person (e.g., “I could tell the teacher or something and ask them if I could have an extra day to work on [the picture]”). Secondary strategies did not involve achieving the original goal in the vignette, but rather provided a means of adapting to the situation without resulting in a negative or harmful outcome for the child or the interaction partner (e.g., “By thinking if it’s not me that can win it, then maybe one of my friends can”). Antisocial strategies, such as physical aggression, verbal aggression, and revenge, also were used to adapt to the current situation but were aggressive or antisocial in nature (e.g., “I’d punch him,” or “I’d rip up his picture so he wouldn’t win”). Goal forfeiture strategies involved giving up attempts to reinstate the goal or not knowing what to do (e.g., “I don’t know what I can do”). Finally, the nonspecific category included strategies that were not goal-specific, or that did not clearly fit in any of the other four categories (e.g., “I would just do something,” “Draw different pictures”). Occasionally, children provided more than one coping strategy. In these cases, the first strategy was coded unless the child clearly indicated that another strategy was their main choice.

We used a conservative approach to categorizing children’s responses and avoided assuming the purpose of any strategies that were ambiguously worded. For example, the strategies, “Trying to draw a new one before the contest starts,” and, “Giving a hug to my mom,” were considered unambiguously-worded primary and secondary strategies, respectively. The strategy, “I’d tell my mom,” was considered ambiguous because it was not clear whether the child’s intent was to get help with reinstating her goal of entering the contest (a primary strategy) or to get emotional support (a secondary strategy). This ambiguous strategy was therefore coded as “nonspecific.”

Using this conservative approach to coding, 99% of children provided at least one unambiguous strategy for their responses on the vignettes and 73% provided at least one unambiguous strategy per vignette. Interrater agreement was calculated for coders’ ratings of children’s responses to the target question of how they would make their bad feelings go away. Kappas were calculated for each of the controllable and uncontrollable parts of each of the three vignettes, and these six values ranged from .82 to .94.

To assess the relative size of children’s coping repertoires, coders counted the number of unique strategies reported by children across all questions in the vignette coping interview (range: 5 to 35; M = 21.86, SD = 7.31). We used unique strategies, rather than total strategies, to measure coping repertoire size because some children repeated strategies over the course of the interview. Interrater agreement for the number of unique strategies was high (r = .95). Coding disagreements were resolved through discussion. Because all children did not generate the same number of total strategies, the number of unique strategies was then standardized by transforming it into the proportion of unique strategies out of all strategies generated by the child (range: 0.31 to 1.00; M = 0.76, SD = 0.14).

Results

Overview

Following preliminary analyses, the results are presented in three sections. The first section examines age and ADHD-status differences in the frequency with which children reported different types of coping strategies (i.e., primary, secondary, antisocial, goal forfeiture, and nonspecific strategies) in response to the controllable and uncontrollable parts of the vignettes. These analyses were conducted using the first strategy children reported in response to the controllable part of the vignettes and the first strategy they reported in response to the uncontrollable part of the vignettes. This provided an equivalent measure for comparing children’s responses to the two parts of the vignettes. Coping flexibility was defined as an increase in the number of secondary strategies reported as situations changed from controllable to uncontrollable. The

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2 We also coded ambiguous strategies using a less conservative strategy that took advantage of any cues children provided in the context of their other answers. For example, the child who said, “I’d tell my mom,” indicated on other answers that she would tell another person in order to get emotional support. So using this context, we coded this as a secondary strategy. Use of this less conservative coding strategy did not affect the results of analyses. The conservative coding approach was used for the analyses presented in this article.
second section of the results examines group differences in three potential mediators of coping flexibility: perceived decrease in controllability, size of coping repertoire, and cognitive switching. Perceived decrease in controllability was measured by children’s responses to the controllability questions. Size of coping repertoire was measured by the proportion of unique strategies that children reported in response to all coping questions across the three vignettes. Cognitive switching was measured by the number of perseverative errors on the WCST-64. The third section of the results examines whether age- and ADHD-related differences in coping strategies and coping flexibility were mediated by these three cognitive correlates.

