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People often evaluate their own skills in relation to others' performance. Two experiments examined the influence of peer characteristics on children's responses to upward social comparisons (i.e., peers who outperformed them). In Experiment 1, a total of 126 5-, 8-, and 10-year-olds were told that they were outperformed by an expert or novice peer on a familiar task and a novel task. Five-year-olds reported high self-evaluations and expectations of winning a competition regardless of peer expertise and task type, and this effect decreased with age. Eight-year-olds reported high self-evaluations after comparisons to an expert for both task types, whereas 10-year-olds did so only for the familiar task. Finally, 8- and 10-year-olds were more optimistic about their ability to win a competition after comparisons with a novice than an expert peer, but 8-year-olds felt this way only for the familiar task and 10-year-olds felt this way only for the novel task. In Experiment 2, a total of 98 5- to 6-year-olds and 9- to 10-year-olds were told that the peer had a positive or negative trait that was task-relevant (i.e., intelligence) or task-irrelevant (i.e., athleticism). Younger children reported high-self evaluations and expectations of winning a competition indiscriminately. Older children reported higher self-evaluations and competition expectations after hearing about positive rather than negative traits, irrespective of task relevance. This research documents an emerging sensitivity to relative failure and peer characteristics in self-evaluation. Taken together, the studies provide insight into the development of children's expertise and trait conceptualizations as related, but distinct, competence cues in early to middle childhood.

By middle childhood, children consider *whether* they were outperformed and *who* outperformed them. These results have implications for understanding how children's self-evaluations can be altered by the way in which teachers and parents frame relative failure.

WHEN PEER PERFORMANCE MATTERS: EFFECTS OF EXPERTISE AND TRAIT INFORMATION ON CHILDREN'S SELF-EVALUATIONS IN A SOCIAL COMPARISON SETTING

by

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APPROVAL PAGE

This dissertation written by Candace Lapan has been approved by the following committee of the Faculty of The Graduate School at The University of North Carolina at Greensboro.

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CHAPTER I

INTRODUCTION

Self-evaluation of performance and abilities has practical importance for academic achievement of children (Luo, Kovas, Haworth, & Plomin, 2011; Schunk & Pajares, 2002) and adults (Dunlosky & Rawson, 2012). Across development, a number of factors become influential to self-evaluations, including social feedback (e.g., explicit praise and criticism; Kamins & Dweck, 1999). During middle childhood, social comparison with peers becomes a particularly salient source of feedback for children's self-evaluations (Ruble, Boggiano, Feldman, & Loebl, 1980). Specifically, knowledge that others have performed better (i.e., upward comparison) or worse (i.e., downward comparison) than the self produces systematic decreases and increases in self-evaluations, respectively. However, these effects can vary based on the information available about comparison others (e.g., gender information; Rhodes & Brickman, 2008). As children age, they acquire an understanding of many types of social information relevant to the interpretation of comparative feedback. The current studies are the first to investigate the effects of two developmentally salient characteristics, namely expertise (Danovitch & Keil, 2004) and ability related traits (e.g., smartness; Stipek & Daniels, 1990), on children's responses to comparative feedback between early and late childhood.

In the adult literature, theoretical and empirical accounts of social comparison suggest that perceived similarity between comparison others and the self is a key factor in determining the outcome of social comparison (i.e., whether self-evaluations are improved or impaired; Mussweiler, 2001, 2003). Indeed, when adults perceive an upward comparison other as similar to the self, self-evaluations are typically positive (Mussweiler, 2001). Although there are currently no developmental models of social comparison, developmental frameworks of self-awareness highlight that representations of others are critical to the development of self-representations. In particular, self-awareness in a number of areas (i.e., physical features, capabilities, traits, and social roles) is linked to the identification of self-other similarities and distinctions, which are developed through interactions with others (Decety & Sommerville, 2003). Relevant interactions with others may include social comparison experiences that also add to the development of children's self-other representations. Children's representations of their traits and capabilities may be influenced by comparisons with peers in particular, as peers serve as salient others in achievement domains as early as the preschool years (Chafel, 1986). Further, distinctions or similarities between the self and peers are likely affected by knowledge about peers' characteristics (e.g., shared traits may make self-other similarities more salient than differences).

In addition to the increasing salience of peers as a reference group with age, children's reasoning about social comparison develops within a typically optimistic context that highlights positive rather than negative attributes. Socialization practices related to academics, such as parenting and schooling, are particularly important (for reviews, see Boseovski, 2010, and Cimpian, in press). Parents of preschoolers often attribute their children's academic success to stable abilities, whereas they attribute failure to a temporary lapse in effort (Rytkonen, Aunola, & Nurmi, 2005; Stipek & MacIver, 1989). Additionally, preschool and early elementary school teachers' criteria for achievement are based on students' effort and improvement. Conversely, upper elementary school teachers are more evaluative and their criteria focus on relative performance and meeting normative standards (Blumenfeld, Hamilton, Bossert, Wessels, & Meece, 1983; Gullickson, 1985). In line with these achievement criteria, teachers' feedback shifts from the provision of corrective feedback and praise for task completion, to the use of normative feedback (e.g., letter grades) and praise based on performance outcomes (Stipek & MacIver, 1989).

Early socialization practices foster the tendency to form and maintain positive views of the self and others via disregard of negative information. This optimistic world view, termed the positivity bias, is evident beginning at 4 years of age, peaks in middle childhood, and attenuates in late childhood (Boseovski, 2010). This documented age-related change in positivity is expected to be reflected in children's self-evaluations. Specifically, children at the peak of this bias may interpret negative social comparative feedback as unrelated to self-evaluations or disregard it altogether. Of relevance to the current studies, the positivity bias is also known to affect children's reasoning about expertise (Boseovski & Thurman, 2014) and ability related traits (e.g., smart: Benenson & Dweck, 1986).

Current perspectives on the development of social comparison are drawn largely from the ability conception literature, which examines children's beliefs about ability related traits, most commonly "smartness." Developmental shifts in children's ability conceptions (i.e., their beliefs about being "smart"), purportedly underlie age-related change in the effects of social comparisons on self-evaluations (Butler, 1989). Support for this perspective comes from research that documents differential developmental trajectories for children's understanding of comparative feedback (i.e., understanding that others have performed better or worse than the self) as compared to their use of such feedback for self-evaluation (i.e., adjusting self-evaluations based on the relative performance of others).

A wealth of literature demonstrates that children as young as 5 years of age engage in comparison and understand comparative feedback. By this age, children engage in spontaneous comparison discourse (e.g., "I have more than this"; Chafel, 1986). For example, children observed in a classroom setting while completing independent work often make remarks about their own work (e.g., "I'm on page 20.") and others' work (e.g., "You spelled this wrong."). Children also make explicit comparative statements about their work in relation to others' (e.g., "She's on 13, and I'm only on 10"; Frey & Ruble, 1985). Young children not only attend to their peers' task progress, but are relatively accurate in using this information to rank peers in terms of their performance (Morris & Nemcek, 1982; Ruble & Frey, 1987). Children also demonstrate an understanding of their own performance relative to peers. For example, when given the opportunity to view their peers' performance outcomes (e.g., how fast a peer ran a race), 5- to 6-year-olds preferentially choose peers who performed similarly to themselves (e.g., peers who ranked one place above or below themselves; Morris & Nemcek, 1982). As early as second grade, children's understanding of their own performance in relation to peers is evident in their selection of future competitors. For example, Ruble and colleagues (1980) found that children prefer to compete against a peer whom they have outperformed in the past (i.e., downward comparison) rather than an unknown peer. Conversely, children prefer to compete against an unknown peer rather than a peer who has outperformed them in the past (i.e., upward comparison).

Although young children understand relative performance feedback (Morris & Nemcek, 1982) and show interest in peers' academic work (Frey & Ruble, 1985), viewing peers' work has little influence on self-evaluations until 7 years of age (Boggiano & Ruble, 1979; Butler, 1998; Levine & Green, 1984; Pomerantz, Ruble, Frey, & Greulich, 1995; Ruble et al., 1980; Ruble, Eisenberg, & Higgins, 1994; Ruble, Feldman, & Boggiano, 1976; Ruble, Parsons, & Ross, 1976; but see Butler, 1998). It is theorized that young children disregard comparative feedback for self-evaluation because they interpret performance differences as resulting from temporary factors (e.g., effort; Nicholls, 1978) rather than stable differences in ability (e.g., smartness). Thus, young children likely view performance differences as irrelevant to self-evaluations because they believe that they need only to try harder to improve their performance. It is also important to note that simplified task settings (i.e., visual presentation and comparison of actual task products rather than only ratings of the products) have been shown to increase preschoolers' use of social comparative feedback to inform self-evaluations (Butler, 1998). This suggests that younger children's lack of attention to comparative feedback is in part due to constraints on information processing skills.

As children enter middle childhood, the desire to learn about peers' performance and view their work increases (Butler, 1989; Ruble et al., 1976). However, social comparison discourse becomes more subtle (Frey & Ruble, 1985). For example, 7- to 10-year-olds often inquired about a peer's progress (e.g., "What number are you on?") rather than explicitly stating differences between their progress and others' progress. Importantly, by 7 years of age, children report lower self-evaluations when upward social comparative feedback about a non-descript peer is provided, rather than an objective performance standard (e.g., task success or failure feedback; Ruble et al., 1980). Such effects are purportedly related to older children's tendency to interpret relative failure as resulting from stable differences in ability (e.g., intelligence; Butler, 1989). Thus, older children often view performance discrepancies between themselves and peers as indicators of their capabilities and therefore, useful for self-evaluation.

There are also direct links between fixed conceptualizations of ability and social comparison behaviors. For example, task descriptions that emphasize fixed ability conceptions (e.g., indicating that the task assesses ability rather than performance) increase sixth graders' interest in comparative feedback (Butler, 1992). Individual differences in beliefs about ability as constant also relate to comparison behaviors. In middle childhood, children who frequently endorse beliefs of ability as constant seek out more social comparative feedback than children who endorse these beliefs less often (Ruble & Flett, 1988).

Given the significance of ability conceptions for children's interpretation of comparative feedback, other types of information related to ability conceptions may also be relevant to developmental changes in social comparison. Children's conceptualizations of expertise may be particularly important to interpretations of comparative feedback. Possession of high expertise entails that an individual has substantial knowledge in a domain, which in turn is related to conceptions of high ability (Yussen & Kane, 1985). For example, when defining "smart", children tend to reference spontaneously to the amount of knowledge an individual possesses, and this tendency increases with age (Kurtz-Costes, McCall, Kinlaw, Wiesen, & Joyner, 2005). Like ability, children may interpret relative failure as stemming from differences in knowledge between themselves and peers (i.e., expertise), rather than temporary factors (e.g., effort). Indeed, as children age, they view effort as less relevant to task performance, whereas previous experience and ability related traits are seen as increasingly important (Weisz, Yeates, Robertson, Beckham, 1982). This provides further support for the proposed importance of expertise information because experience is a component of expertise and is typically used to describe experts (e.g., "Jenny…knows a lot about dogs. She is an animal doctor and works with dogs all the time."; Koenig & Jaswal, 2011).

Although conceptualizations of expertise and ability become more interrelated with age, a key difference between these two characteristics is that they vary in the extent to which they are essentialized with age. Essentialism refers to beliefs that characteristics are biologically based, present at birth, stable over time, and immune to change (Gelman, Heyman, & Legare, 2007). Given that beliefs about ability as stable are posited to underlie the development of social comparison, the degree to which expertise and ability related traits are essentialized should be relevant to consideration of these characteristics in a comparison setting.

A wealth of literature has examined trait essentialism (e.g., physical, psychological, and ability related traits). Essentialist beliefs about ability related traits are evident by 5 years of age, become more prevalent with age, and are more prevalent than essentialist beliefs about personality traits (e.g., "nice"; Gelman et al., 2007; Heyman & Giles, 2004). For example, 7- to 14-year-olds require less evidence to attribute ability related traits than personality traits (Heyman & Giles, 2004). Between 5 and 10 years of age, children increasingly expect ability related traits, as compared to personality traits, to be linked to nature rather than nurture (e.g., believe that an adopted individual will share ability related traits with their birth parents rather than adopted parents; Heyman & Gelman, 2000). As noted previously, young children conceptualize ability related traits as able to change, but by middle to late childhood, they are more likely to indicate that abilities (e.g., intelligence) cannot change (Gelman et al., 2007; Heyman & Giles 2004).

In contrast to traits, expertise has not been conceptualized in an essentialist framework, as knowledge always has the possibility to change (Lockhart, Goddu, & Keil, 2016). There is evidence that children and adults hold non-essentialist beliefs about expertise in regards to malleability (i.e., whether an individual can change how much they know about a topic over time). Findings indicate that between early and late childhood, expertise is seen as relatively malleable. Although younger children are more optimistic about the amount of knowledge that one will acquire across the lifespan, even

8- to 12-year-olds expect that an individual's level of knowledge will change significantly across the lifespan. Other than conceptions of malleability, essentialist concepts are unlikely to apply to reasoning about expertise (e.g., biological basis, stability). Given that expertise is not thought of in essentialist ways, the methodology used to assess expertise understanding necessarily diverges from that used to assess ability related traits. For example, it is common to ask "Do you think that George was born shy" (Gelman et al., 2007), but not "Do you think George was born knowing all about dogs?"

Divergent developmental essentialist beliefs about these characteristics may alter how children interpret relative failure. Specifically, the provision of expertise information in a comparison setting should enhance reflection on malleable causes of performance differences (e.g., experience), resulting in weak effects of comparative feedback. Conversely, ability related traits should highlight malleable causes of performance differences in young children, but fixed ability reasoning in older children, as these are the predominant ways in which children view ability related traits across development. Despite this divergence in essentialist thinking, there are substantial similarities in the developmental conceptualizations of expertise and ability related traits as described above, and these cues should both be meaningful in a comparison context.

Role of Peer Characteristics in Social Comparison

As reviewed above, there is strong evidence to suggest that ability conceptions are related to social comparison. Thus, the provision of comparison peer characteristics that denote competence (i.e., expertise and ability related traits) are likely to impact children's interpretations of relative failure, and thereby, self-evaluations. Few developmental studies have examined the effects of comparison peer characteristics on children's self-evaluations, particularly in early childhood.

One relevant line of research has assessed the effects of comparison peers' social categories (e.g., gender) on self-evaluations. Such studies have shown that when a comparison peer's gender is made salient, even preschoolers' self-evaluations are impaired by comparative feedback (Cimpian, 2010). For example, Rhodes & Brickman (2008) told 4- and 5-year olds that they were outperformed on a tracing task by a same gender, opposite gender, or gender unidentified peer. Children then rated their performance on the task. Next, children completed an additional trial of the task in which they were told that they were *more* successful than the peer. Finally, children rated their performance again after this second trial. When the peer was the same gender as the participant or an unidentified gender, children's self-evaluations improved between the unsuccessful and successful trials. Conversely, when the peer was the opposite gender of the participant, children's self-evaluations remained low even after the second more successful trial. These findings suggest that when category membership is made salient, children likely interpret task performance as linked to such categories, particularly when the child and comparison peer are members of different groups. For example, when a female child is outperformed by a male peer, the female child may interpret that the peer's superior performance was a result of a gender-linked ability. This type of interpretation highlights the role of ability in task performance and reveals that even preschoolers' self-evaluations can be influenced by relative failure.