Preliminary analyses

Emotional response. Children’s responses to the question of how the situations in the vignettes would make them feel were analyzed to find out whether children with and without ADHD differed in their reported emotional responses and whether children’s reported emotion was related to the type of coping strategy they described. The emotions reported most frequently were sad (46%) and angry (40%). Of the remaining responses, 11% were classified as general negative and 3% as “other.” Separate Chi-square analyses were conducted for each of the three vignettes (six analyses) that included ADHD status and emotion (sad, angry, general negative, and other) as variables. Findings revealed no ADHD-status differences in reported emotional response (Chi-square values ranged from 0.43 to 4.46 and p-values ranged from .93 to .22).

Then we examined whether children’s emotional responses were related to the types of coping strategies they described. First, because of the large number of responses given in the vignettes, it was necessary to create a variable that represented each child’s most frequent emotional response in response to the vignettes. A child’s most frequent emotional response was defined as the emotion reported in response to at least four out of the six vignettes. For example, a child who responded that he would feel sad in response to five out of the six vignettes was classified as “primarily sad.” Three groups emerged from this analysis: across the two parts of the three vignettes, 31 children reported sadness more frequently than any other emotion (primarily sad); 27 children reported anger most frequently (primarily angry); and 21 children reported general negative emotion most frequently or a mixture of emotional responses to the vignettes (primarily general negative or mixed). One child was not included in these groups because the majority of his emotional responses were categorized as “other.” A Chi-square analysis revealed no ADHD-status differences in the three emotion groups, $\chi^2(2, N = 79) = 2.01$, $p = .37$. Next, we conducted four one-factor ANOVAs in which the dependent variables were the total number of each of the classifiable coping strategies children reported across all vignettes: primary, secondary, antisocial, and goal forfeiture. The between-subjects variable was the predominant emotional response children reported (primarily sad, primarily angry, primarily general negative or mixed). No significant differences were found in the frequency with which children in each emotion group generated any of the four types of coping strategies ($F$-values ranged from 1.16 to 2.57 and $p$-values ranged from .32 to .08). Because children’s emotional reactions to the vignettes were not associated with their ADHD status or coping strategies, emotion was not included as a factor in subsequent analyses.

Covariates. Gender and whether or not the child had a comorbid clinical diagnosis were assessed as possible covariates. As is typical in studies involving children with ADHD, there were proportionately more males than females in the ADHD groups. The females and males in this study did not differ significantly in subtype or age at ADHD diagnosis. The most common diagnosis (45%) for both genders was the combined subtype. Because there was little evidence to suggest a difference in ADHD severity between males and females, both genders were included in the sample. Gender was included as a covariate in all analyses because the younger and older ADHD groups included too few females to support including gender as a separate factor. Preliminary analyses indicated, however, that comorbidity status was not significantly associated with any of the coping strategy dependent variables ($F$-values ranged from 0.24 to 1.60 and $p$-values ranged from .22 to .63). Therefore, comorbidity status was not used as a covariate.

Vignettes. Preliminary analyses of the frequency with which children reported different types of coping strategies revealed no significant differences between the three vignettes. Therefore, data were collapsed across vignettes in subsequent analyses.

Types of coping strategies by age and ADHD status

The types of coping strategies children reported (primary, secondary, antisocial, goal forfeiture, and nonspecific) were examined by age group and ADHD status. For each part of the vignettes, a score was created for each of the five types of strategies by adding up the number of times children used the type of strategy across the three vignettes. For example, if a child used primary strategies for the controllable part of all three vignettes, the child would receive a score of “3” for primary strategies for the controllable parts. If the child went on to use one secondary strategy in the uncontrollable part of the first vignette, but goal forfeiture strategies for the uncontrollable parts of the other two vignettes, the child would receive a score of “0” for primary strategies, “1” for secondary strategies, and “2” for goal forfeiture strategies, for the uncontrollable parts.

Separate repeated-measures ANCOVAs (controlling for gender) were conducted on children’s scores for each of the five types of strategies. In each analysis, the between-subject factors were age group and ADHD status. The within-subject factor was situation type (i.e., the strategies reported in response to the controllable and uncontrollable parts of the vignettes). Because the number of participants in the ADHD and non-ADHD groups differed, we used the conservative Type III sums of squares which provide estimates that are not

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3 We also examined whether children in our ADHD group who had comorbid Oppositional Defiant Disorder (ODD) were more likely than children without a comorbid ODD diagnosis to endorse antisocial strategies. Only two children with ADHD were reported to have a comorbid diagnosis of ODD in our sample, and neither one of these children responded with an antisocial strategy to the vignettes. In addition, we examined whether antisocial strategies were associated with children’s scores on a nine-item subscale on the SWAN, separate from the ADHD items, that measured uncooperative behaviors typical of children with ODD. We computed correlations between children’s ODD behavior subscale score and the sum of their antisocial strategies for each of the two parts of the vignettes. Neither the sum of antisocial strategies for part one of the vignettes, nor the sum of antisocial strategies for part two of the vignettes, were significantly associated with children’s ODD behavior subscale score (part 1: $r = .36, p = .16$; part 2: $r = .43, p = .09$).
Table 1
Mean number of each type of coping strategy children reported in response to the controllable and uncontrollable parts of vignettes, by age group and ADHD status

<table>
<thead>
<tr>
<th>Vignette part</th>
<th>Non-ADHD</th>
<th>ADHD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controllable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>0.83 (0.75)</td>
<td>1.09 (0.54)</td>
</tr>
<tr>
<td>Secondary</td>
<td>0.77 (0.97)</td>
<td>0.86 (0.76)</td>
</tr>
<tr>
<td>Antisocial</td>
<td>0.03 (0.18)</td>
<td>0.00 (0.00)</td>
</tr>
<tr>
<td>Goal forfeiture</td>
<td>0.23 (0.43)</td>
<td>0.11 (0.32)</td>
</tr>
<tr>
<td>Nonspecific</td>
<td>1.10 (0.92)</td>
<td>1.14 (0.85)</td>
</tr>
<tr>
<td>Uncontrollable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>0.67 (0.66)</td>
<td>0.39 (0.57)</td>
</tr>
<tr>
<td>Secondary</td>
<td>0.67 (0.80)</td>
<td>1.50 (0.96)</td>
</tr>
<tr>
<td>Antisocial</td>
<td>0.00 (0.00)</td>
<td>0.04 (0.19)</td>
</tr>
<tr>
<td>Goal forfeiture</td>
<td>0.20 (0.41)</td>
<td>0.07 (0.26)</td>
</tr>
<tr>
<td>Nonspecific</td>
<td>1.47 (0.90)</td>
<td>1.00 (0.82)</td>
</tr>
</tbody>
</table>

Primary strategies. The results of the analysis of primary strategies showed no significant differences between age and ADHD-status groups. One main effect of situation type was found, however. Reports of primary strategies decreased from the controllable part of the vignette (M = 0.88, SD = 0.64) to the uncontrollable part (M = 0.53, SD = 0.64), F(1,75) = 7.51, p = .008, η²p = .09. When analyses of primary strategies were restricted to only those strategies that were self-initiated (e.g., “Draw a new picture so he wouldn’t win”), a main effect for ADHD status was also found. Children with ADHD reported more self-initiated primary strategies overall (M = 0.48, SD = 0.33) than did children without ADHD (M = 0.33, SD = 0.30), F(1,75) = 5.03, p = .03, η²p = .06.

Secondary strategies. The analysis of the number of secondary strategies (e.g., “By thinking if it’s not me that can win it, then maybe one of my friends can”) that children reported revealed a three-way interaction, F(1,75) = 4.32, p = .04, η²p = .056, which is depicted in Figure 1. Post-hoc tests using the Bonferroni adjustment indicated that older children without ADHD showed a significant increase in their use of secondary strategies between the controllable and uncontrollable parts of the vignettes, F(1,27) = 9.63, p = .004, η²p = .26. In contrast, younger children without ADHD and both age groups with ADHD reported relatively few secondary strategies, and the use of these strategies did not change significantly between the controllable and uncontrollable parts of the vignettes. Indeed, the number of secondary strategies reported by older children with ADHD was not significantly different from the younger groups for either the controllable or uncontrollable part of the vignettes.