Older children are increasingly sensitive to comparative feedback and characteristics of comparison peers. By middle to late childhood, the effects of comparative feedback vary based not only on the nature of the comparison (i.e., upward vs. downward), but on the nature of the peer relationship. For example, 9- to 11-year-olds' academic self-concept is related to naturalistic comparisons with reciprocated friends (i.e., both children consider each other friends), but not with non-reciprocated friends (i.e., only one child considers the other a friend; Altermatt & Pomerantz, 2003). Additionally, experimental studies have shown that comparative feedback has a greater influence on 9- and 10-year-olds' self-perceptions when peers are described as competitors (Butler, 1989).

Based on the reviewed findings, it is evident that across early to late childhood, there is an emerging sensitivity to comparative feedback and the characteristics of comparison peers. In early childhood, salient information about group membership (i.e., gender) facilitates the use of comparison information for self-evaluation, whereas in later childhood, subtler peer characteristics are considered (e.g., friendship status). Given that seemingly task-unrelated characteristics influence social comparison outcomes, there is a strong basis for additional examination of comparison peer attributes. Characteristics that are related to competence (e.g., expertise and ability related traits), and thereby task performance, should be particularly relevant.

The Present Research

The current studies examined the effects of two developmentally salient peer characteristics, expertise (Experiment 1) and ability related traits (e.g., smartness;

Experiment 2), on 5- to 10-year-olds' social comparison outcomes. The studies provide novel insight about how children treat the same social comparative feedback differently based on comparison peers' expertise and traits. For example, if children are outperformed by a peer, do they perceive their performance as particularly poor when the peer is a novice, but more favorably when the peer is an expert? In either case, children have failed (to the same degree) relative to a peer, but peer competence information may alter the way that children construe relative failure. Instances of relative failure (i.e., upward social comparisons) were of particular interest for two main reasons. First, it is well established that downward comparisons result in favorable self-evaluations (e.g., Ruble et al., 1976b) and thus, are not likely to be influenced by contextual information. Second, children's responses to failure, rather than success, are related to achievement motivation and academic outcomes (Kamins & Dweck, 1999). Similarly, relative failure results in poor self-evaluations (e.g., Ruble et al, 1980). Thus, it was of practical significance to identify circumstances under which these negative outcomes may be altered.

Given that expertise information guides children's decision making as early as the preschool years, peer expertise was expected to be salient and influential in the context of relative failure (e.g., Danovitch & Keil, 2004). For example, when given conflicting information by a person described as an expert and a person described as a layperson, even preschoolers prefer to endorse the information provided by the expert as correct (e.g., Koenig & Jaswal, 2011). With age, children's' understanding of the varying content of expertise is refined (Keil, Stein, Webb, Billings, & Rozenblit, 2008). Even 9-year-olds have an adult-like understanding of the distinctions between domains of expertise (e.g., natural vs. social sciences; Keil et al., 2008). By this age, children also understand distinctions in the knowledge content of experts with narrow and broad domains of expertise (e.g., an animal expert versus a poodle expert; Landrum & Mills, 2015). These children also prefer experts rather than lay people to teach them how to complete a task (Boseovski, Hughes, & Miller, 2016), suggesting an awareness that experts should perform better than laypeople on tasks within the domain of expertise.

Similar to expertise, ability related traits are influential to children's reasoning in a variety of domains (e.g., Heyman & Gelman, 2000). Relevant here, ability related traits are connected to children's perceptions of achievement and this relation becomes stronger with age. For instance, 5- to 8-year-olds typically explain academic outcomes in terms of actions (e.g., studies a lot), whereas 10-year-olds use these types of explanations as well as trait explanations (e.g., "He's smart"; Benenson & Dweck, 1986). Ability related traits are also linked with academic outcomes. Specifically, praise and criticism of children's academic outcomes through the use of ability related trait references (e.g., praising good performance with "You are so smart!") convey that intelligence is fixed and thereby results in negative psychosocial outcomes (e.g., academic helplessness; Kamins & Dweck, 1999), particularly in response to failure.

Because ability related traits are essentialized, but expertise is not, the examination of these cues in a similar task context can elucidate the role of ability conceptions as a mechanism of age-related change in social comparison. Limited effects of expertise as compared to ability related traits would suggest that fixed ability conceptions facilitate the use of comparative feedback for self-evaluation. These two cues were also assessed across an age range in which the positivity bias declines. Undifferentiated self-evaluations by young children in response to these two cues would provide evidence that their views of expertise and ability as malleable lend themselves to positive self-evaluations in the face of relative failure. Furthermore, developmental change in children's positivity is likely to be reflected in their overall self-evaluations (i.e., younger children should report more positive self-evaluations than older children).

The present studies also merge two disparate areas of research by investigating children's reasoning about expertise as compared to traits as cues of peer competence. Moreover, the investigation provides insight into children's reasoning about expertise and trait information in a self-evaluative context, whereas previous research has focused largely on contexts that are not self-evaluative (e.g., Koenig & Jaswal, 2011; Kurtz-Costes, et al., 2005). Thus, the current studies address the paucity of research on the relation between children's beliefs about these characteristics and provide information about their differential relevance to ability conceptions with age.

CHAPTER II

EXPERIMENT 1

Five-, 8-, and 10-year-olds were told that they were outperformed by an expert peer or a novice peer and then reported their self-evaluations. As described above, by 7 to 8 years of age, children demonstrate a well-developed sensitivity to both expertise (Aguiar, Stoess, & Taylor, 2012) and comparative feedback (Ruble et al., 1980). Therefore, by this age, it is likely that children will be able to consider both types of information in the self-evaluation process. Beyond this, there are three main reasons to expect that expertise information should be highly relevant to children's social comparison outcomes. First, a comparison peer's level of expertise should have implications for the accuracy of self-evaluations (Festinger, 1954). An individual is more likely to form accurate self-evaluations from comparisons with a peer who has a similar, rather than different, level of expertise. For example, if a child is a novice piano player, it would be more useful to compare his or her piano abilities to another beginner, rather than a child who has been playing for several years. It would be unrealistic to expect a beginner to perform at a similar level as an individual who has years of practice with a task and specialized knowledge about the domain. Thus, when an individual is a novice, comparisons with experts should be disregarded as uninformative. Although children's reasoning about expertise in a social comparison context has not been examined, research has shown that adults typically disregard such extreme comparisons (Sanders, 1982; Seta, 1982).

Second, as noted above, expertise is related to ability conceptions. Specifically, children conceptualize knowledge as a defining feature of ability, at least in the domain of intelligence (Kurtz-Costes et al., 2005; Yussen & Kane, 1985). Given that developmental changes in social comparison are related to ability conceptions (Butler, 1989), and expertise is a component of ability conceptions (Yussen & Kane; 1985), expertise should also have implications for social comparison. In particular, denoting a comparison peer's level of expertise may alter children's interpretation of the source of performance discrepancies between themselves and a comparison peer (e.g., the discrepancy is due to fixed differences in ability vs. effort or luck). Additionally, peer expertise information should affect children's expectations of how a peer will perform on the task (e.g., an expert peer should perform well; Boseovski et al., 2016; Weisz et al., 1982).

Third, expertise is a relevant informational cue that is sometimes preferred in social decision making even in the face of salient social categories. In one study, 4- to 8-year-olds were given conflicting information by a gender stereotypical layperson (e.g., a female with little knowledge of sewing) and a gender counter-stereotypical expert (e.g., a male sewing expert). Children of all ages tended to endorse the gender counter-stereotypical expert as correct, demonstrating that they prioritized expertise over gender as an indicator of superior knowledge (Boseovski et al., 2016). Given the influence of gender information in previous social comparison studies (Rhodes & Brickman, 2008), it is reasonable to expect that expertise would also be salient to children in a social comparison setting.