Antisocial strategies, goal forfeiture strategies, and nonspecific strategies. Analysis of antisocial strategies (e.g., “I’d rip up his picture so he wouldn’t win”) showed that children with ADHD reported more antisocial strategies (M = 0.15, SD = 0.42) than did children without ADHD (M = 0.02, SD = 0.09), F(1,75) = 4.82, p = .03, η²p = .06. Analysis of goal forfeiture strategies (e.g., “I don’t know what I can do”) showed that younger children reported more goal forfeiture strategies (M = 0.27, SD = 0.37) than did older children (M = 0.09, SD = 0.19), F(1,75) = 8.96, p = .004, η²p = .11. No differences were found in the frequency with which children reported nonspecific strategies.

Summary of group differences in coping strategies. In summary, the group consisting of older children without ADHD was the only one that showed an increase in their use of secondary strategies as the vignettes changed from controllable to uncontrollable (our operational definition of coping flexibility). Both younger groups and the older children with ADHD reported few secondary strategies regardless of the controllability of the situation. Examination of children’s use of primary, antisocial, and goal forfeiture strategies showed that children with ADHD reported more antisocial and self-initiated primary strategies than did children without ADHD, and younger children reported more goal forfeiture strategies than did older children.

Group differences in potential mediators of coping flexibility

Next we examined whether three potential mediators of coping flexibility differed by age group or ADHD status: perceived decrease in controllability, size of coping repertoire, and cognitive switching.

Perceived decrease in controllability. Perceived decrease in controllability was assessed using children’s ratings of how likely it was that they would be able to achieve the target goal
of the vignette. If the child rated controllability as higher for the controlable than for the uncontrollable part of the vignette, they received a score of 1. These scores were summed across the three vignettes (range: 0 to 3) for each child. A two-factor (age group, ADHD status) ANCOVA was conducted on these scores with gender as the covariate. The results showed that older children perceived the decreases in controllability more often (M = 1.72, SD = 0.79) than did younger children (M = 1.24, SD = 0.73), F(1,75) = 4.89, p = .03, \( \eta^2_p = .06 \). Children without ADHD perceived the decreases in controllability more often (M = 1.60, SD = 0.75) than did the children with ADHD (M = 1.14, SD = 0.83), F(1,75) = 5.64, p = .02, \( \eta^2_p = .07 \).

Size of coping repertoire. We also examined the size of children’s coping repertoires. This was operationalized as the proportion of unique strategies children reported across the entire vignette coping interview. A two-factor ANCOVA, controlling for gender, was conducted on coping repertoire size, with age group and ADHD status as the between-subjects factors. The results showed that younger children had smaller coping repertoires (M = 0.74, SD = 0.16) than did older children (M = 0.78, SD = 0.12), F(1,74) = 5.91, p = .02, \( \eta^2_p = .07 \). In addition, children with ADHD had smaller coping repertoires (M = 0.62, SD = 0.15) than did children without ADHD (M = 0.81, SD = 0.10), F(1,74) = 42.17, p < .001, \( \eta^2_p = .36 \).

Cognitive switching. The same analysis was conducted to examine group differences in cognitive switching. The results showed a significant interaction between age group and ADHD status, F(1,75) = 5.56, p = .02, \( \eta^2_p = .07 \). Post-hoc analyses using the Bonferroni adjustment revealed a significant age difference for the ADHD groups only. Younger children with ADHD made almost twice as many perseverative errors (M = 14.55, SD = 6.71) as older children with ADHD (M = 7.36, SD = 3.30), F(1,19) = 9.78, p = .006, \( \eta^2_p = .34 \). No significant difference was found between younger children without ADHD (M = 10.47, SD = 7.44) and older children without ADHD (M = 10.82, SD = 5.74). Furthermore, no significant differences were found between the older ADHD group and the two non-ADHD groups.