Although even preschoolers show a sophisticated understanding of expertise (e.g., Lutz & Keil, 2002; Danovitch & Keil, 2004), appropriate use of expertise information in a comparison context may not occur until middle to late childhood, when expertise reasoning is more adult-like (Keil et al., 2008). There are two relevant limitations in young children's expertise reasoning that may impede its use in a social comparative context. First, as discussed previously, children sometimes prioritize positively valenced informational cues above other information. This bias for positive information has been documented in children's reasoning about expertise. For example, when informants are labeled in trait terms (i.e., mean and nice), preschoolers are less likely to endorse information provided by a "mean" expert informant than a "nice" lay informant (Landrum, Mills, & Johnston, 2013; Exp. 2 and 3). Additionally, 6- and 7-year-olds are less willing to accept negative information about a novel animal (e.g., "very dangerous") as compared to positive information (e.g., "very friendly"), even when the negative information was provided by a zookeeper and the positive information was provided by a layperson (Boseovski & Thurman, 2014). Thus, children's preference for positive information can override their reliance on expert testimony. Similarly, children's desire to view themselves positively may override their consideration of peer expertise in a social comparison setting.

Second, young children have difficulty reasoning about expertise in self-relevant contexts (i.e., when they must assess their own expertise relative to others, rather than only judging other individuals' expertise). For example, 4- and 5-year-olds can direct domain-specific questions to relevant experts (e.g. assign medical questions to doctors, but farming questions to farmers; Lutz & Keil, 2002; Sobel & Corriveau, 2010). However, when they are given the option to assign such questions to *themselves*, in addition to relevant or irrelevant experts, children often erroneously believe that they can answer the questions (Aguiar et al., 2012; Exp. 2 and 3). Developmental change in the effects of self-relevant contexts may be related to the theory of mind (ToM) demands imposed by such contexts. Indeed, advanced ToM skills are related to more sophisticated reasoning about expertise (Danovitch, 2013). In this context, even when children defer to experts, they are poor at identifying the relevant expert. This suggests that the assessment of self- and other-knowledge may interfere with young children's ability to assess others' expertise.

In the current study, 5-, 8-, and 10-year-olds were told that they were outperformed by a novice or expert peer on a novel task (i.e. Tower of Hanoi; ToH) and a familiar task (i.e., drawing). Drawing was selected as a commonplace activity, whereas the ToH task (Welsh, 1991) was expected to be unfamiliar to children. After each task, children reported self-evaluations (i.e., feelings about their performance, performance evaluations, and ability evaluations) and made predictions about their likelihood of winning a competition in that domain. Finally, to assess whether perceptions of task demands differed across age groups and tasks, children provided ratings of task difficulty. This measure was included because age and task related differences in perceptions of difficulty may influence children's self-evaluations. For example, when children perceive a task as difficult, they may judge their performance to be poor (Heyman, Gee, & Giles, 2003; Saxe & Sicilian, 1981)

- **Hypothesis 1**: Given young children's generally positive world view (Boseovski, 2010) and limited expertise reasoning in self-relevant contexts (e.g., Aguiar et al., 2012), 5-year-olds' self-evaluations (i.e., affect and performance ratings) were expected to be high regardless of peer expertise.
- **Hypothesis 2**: Given that 8-year-olds are sensitive to comparative feedback (Ruble et al., 1980), but sometimes display a positivity bias in expertise reasoning (Boseovski & Thurman, 2014), it was unclear how they would respond to peer expertise. One possibility is that they would report similar self-evaluations irrespective of expertise, but that their self-evaluations would be generally lower than those of younger children.
- **Hypothesis 3**: Ten-year-olds' self-evaluations were expected to be lower after being outperformed by a novice as opposed to an expert and this effect was predicted to be more robust in a familiar domain. Negative feedback may have a greater effect on self-evaluations in a familiar domain, as upward comparisons may confirm preexisting negative self-perceptions (Schunk & Pajares, 2002) or because these domains may be perceived as more personally significant (Bers & Rodin, 1986).

- **Hypothesis 4**: Children's ability evaluations were expected to be unaffected, as multiple comparisons are generally necessary to influence these evaluations (Ruble et al., 1980).
- **Hypothesis 5**: Older children were predicted to report lower expectations of winning a competition when they were outperformed by an expert as compared to a novice, as the provision of peer expertise information may cue them to reflect on the background knowledge and experience of their possible competitors. Younger children's competition expectations were not expected to vary, as the use of comparison information to guide the selection of competitors is not evident until the second grade (Ruble et al., 1980; Exp. 2).
- **Hypothesis 6**: Children's ratings of task difficulty were expected to decrease with age for two reasons. First, younger children may genuinely perceive the tasks as more difficult than older children, given their relatively limited cognitive skills. Second, older children interpret tasks to be easier in instances of relative failure, as opposed to when no comparison information is provided (Ruble et al., 1980; Exp. 1). Conversely, younger children do not distinguish between these contexts and rate task difficulty high in either case.

Method

Participants. Forty-one 5-year-olds (*M* = 66.2 months, *SD* = 3.7, 23 males), 43 8-year-olds (*M* = 102.2 months, *SD* = 3.2, 19 males), and 42 10-year-olds (*M* = 126.7

months, *SD* = 3.6, 24 males) were tested in a Southeastern city. Concerning demographic data, 74.6% of children were Caucasian, 15.9% African American, 7.9% mixed race, 0.8% Asian; 0.8% of families did not disclose this information. Family income ranged from less than $20,000 to over $90,000.

Materials. In the drawing task, an 8.5 x 11 inch line drawing of a cat was used. For the ToH, wooden stacking toys were used with discs of varying colors. Social comparison feedback was provided on a 13 inch Macbook Pro and scores were displayed on PowerPoint slides in full screen mode. A cardboard face with an adjustable mouth was used to assess children's affective states (Ruble et al., 1976).

Design and Procedure. A mixed design was used to assess the effects of age (between-subjects: 5-, 8-, and 10-year-olds), comparison peer expertise (between-subjects: expert vs. novice), and domain (within-subjects: novel vs. familiar) on children's self-evaluations. Children were tested in the university laboratory or their day care facility by a female experimenter in one session. The order of the two social comparison tasks was counterbalanced across participants.

Novel domain. As the ToH was meant to serve as the novel task, children who were familiar with it were excluded from the current sample. Given the novelty of the task, children were given extensive training and instructions to ensure that they understood the rules before they completed the task for feedback (see Welsh, 1991). Children were presented with the two wooden stacking toys and the experimenter described the task as the "flerping game," a nonsense term selected to further increase the novelty of the task. Children were told that the goal of the game was to get all of their discs to the last post in increasing size. The experimenter's toy remained in this goal state as a visual reminder of the goal that children had to meet. Children completed three practice trials for which they received corrective feedback and repetitions of the rules. Additionally, if children made mistakes on the practice trials, these trials were repeated until children could complete them all successfully.

Next, children were told "Now that you understand the rules, you're going to play the flerping game for three minutes. Try to get as many as you can and try not to make mistakes." Time was not actually limited (i.e., children played until they completed five trials), but was introduced as a supposed factor to increase performance ambiguity. Afterward, the experimenter pretended to enter information in the computer saying, "Now I'll put in how many moves you made and how long it took you to finish. Then the computer will tell us how you did on the flerping game. You will get a score in stars. The more stars you get, the better you did on the flerping game." The experimenter showed children a display of nine stars and said "You got nine stars on the flerping game."

Next, children were told that the computer had other children's scores as well. Based on their pre-assigned condition, children received a description of either an expert or novice peer who was of the same gender as the participant. For example, in the expert condition, male children were told: "Casey is a boy your age. He goes to a school like yours and likes to play with his friends. He knows a lot about flerping. After school, he often takes special lessons on how to flerp. He knows how to flerp with lots of discs and posts. He flerps in front of lots of people. He has won competitions for his flerping." Full descriptions of the provided expertise information are supplied in Appendix A. The experimenter then showed children a visual display and stated, “Casey got 11 stars on the flerping game.” The scores of 9 and 11 were selected so as to avoid the suggestion of a normative maximum (e.g., scores of 5 and 7 may suggest that the maximum was 10).