Mediation analyses
Because age and ADHD status differences were found in the frequency with which children reported specific coping strategies, and in coping flexibility, we examined cognitive abilities that could potentially explain these differences. Three cognitive factors were examined as potential mediators: whether children perceived decreases in controllability, the size of their coping repertoire, and their ability to switch between cognitive activities. First, we conducted hierarchical linear regression analyses assessing the relation between the three potential mediators and the number of times children reported each of the four types of strategies in response to the uncontrollable part of the vignettes. For each regression analysis, gender, age group, and ADHD status were entered as control variables in step 1, followed by the three potential mediator variables in step 2. To explore the relationship between the potential mediators and coping flexibility, we also conducted a regression analysis on “change in secondary strategies.” This variable was created by subtracting the number of secondary strategies reported in response to the controllable part of the vignettes from the number reported in response to the first coping question of the uncontrollable part. We used Baron and Kenny’s (1986) procedure for identifying mediated relationships. Significant findings for each potential mediator are described below.

Perceived decrease in controllability. Analyses conducted on “change in secondary strategies” showed that perceiving the decrease in controllability within the vignettes was associated with reporting more secondary strategies as the situation changed from controllable to uncontrollable, \( \beta = 0.24, t = 1.96, p = .05 \). The top panel of Figure 2 shows a path model using the standardized regression coefficients of the mediation analysis. As can be seen in this model, older children were more likely than the younger children to perceive the decrease in

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4 Analyses of coping repertoire size were initially conducted using an arcsine transformation on the proportions of unique strategies in order to meet the assumption of normality for the ANCOVA. The resulting significant differences were identical to those using untransformed proportions. Therefore, for ease of interpretation, analyses with untransformed proportions are reported. In addition to analyzing the proportion of unique strategies generated, we analyzed the total number of unique strategies generated. Results were similar to those found for proportions, except that both the main effect of age on number of unique strategies, and the strength of association between number of unique strategies and number of antisocial strategies in the test for mediation, approached significance at \( p < .07 \).

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**Figure 2.** Path models with standardized coefficients showing the two mediated relationships. The top panel demonstrates that perceived decreases in controllability mediated the relation between age group and change in secondary strategies. The bottom panel shows that size of coping repertoire mediated the relation between ADHD status and number of antisocial strategies reported in response to the uncontrollable parts of the vignettes. Values in parentheses represent the coefficients for the unmediated relation between the independent and dependent variables.

\*p ≤ .05; **p < .01; ***p < .001.
Developmental change in coping flexibility

Older children without ADHD showed greater coping flexibility than younger children without ADHD, generating more strategies that involved adapting to situations (secondary strategies) as those situations shifted from controllable to uncontrollable. Specifically, whereas older non-ADHD children reported an increase in secondary strategies in response to uncontrollable circumstances, younger non-ADHD children’s use of secondary strategies did not change. Instead, younger children were more likely to report simply giving up on attaining the target goal or not knowing how to cope with the situation. This age-related increased use of secondary strategies is consistent with prior research suggesting that the use of secondary strategies during coping efforts becomes more frequent as children get older (e.g., Altschuler & Ruble, 1989; Band & Weisz, 1988; Compas et al., 1988; Thurber & Weisz, 1997). What is important about this finding, however, is that whereas other studies have found changes in the overall frequency of using secondary strategies, or in the use of these strategies at one point in time, this study demonstrates that there is also an age-related change in the ability to flexibly shift to secondary strategies as circumstances change within a single event.

The ability to identify decreases in controllability mediated the relation between age group and an increase in reporting secondary strategies as situations became uncontrollable. A link between perceived controllability and coping flexibility has been found in Cheng’s work on coping flexibility with adults (e.g., Cheng, 2001, 2003; Cheng & Cheung, 2005). Studies on children’s coping, however, do not always examine perceived controllability, and those that have generally do so with events only at one point in time. The current study demonstrates that, by the age of 10, children without ADHD can assess changes in the controllability of a single situation as it unfolds and can change their strategies to ones that are more adaptive to the current circumstances.

ADHD status and coping flexibility

In contrast to the age differences in coping flexibility that were seen in the non-ADHD group, both younger and older children with ADHD endorsed few secondary strategies during either part of the vignettes. Thus, older children with ADHD showed a pattern similar to that of the younger children without ADHD. This finding may reflect a developmental lag in coping flexibility for children with ADHD, a result that is consistent with the belief that ADHD is a developmental disorder (e.g., Barkley, 1998). Additional research with children from a broader age range would be necessary to determine whether children with ADHD who are older than 11 reach the levels of coping flexibility of children without ADHD.