Children answered four comprehension questions: “Did Casey know a little or a lot about flerping?” “How many stars did you get?”, “How many stars did Casey get?”, and “Who did better? You or Casey?” Then, children’s beliefs about the influence of expertise on the peer’s performance were assessed. The goal of these questions was to examine whether children viewed expert status, but not novice status, as a likely cause of the peer’s performance. Peer performance questions were based on children’s preassigned condition (expert condition: “Did Casey get 11 stars because he knew a lot about flerping?”; novice condition: “Did Casey get 11 stars because he knew a little about flerping?”). “Yes” responses were coded as 1 and “no” responses were coded as 0.

Next, children answered three self-evaluation questions (Ruble et al., 1994). First, they were asked, “How do you feel about how you did on the flerping game?” and manipulated the mouth on the face to indicate their affective state (marks on the side of the face allowed for scoring; 1 = *very sad*, 9 = *in between*, 17 = *very happy*). Second, they were asked about their performance evaluations, “How do well do you think you did on the flerping game?” and ability evaluations, “How good do you think you are at doing games like the flerping game?” for which they responded on a 9-point Likert scale accompanied by a display of circles of increasing size (1 = *not good at all*, 9 = *very good*). Children provided open ended explanations for their self-evaluations. Affect and performance evaluations were coded for references to positive performance, negative performance, effort, and enjoyment. Ability explanations were coded for references to practice, abilities, and enjoyment (see Appendix B for examples). All responses were coded by one rater and another rater coded 20% of responses to establish interrater reliability, which was high for all variables (Cohen's kappas: .84-.91).

Children also answered a competition prediction question, "If we had a competition with the flerping game, do you think you could beat other kids and win the competition?" Predictions that the child would win were scored as 1, whereas predictions that the child would not win were scored as 0. Finally, children evaluated the difficulty of the task with the same circle scale used previously, but different descriptions of the values were provided (1 = *not hard at all*, 9 = *very hard*).

Familiar domain. For the drawing task, children were shown a line drawing of a cat and told "Now we're going to play a drawing game. This is a picture of a cat. In this game, you have to try and draw this picture on your own. You will get 3 minutes to draw it. Try and make your drawing as close as possible to this picture here and try not to make mistakes." Again, time to complete the task was not really limited (i.e., continued until they finished their drawing). Next, the experimenter took a digital picture of the child's drawing and said, "We are going to put your picture on the computer…the computer will grade it and tell us how close your picture was to this one." Remaining procedures for feedback and self-evaluations were identical to those above.

Results

One 10-year-old female was excluded from data analyses because she was familiar with the ToH task. One 5-year-old male was excluded because he failed the practice trials of the ToH. All children answered all four comprehension questions correctly.

Peer Performance Question. Descriptive data are presented in Table 1. Children of all ages reliably indicated that the expert peer got 11 stars because he or she "knew a lot" about the domain (drawing: 100%); t-tests against chance for each age group indicated that this was also true for flerping (96%), *ps* $< .05$. In the novice condition, 8- and 10-year olds rejected the idea that the novice peer got 11 stars because they "knew a little" about the domain (drawing: 82.9%; flerping 82.9%, *p*s $< .05$), but 5-year-olds' responses did not differ significantly from chance in either domain: (drawing: 60%; flerping, 52.6%), *p*s $> .10$.

Table 1

Proportion of "Yes" Responses to the Peer Performance Question in Experiment 1 (by Age and Peer Expertise) and Experiment 2 (by Age and Trait Valence).

Experiment 1						
Familiar						
	Expert			Novice		
Age in Years	*M*	*SE*	N	*M*	*SE*	N
5	.74	.10	19	.50	.11	20
8	.38	.11	21	.77	.09	22
10	.52	.11	21	.57	.11	21
Novel						
	Expert			Novice		
Age in Years	*M*	*SE*	N	*M*	*SE*	N
5	.70	.11	20	.70	.11	20
8	.62	.10	21	.55	.11	22
10	.52	.11	21	.81	.09	21
Experiment 2						
	Positive			Negative		
Age in Years	*M*	*SE*	N	*M*	*SE*	N
5-6	.60	.10	25	.80	.08	25
9-10	.67	.10	24	.37	.10	24

Do Children's Self-Evaluations Vary by Age, Expertise, and Domain?

Descriptive data are presented in Table 2. Data were analyzed using a series of 3 (age: 5-year-olds vs. 8-year-olds vs. 10-year-olds; between-subjects) x 2 (target expertise: expert vs. novice; between-subjects) x 2 (domain: familiar vs. novel; within-subjects) mixed ANOVAs. There were no significant effects or interactions involving gender or task order on any dependent measures; thus, these variables were excluded from the final models.

Affect. Five-year-olds felt better about their performance than older children, $F(2, 120) = 7.27$, $p = .001$, $\eta_p^2 = .11$. There was a significant interaction between age and domain, $F(2, 120) = 3.62$, $p = .03$, $\eta_p^2 = .06$. To examine the nature of this interaction, follow-up 2 (domain: familiar vs. novel) x 2 (expertise: expert vs. novice) ANOVAs were conducted for each age group. Ten-year-olds' affective rating varied significantly by domain, $F(1, 40) = 5.71$, $p = .02$, $\eta_p^2 = .13$. Post-hoc paired t-tests indicated that 10-year-olds' affective ratings were more positive in the novel domain ($M = 14.44$, $SD = 2.40$) than the familiar domain ($M = 13.51$, $SD = 2.75$), $t(41) = -2.33$, $p = .03$. Conversely, 5- and 8-year-olds' affective ratings did not differ by domain, *p*s > .05, and were relatively positive (see Table 2). No other main effects or interactions were significant, *p*s > .05.

Performance. There were significant main effects of age, $F(2, 120) = 5.94$, $p = .003$, $\eta_p^2 = .09$, and expertise, $F(1, 120) = 5.04$, $p = .03$, $\eta_p^2 = .04$. These effects were qualified by a significant interaction between age, peer expertise, and domain, $F(2, 120) = 2.93$, $p = .05$, $\eta_p^2 = .05$; see Figure 1a. To examine this interaction, follow-up 2

Table 2

Mean Self-Evaluations in Experiment 1 (by Age, Domain, and Peer Expertise) and Experiment 2 (by Age and Trait Valence).

Experiment 1																		
Familiar Task																		
	Expert									Novice								
	Affect			Performance			Ability			Affect			Performance			Ability		
Age in Years	*M*	*SE*	N	*M*	*SE*	N	*M*	*SE*	N	*M*	*SE*	N	*M*	*SE*	N	*M*	*SE*	N
5	15.60	.60	20	8.00	.47	20	8.80	.11	20	16.23	.40	21	8.23	.26	21	8.47	.25	21
8	14.19	.53	21	7.52	.25	21	7.47	.38	21	13.09	.99	22	6.73	.31	22	8.00	.23	22
10	14.00	.79	21	7.42	.34	21	7.25	.43	21	13.14	.62	21	6.52	.25	21	7.05	.36	21
Novel Task																		
	Expert									Novice								
	Affect.			Performance			Ability			Affect			Performance			Ability		
Age in Years	*M*	*SE*	N	*M*	*SE*	N	*M*	*SE*	N	*M*	*SE*	N	*M*	*SE*	N	*M*	*SE*	N
5	15.30	1.33	20	8.25	.45	20	8.60	.21	20	14.80	.64	21	7.57	.48	21	7.90	.37	21
8	13.52	.85	21	7.76	.24	21	7.95	.25	21	11.77	.99	22	6.68	.31	22	7.36	.36	22
10	14.29	.54	21	7.47	.25	21	7.38	.39	21	14.71	.54	21	7.52	.24	21	7.81	.27	21
Experiment 2																		
	Positive Trait									Negative Trait								
	Affect.			Performance			Ability			Affect			Performance			Ability		
Age in Years	*M*	*SE*	N	*M*	*SE*	N	*M*	*SE*	N	*M*	*SE*	N	*M*	*SE*	N	*M*	*SE*	N
5-6	14.76	.85	25	7.76	.45	25	8.44	.32	25	15.32	.57	25	7.80	.45	25	8.24	.22	25
9-10	14.79	.44	24	7.42	.20	24	7.46	.26	24	10.88	.70	24	6.04	.19	24	6.92	.24	24