Discussion

This study examined the development of coping flexibility in younger and older children with and without ADHD and explored cognitive factors underlying differences in coping flexibility. Children responded to hypothetical vignettes about problematic interactions with peers that changed from controllable to uncontrollable over time. Findings from this study indicated that: (a) older children without ADHD showed greater coping flexibility than younger children without ADHD or either age group with ADHD; (b) accurately perceiving the controllability of a situation was a key cognitive predictor of coping flexibility; and (c) greater use of antisocial strategies by children with ADHD was related to their limited repertoire of coping strategies.
Children with ADHD also differed from those without ADHD in their use of self-initiated primary strategies, antisocial strategies, and goal forfeiture strategies. Although no group differences were found when all primary strategies were examined, children with ADHD endorsed more primary strategies in which the children themselves tried to reinstate the target goals of the vignettes (as opposed to enlisting the help of others). There was no significant change in the frequency with which children with ADHD reported this type of strategy over the course of the vignettes. Consistent with previous studies (e.g., Bloomquist et al., 1997; Milich & Dodge, 1984), children with ADHD also endorsed antisocial strategies (i.e., using aggression or revenge) more frequently than did children without ADHD. Finally, younger children with ADHD responded that they did not know what to do, or that they would give up on a goal, more frequently than did older children with or without ADHD. These findings help to provide a profile of the types of strategies that children with ADHD can generate when faced with situations that decrease in controllability. In situations that are not under the child's control, seeking assistance may be an appropriate strategy but trying to reinstate the goal oneself or retaliating are not. Thus the current findings suggest a maladaptive, inflexible pattern of coping in children with ADHD.

Children's perceptions of controllability and the size of their repertoire of coping strategies may contribute to this inflexible pattern. Children with ADHD perceived decreases in controllability less frequently than did children without ADHD. These children may perceive that they have more control than they actually have. In real-world situations, when events suddenly become uncontrollable, insensitivity to changes in controllability may prevent them from shifting to more appropriate secondary coping strategies for adjusting to circumstances as they stand.

Children with ADHD also had smaller coping repertoires than did children without ADHD. Having a smaller repertoire of coping strategies mediated the association between ADHD status and reporting a greater number of antisocial strategies. This finding stands in contrast to other studies that have shown that children who are aggressive, and children with ADHD, do not usually differ from controls in the quantity of strategies generated, but do differ in the quality or aggressiveness of the strategies (Bloomquist et al., 1997; Guerra & Slaby, 1989). The present findings suggest that the aggressive strategies of children with ADHD are related to their limited repertoire of coping strategies. Without a variety of strategies to choose from, children with ADHD would be at a disadvantage when it becomes necessary to select a new coping strategy for responding to an uncontrollable situation.

Children with ADHD in this study also may have attributed more hostile intent to the other child in the vignette than did children without ADHD and thus responded with antisocial strategies. Studies have shown that, in situations where the intent of an interaction partner is not made clear, children with ADHD tend to interpret their partner's actions as more hostile than do non-ADHD controls (e.g., Milich & Dodge, 1984; Washbusch et al., 2002). This misinterpretation may start a vicious cycle, whereby children with ADHD retaliate, their interaction partners respond with real hostility, and this reinforces the children's attributions of hostile intent (Whalen & Henker, 1985). These types of interactions would affect the size and nature of children's coping repertoires by reducing opportunities to interact, learn, and practice new coping strategies with peers. Thus, the limited coping repertoires of children with ADHD could include proportionately more antisocial strategies due to their past experiences of hostile interactions with peers. Future studies on coping flexibility should include questions that directly assess the children's interpretation of an interaction partner's intent.

Older and younger children without ADHD did not differ in their performance on the Wisconsin Card Sorting Task (WCST-64), a well-established measure of executive function that assesses ease of switching between cognitive sets. Among children with ADHD, however, younger children showed significantly poorer cognitive switching than older children. Case (1992) proposed that for typically-developing children, a reorganization in executive functioning begins around age 5. During this reorganization, the coordination between the frontal lobes of the brain and other cortical areas go through a restructuring that results in developmental changes in attention, cognitive switching, and self-regulation (Romine & Reynolds, 2004). For this study's non-ADHD group, this change may have already occurred, resulting in our finding no difference between the two age groups. The age difference in cognitive switching observed for children with ADHD suggests that children with ADHD go through this change at some point between the ages of 7 to 8 and 10 to 11, the two age ranges assessed in the study.

Because children with ADHD are known to have executive functioning deficits, we expected poor cognitive switching to account for deficits in their coping flexibility. This was not the case. Instead, poor cognitive switching predicted reporting more goal forfeiture strategies during the uncontrollable part of the vignettes, although it was not a significant mediator of the age group differences observed for goal forfeiture strategies. It is worth noting, however, that younger children with ADHD had the lowest performance of all groups on the cognitive switching measure and also reported the most goal forfeiture strategies. Therefore, executive function deficits should remain an issue to consider for future research on why children with ADHD have difficulty generating coping strategies when faced with uncontrollable situations.

Limitations and future directions

This study contributes to our understanding of how children with and without ADHD cope with changing, problematic peer interactions, but limitations should be noted. Although all children in the ADHD group had been diagnosed with and exhibited the symptoms of ADHD, not all children in our study were assessed for these symptoms using the same measures. Ideally, researchers studying children with ADHD should use a standardized assessment procedure for all participants in order to avoid discrepancies in the criteria for establishing ADHD status. Although we were not able to do this, it is important to note that all of our diagnostic measures were established measures that assessed the same 18-symptom DSM-IV criteria for ADHD.

We also note some limitations with respect to gender and age. There were more males than females in the ADHD group. This gender disparity is typical of studies on ADHD; however, caution should be taken in generalizing the findings to females with ADHD. Also, assessing coping in children 7 to 11 years of age provides a narrow window for observing how children deal with social situations during the elementary school years. Examining a broader age range, or using a longitudinal design,
would further elucidate how coping flexibility develops. Older children with ADHD were found to have highly similar patterns to the younger non-ADHD children with respect to both secondary strategy usage and perceptions of decreased controllability. Assessing coping flexibility across a wider age range would allow us to determine whether children with and without ADHD develop coping flexibility in the same manner, but with a slower developmental progression for children with ADHD.

Another limitation is that this study used hypothetical scenarios. Coping choices made in real interactions between peers can be influenced by prior history with the peer, the presence of other individuals, and the amount of time the child has to react to the situation. In the absence of this broader context, children’s responses to hypothetical scenarios may not always correspond to their responses in real-life situations. In future studies, naturalistic observations or observations of children with peers in a structured setting should be used to assess coping flexibility. Naturalistic situations provide the benefit of showing how children cope when they must keep up with the flow of the interaction, rather than when they are given a longer time to think about what they would do. Despite this limitation, prior evidence suggests that the responses given by the children in this study were similar to what they would do in real-life situations. Many children elaborated on their responses by saying that they had used the strategy before in a similar situation, and their responses were age- and ability-appropriate. Furthermore, in other studies that used similar types of hypothetical vignettes, children’s self-reported coping strategies have been shown to be concordant with mothers’ reports of their children’s real-life coping behaviors (e.g., Benzoewig, Eisenberg, & Fabes, 1993) and behavioral functioning (e.g., Creasey, Mitts, & Catananzo, 1995; Halpern, 2004).

In addition, a possible limitation of this study is the sample size of the ADHD group. It is common for studies including clinical populations to have relatively smaller sample sizes than studies including only typically-developing children. Even so, it is important to consider the effect this might have had on the power to detect significant differences between groups. There is evidence to suggest that power was sufficiently high, however. This study had a rich data set with many coping responses from each child, and ADHD-status group differences were found for five analyses, including an interaction that revealed a difference in perseverative errors between younger and older children with ADHD. Also, the nonsignificant findings between age and ADHD-status groups in the frequency of reporting primary coping strategies are consistent with previous research on children’s use of these strategies (Compas et al., 1988), increasing our confidence that these findings were not merely the result of low power.