Figure 1a. Mean Performance Evaluations by Age, Domain, and Expertise. *p < .05

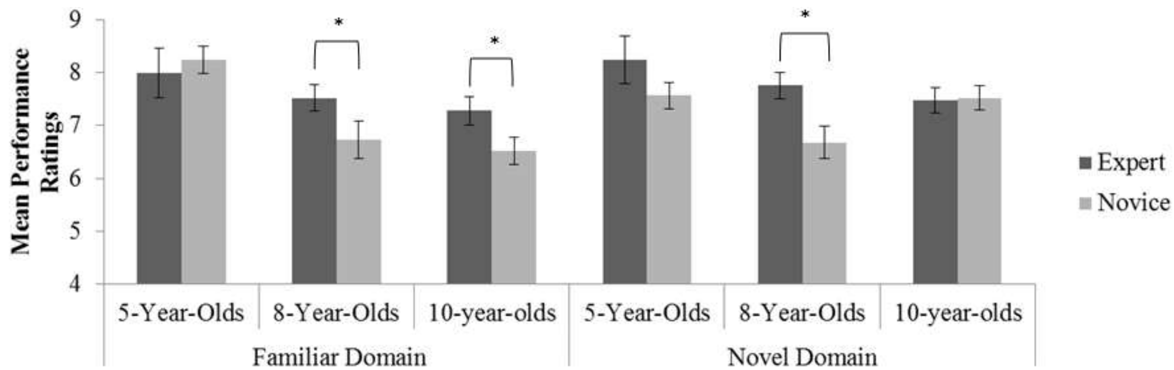
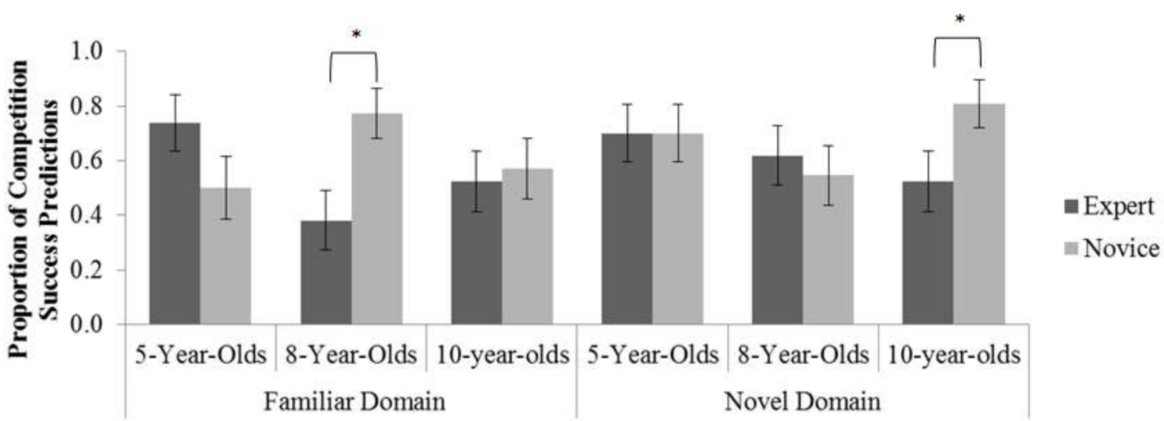


Figure 1b. Proportion of Participants Who Reported that They Could Win a Competition by Age, Domain, and Expertise. *p < .05



(domain: familiar vs. novel) x 2 (expertise: expert vs. novice) ANOVAs were conducted for each age group. Five-year-olds' evaluations were relatively high and did not differ by peer expertise or domain, *p*s > .05. Eight-year-olds reported lower evaluations when they were outperformed by a novice rather than an expert irrespective of domain, $F(1, 41) = 7.55$, $p = .01$, $\eta_p^2 = .16$. Ten-year-olds' evaluations varied by domain and expertise, $F(1, 40) = 5.83$, $p = .02$, $\eta_p^2 = .13$; Post-hoc independent samples t-tests indicated that 10-year-olds reported lower evaluations after being outperformed by a novice rather than an expert in the familiar domain, $t(40) = -2.06$, $p = .05$, but not the novel domain, $t(40) = 0.14$, $p = .89$. Eight- and 10-year-olds' evaluations after expert comparisons were high; indeed, they were not significantly different from 5-year-olds' evaluations in either domain, *p*s > .10.

Ability. Ability ratings decreased with age, $F(1, 120) = 11.49$, $p < .001$, $\eta_p^2 = .16$, but were quite high (see Table 2). No other main effects or interactions were significant, *p*s > .05.

Do Children's Competition Predictions Vary by Age, Expertise, and Domain? Children's responses to the competition question were analyzed using a Generalized Estimating Equation with a binary logistic model. The corrected quasi-likelihood under an independence model criterion (*QICC*), a measure of goodness of fit, was used to assess the best model predictors (Pan, 2001). Three models were compared: (1) main effects model (2) main effects and all 2-way interactions (3) a full factorial model. The best fitting model (*QICC* = 339.47) captured a significant interaction between age, condition, and domain, $\beta = -3.17$, Wald $\chi^2 = 7.12$, $p < .01$ (see Table 3). To examine

Table 3

GEE Binary Logistic Regression Models for Competition Predictions in Experiment 1

	Model 1			**Model 2**			**Model 3**		
Variables	**Wald χ^2**	**df**	**Sig.**	**Wald χ^2**	**df**	**Sig.**	**Wald χ^2**	**df**	**Sig.**
Age	0.98	2	.614	1.10	2	.578	0.91	2	.634
Expertise	1.27	1	.261	0.60	1	.319	1.18	1	.278
Domain	0.60	1	.250	0.60	1	.242	1.29	1	.256
Age x Expertise				0.60	2	.107	4.49	2	.106
Age x Domain				0.60	2	.673	1.07	2	.585
Expertise x Domain				0.60	1	.980	0.02	1	.901
Age x Expertise x Domain							8.45	2	.015*
(Intercept)	11.834	1		12.29	1		12.19	1	
QICC	338.32			343.13			339.48		

this interaction, post-hoc Chi-Square tests were conducted for each domain and age group to assess whether responses differed significantly by expertise. Five-year-olds' responses did not vary significantly by condition in either domain, p's $> .10$, whereas 8- and 10-year-olds' responses varied by both condition and domain. Eight-year-olds indicated that they were more likely to win a drawing competition when the peer was a novice rather than an expert, $\chi^2(1, N = 43) = 6.78, p < .01$, whereas their responses did not vary by peer expertise in the novel domain, $\chi^2(1, N = 43) = 0.24, p = .63$. This pattern was reversed for 10-year-olds: they indicated that they were more likely to win a flerping competition when the peer was a novice rather than an expert, $\chi^2(1, N = 42) = 3.86, p = .05$, but their responses did not vary by peer expertise in the familiar domain, $\chi^2(1, N = 42) = 0.09, p = .76$, see Figure 1b.

Additionally, t-tests against chance (0.50) demonstrated that 5-year-olds were more likely than expected by chance to report that they could win a drawing competition, but only after an expert peer comparison, $t(19) = 2.28, p = .04$. Conversely, 8-year-olds were more likely than expected by chance to report that they could win a drawing competition only after a novice peer comparison, $t(22) = 2.98, p = .01$. Ten-year-olds' expectations of winning a drawing competition, regardless of peer expertise, did not differ from chance levels, ps $> .10$. However, 10-year-olds were more likely than expected by chance to report that they could win a flerping competition after a novice peer comparison, $t(21) = 3.53, p = .002$. Children's predictions in all other conditions did not differ significantly from chance levels, ps $> .10$.