Although we found a number of significant group difference, the practical significance of some of these differences should be interpreted with caution. Many of our effect sizes were less than .10, which is relatively small. Also, in the analysis of coping repertoire size, the difference found between younger and older children with respect to the proportion of unique strategies reported (4%) was modest in comparison to the much larger difference between the ADHD and non-ADHD groups. Thus, the explorative significance of the relatively small age difference in the size of children’s coping repertoires remains a task for future investigations.

Comorbidity is a factor that should be addressed in future studies, as well. In the present study, children’s comorbidity status was reported by parents, which may lead to underreporting of these diagnoses. We were not able to confirm these diagnoses through other means. Although this limitation suggests we should approach our comorbidity findings with caution, parents did report a wide variety of comorbid diagnoses for their children and these did not account for the differences in coping flexibility and coping strategy types between children with and without ADHD. Given the variability of reported comorbid diagnoses in our sample, however, this does not rule out the possibility that specific comorbid diagnoses could play a role in the coping tendencies of children with ADHD. For this reason, future studies examining coping flexibility and coping strategies in children with ADHD should compare children who have a single ADHD diagnosis with those who have an ADHD plus a specific comorbid disorder, such as Oppositional Defiant Disorder.

Another important direction for future studies on coping flexibility is exploring the relationship between children’s emotional responses and their coping strategy choices. In the present study, no differences in coping strategies were found as a function of the predominant emotional response children reported across the vignettes. Our focus, however, was on general types of coping strategies such as primary and secondary coping. These general categories may not reveal subtle differences in coping behavior motivated by specific emotions. For example, sadness might lead a child to seek a hug from a parent, whereas anger might lead a child to punch a pillow. Each emotion motivates different specific coping behaviors but both of these strategies would be classified as secondary strategies under the broad coding scheme used in the current study. Future research on coping flexibility should examine the role that discrete emotions may play in motivating children’s selection of specific primary and secondary strategies for dealing with stressful situations.

Lastly, an important cognitive ability that was not explicitly assessed in this study was children’s understanding of mental states. An understanding that emotions, beliefs, and desires are mental states that can be changed is an important precursor of being able to engage in secondary strategies. Mental state knowledge is important for coping in a social situation because children not only have to understand their own goals and desires, but also recognize that their interaction partners might hold different goals and desires that must be considered when selecting an appropriate strategy. Future studies should incorporate false-belief tasks or other tasks that assess mental state understanding.

Conclusion

In conclusion, the findings of this study elucidate how children with and without ADHD cope over the course of stressful peer interactions. As situations changed from controllable to uncontrollable, older children without ADHD demonstrated flexibility in coping by reporting greater use of secondary strategies. In contrast, the reported use of secondary strategies in younger children and older children with ADHD did not change. This difference in coping flexibility was related to older children’s ability to accurately perceive decreases in controllability. The coping flexibility difficulties of children with ADHD were further compounded by reports of more antisocial strategies. Specifically, antisocial strategies were more frequently reported for the uncontrollable part of the vignettes by the
children with ADHD, regardless of age group, and this was related to their having relatively small coping repertoires. These findings have practical applications in both clinical and non-clinical settings. The demand to incorporate social skills and self-efficacy programs into school curricula has increased in recent years. Studies like this one can inform designers of these programs about the skills likely to be most helpful to children of different ages for coping with stressful peer interactions. The current findings suggest that programs designed to target the coping skills and coping flexibility of younger children should focus on teaching secondary strategies by training them how to recognize situations that are beyond their control and adapt their strategies to those situations.

Programs targeting children with ADHD might need to modify their approach to accommodate their different abilities. As with the non-ADHD children, teaching secondary strategies to children with ADHD is important; however, more emphasis should be put on increasing the size of their coping repertoires by teaching them a variety of positive secondary coping strategies. This way, children with ADHD can readily access these strategies, rather than antisocial ones. This is particularly important for younger children with ADHD whose poorer executive abilities may make them the most susceptible to choosing the most easily accessible strategy. Furthermore, given that children with ADHD were found to be less sensitive to decreases in controllability than children without ADHD, these programs should also teach them to accurately monitor the controllability of a situation and to know what types of strategies are most appropriate in situations that differ with respect to level of control. By incorporating what we learn about coping flexibility, we can help children learn how to effectively navigate problematic social situations and ultimately improve their relationships with peers.

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