Do Children's Task Difficulty Ratings Vary by Age, Expertise, and Domain? As with children's self-evaluations, difficulty ratings were analyzed using a 3 (age: 5-year-olds vs. 8-year-olds vs. 10-year-olds; between-subjects) x 2 (target expertise: expert vs. novice; between-subjects) x 2 (domain: familiar vs. novel; within-subjects) mixed ANOVA. There was a significant interaction between age and condition, $F(2, 119) = 4.20$, $p < .05$, $\eta_p^2 = .07$. Five-year-olds, $t(79) = -2.16$, $p < .05$, and 10-year-olds, $t(82) = -2.60$, $p < .05$, rated the tasks as more difficult when they were outperformed by an expert peer ($M = 6.20$, $SE = .55$; $M = 5.90$, $SE = .31$) as compared to a novice peer ($M = 4.56$, $SE = .52$; $M = 4.64$, $SE = .37$). In contrast, 8-year-olds task difficulty ratings did not significantly differ when the peer was an expert ($M = 4.45$, $SE = .43$) as compared to a novice ($M = 5.47$, $SE = .55$), $t(84) = 1.73$, $p > .05$.

Do Children's Self-Evaluation Explanations Vary by Age and Domain? Data for participants who responded "I don't know" were not analyzed (affect: 11.2%, performance: 15.8%, ability: 13.8%). Below, the most common explanations are provided; full descriptive data are provided in Table 4.

Affect. Chi-square analysis were conducted within each domain to examine if children's explanations varied by age. Children's explanations of their affect in the familiar domain varied by age, χ^2 (8, $N = 115$) = 15.15, $p =.05$. Five-year-olds most frequently cited enjoyment (36.1%) and perceived positive performance (27.8%) as the reason for their affective state. Conversely, 8-year-olds and 10-year-olds frequently referenced their perceived negative (40%, 35.9% respectively) and positive performance (25%, 30.8%). Children's explanations of their affect in the novel domain also varied by

Table 4

Percentage of Each Explanation Type by Domain, Age, and Evaluation Question in Experiment 1

Novel Domain						
			Affect			
	Positive Performance	Negative Performance	Effort/Practice	Enjoyment	Miscellaneous	Don't Know
Age						
5	22.0%	14.6%	7.3%	19.5%	31.7%	4.9%
8	11.6%	30.2%	23.3%	11.6%	9.3%	14.0%
10	14.6%	31.7%	24.4%	17.1%	9.8%	2.4%
			Performance			
	Positive Performance	Negative Performance	Effort/Practice	Enjoyment	Miscellaneous	Don't Know
Age						
5	34.1%	7.3%	17.1%	0%	19.5%	22.0%
8	18.6%	37.2%	18.6%	0%	16.3%	9.3%
10	17.1%	39.0%	22.0%	0%	19.5%	2.4%
			Ability			
	Practice	Skill/Ability	Enjoyment	Miscellaneous	Don't Know	
Age						
5	19.5%	24.4%	17.1%	14.6%	24.4%	
8	32.6%	20.9%	16.3%	18.6%	11.6%	
10	41.5%	22.0%	19.5%	14.6%	2.4%	
Familiar Domain						
			Affect			
	Positive Performance	Negative Performance	Effort/Practice	Enjoyment	Miscellaneous	Don't Know
Age						
5	24.4%	12.2%	12.2%	31.7%	7.3%	12.2%
8	23.3%	37.2%	16.3%	11.6%	4.7%	7.0%
10	29.3%	34.1%	9.8%	9.8%	12.2%	4.9%
			Performance			
	Positive Performance	Negative Performance	Effort/Practice	Enjoyment	Miscellaneous	Don't Know
Age						
5	36.6%	9.8%	12.2%	0%	22.0%	19.5%
8	37.2%	27.9	11.6%	0%	9.3%	14.0%
10	31.7%	29.3%	12.2%	0%	19.5%	7.3%
			Ability			
	Practice	Skill/Ability	Enjoyment	Miscellaneous	Don't Know	
Age						
5	20.0%	37.5%	12.5%	25.0%	5.0%	
8	27.9%	25.6%	14.0%	23.3%	5.0%	
10	40.0%	32.5%	12.5%	10.0%	5.0%	

age, χ^2 (8, N = 116) = 16.88, p =.03. In this case, 5-year-olds frequently made miscellaneous responses (33.3%) and references to positive performance (23.1%), and enjoyment (20.5%). Conversely, 8-year-olds and 10-year-olds frequently made references to their perceived negative performance (35.1%, 32.5% respectively) and effort/practice (27%, 25%).

Performance. Children's explanations of their performance in the familiar domain did not vary significantly by age, χ^2 (8, N = 108) = 6.70, p =.35. Across all age groups, the most common response was perceived positive performance (40.7%). Explanations of performance evaluations in the novel domain varied by age, χ^2 (6, N = 111) = 12.90, p =.04. Five-year-olds most frequently made references to positive performance perceptions (43.8%), whereas 8- and 10-year-olds most frequently referenced negative performance perceptions (41% and 40%, respectively).

Abiity. Children's explanations of their ability did not differ by age in either domain, ps > .10. Ability and effort/practice were the most common explanations in the familiar domain (ability: 33.9%; effort/practice: 31.3%). and novel domain (ability: 24.8%; effort/practice: 36.7%).

Discussion

The current findings are the first to reveal age-related change in children's use of expertise information in a social comparison setting. Five-year-olds' self-evaluations and competition predictions were positive despite relative failure. In contrast, 8- and 10-year-olds reported lower performance evaluations following comparisons with novice peers as compared to expert peers, but this was limited to the familiar domain for the latter age group. Additionally, 8- and 10-year-olds' competition predictions varied by peer expertise in the expected direction; however, this was only the case for 8-year-olds in the familiar domain and 10-year-olds in the novel domain. Notably, peer expertise affected these children's performance evaluations, but not their affect ratings and ability evaluations.

Broadly, 5-year-olds' positive self-evaluations (i.e., qualitative responses, affect, performance, and ability evaluations) are consistent with previous social comparison research (Pomerantz et al., 1995; Ruble et al., 1994). As discussed earlier, this disregard for comparative feedback likely stems from their perceptions of ability as malleable. Thus, relative failure has little meaning for self-evaluation. Similarly, the lack of differentiation in self-evaluations based on peer expertise may reflect young children's perception of expertise as a particularly malleable characteristic, thereby providing limited usefulness for self-evaluation. Taken together, younger children's unwillingness or inability to consider negative comparative feedback is consistent with children's disregard of negative information in other contexts (e.g., Boseovski & Lee, 2006) and reflects a positivity bias exhibited early in life (Boseovski, 2010). Although these children typically use expertise information readily in a variety of contexts (e.g., learning about novel animals and artifacts; Koenig & Jaswal, 2011), they may disregard it in evaluative circumstances (Boseovski & Thurman, 2014).

An alternative explanation for younger children's disregard of peer expertise is that ToM skills (i.e., mental state reasoning) were required in this context and limitations in these skills may have restricted their understanding of the expertise information provided. Generally, preschoolers' ability to make inferences about others' false beliefs is associated with expertise reasoning (Danovitch, 2013). Such skills may be important because they allow children to reason about what an individual could feasibly know. The youngest children may have struggled to recognize that a novice has little task knowledge and that relative failure in this case indicates particularly poor performance. Indeed, on the peer performance questions, 5-year-olds understood the connection between high expertise and successful performance, but they were unsure about the connection between low expertise and performance. This is consistent with other work showing that young children may not view novice status as a predictor of poor performance (Boseovski et al., 2016). Therefore, failure relative to a novice was especially unlikely to result in poor performance evaluations.

The self-relevant context created in the current study likely exacerbated ToM demands (e.g., recognition of discrepancies in the knowledge of the peer as compared to the self; Aguiar et al., 2012). There were only two contexts in which 5-year-olds demonstrated an understanding of expertise and both of these were contexts that were not self-relevant. First, these children more frequently reported that the peers' level of expertise was the cause of their superior performance when the peer was an expert rather than a novice. Second, they differentiated their task difficulty ratings by peer expertise in a logical direction (i.e., believing that a task is easier when even a novice performed well). Thus, the demands imposed by self-relevant contexts may limit young children's use of expertise information for self-evaluation.

Unlike younger children, older children reported favorable performance perceptions in the context of expert rather than novice peer comparisons. This indicates that they recognize that failure relative to an expert is a poor indicator of their performance. As expected, ability evaluations were high regardless of peer expertise, suggesting that one instance of relative failure is not enough for even older children to make dispositional attributions about their level of ability (Ruble et al., 1980). Yet surprisingly, 8- and 10-year-olds' *feelings* about their performance were very positive and did not vary by peer expertise. Evidence regarding the consistency of performance and affect ratings in response to social comparison is mixed (see Ruble et al., 1994). Thus, these two types of self-evaluations may sometimes hold different meanings for children. Expertise information may not have affected emotional reactions to relative failure because it is not highly evaluative (e.g., being a novice is not necessarily a negative characteristic, in contrast to incompetence; Koenig & Jaswal, 2011). Because expertise is conceptualized as malleable, this may diminish its evaluative nature. The emphasis on this characteristic may have partially alleviated older children's tendency to interpret relative failure as due to stable differences in ability. Highly evaluative peer characteristics (e.g., ability related traits) that are frequently essentialized may evoke more robust emotional reactions.

One could argue that children's task perceptions played a role in the developmental and domain effects documented in the current study. Specifically, differences in children's consideration of feedback may stem from differences in their task experience. If 5-year-olds (in both domains) or 10-year-olds (in the novel domain) perceived the task as particularly difficult, this could have influenced their self-evaluations. This explanation is highly unlikely, as children's perceptions of task difficulty did not differ by age or domain. However, other characteristics that were not assessed here may have played a role. For example, older children are more affected by comparative feedback in domains that they perceive to be of significant importance to themselves (Bers & Rodin, 1986). Eight-year-olds may have viewed drawing and the novel task as personally significant, resulting in the salience of comparative feedback in both domains. Ten-year-olds may have placed little value on the novel task, and thus perceived the comparative feedback as less important.

A more likely explanation for 8- and 10-year-olds' differential consideration of comparative feedback in a novel domain is that these differences reflect an emerging awareness that effort alone cannot overcome inherent limitations in ability (Folmer et al., 2008). Eight-year-olds may have overestimated the effectiveness of their exerted effort in the novel domain, which made them vulnerable when it did not result in high performance (Lockhart, Keil, & Aw, 2013). Indeed, these children were uncertain about their ability to win a flerping competition regardless of peer expertise. Unrealistic perceptions of effort, coupled with relative failure, may result in tentative expectations of future performance.

With age, children may have considered their previous effort and failures in drawing, which increased the salience of peer expertise in the familiar domain. Ten-year-olds may have viewed feedback in a novel domain as undiagnostic given that they did not exert substantial effort to determine whether they could improve their performance. They may have felt that it was possible to attain expertise at “flerping”, but were more certain that they were unable to attain expertise in drawing. Indeed, 10-year-olds were uncertain about their ability to win a drawing competition. In contrast, these children were more optimistic about their ability to win a “flerping” competition, at least when the peer was a novice. This interpretation is consistent with findings that older children report more favorable self-evaluations following relative failure when comparison peer status seems attainable (Buunk, Kuyper, van der Zee, 2005).

In sum, sensitivity to comparative feedback and peer expertise increased with age, but the effects of peer expertise on older children’s self-evaluations were still limited. The current findings suggest that developmental change in children’s consideration of negative information (i.e., positivity bias) and self-relevant information affected children’s consideration of comparative feedback and peer expertise. Additionally, the limited effects of comparative feedback in later childhood suggest that conceptions of expertise as malleable partially alleviate perceptions that relative failure is due to stable differences in ability.

Given young children’s disregard for peer expertise in the current study, it was expected that more essentialized ability information about a peer may be necessary to increase reflection on ability as a cause of relative failure. Additionally, such information may be necessary for older children to consider it relevant, rather than undiagnostic, for performance evaluations in a novel domain. This possibility was addressed in Experiment 2 through the provision of peer ability related trait information. Traits are essentialized categories with associated properties (e.g., behaviors and intentions). Thus, a wealth of conceptual information is conveyed in a single trait label (Gelman et al., 2007; Heyman & Gelman, 1999). Traits are also readily considered at an early age because reasoning about categorical information requires low processing demands (Heyman & Gelman, 2000). Therefore, young children may consider trait labels more readily than expertise in a comparison context. Given that the majority of mixed findings in Experiment 1 were found in the novel domain, Experiment 2 only included a novel domain to examine these effects further. Further, the effects were examined in 5- to 6-year-olds and 9- to 10-year-olds, as these are critical times for trait reasoning development (e.g., Heyman & Gelman, 2000).

CHAPTER III

EXPERIMENT 2

The goal of Experiment 2 was to examine the effects of comparison peer traits on children's self-evaluations. This investigation builds on Experiment 1 by examining how highly essentialized ability related traits, as opposed to non-essentialized expertise information, relate to children's use of peer competence information in a social comparison setting. As discussed previously, theoretical views of social comparison development center on the idea that children's reasoning about ability related traits underlies changes in responsiveness to social comparison (Butler, 1989). Yet, there has been little empirical work on the relevance of ability conceptions to comparative outcomes directly (Butler, 1992). This study is the first to examine systematically children's use of peer trait labels in a social comparison context through the use of an experimental design. Ability related trait information should be influential to the interpretation of comparative feedback because it may increase reflection about ability as the cause of performance discrepancies. Thus, this investigation will inform our understanding of age-related change in ability conceptions as a mechanism of change in social comparison.

Given the theoretical importance of ability conceptions for social comparison development, traits were expected to be relevant in a social comparison context. Generally, trait reasoning has implications for children's beliefs about behaviors and academic outcomes beginning early in life. By 5 years of age, children make trait attributions about others (Boseovski, Lapan, & Bosacki, 2013; Giles & Heyman, 2004; Lapan & Boseovski, 2016) and use trait information to inform their predictions of others' future behaviors (Yuill & Pearson, 1998). For example, children expect that a nice individual will engage in behaviors like sharing (Liu, Gelman, & Wellman, 2007). Likewise, they infer that an individual who shares is "nice" (Boseovski & Lee 2006, 2008; Lapan, Boseovki, & Blincoe, 2016). Even preschoolers use explicit trait labels to make inferences about an individual's emotional state (e.g., inferring that a "nice" child would be sadder than a "mean" child when their actions made someone else upset; Heyman & Gelman, 1999). Children of this age also make distinctions between the behavioral correlates of a variety of traits (e.g., nice vs. mean vs. smart; Cain, Heyman, & Walker, 1997).

Ability related traits (e.g., smart, athletic, artistic) are a specific subcategory of traits that are associated with expected performance outcomes (e.g., grades in school; Lockhart et al., 2013). Children's reasoning about ability related traits has implications for academic self-perceptions (Mueller & Dweck, 1998) and beliefs about achievement (Blackwell, Trzesniewski, & Dweck, 2007). By 5 years of age, the provision of ability related traits impacts children's expectations of peers' academic performance (Stipek & Daniels, 1990). For example, even kindergarteners expect that a "smart" peer will perform better on reading and spatial reasoning tasks than a "not smart" peer (Stipek & Daniels, 1990). Additionally, when asked what it means to be smart, children as young as 5 years of age spontaneously refer to knowledge or achievement (Kurtz-Costes et al., 2005). Young children also demonstrate some understanding of the distinct behavioral correlates of ability-related traits and prosocial traits (e.g., “nice”). For instance, when asked to select peers to be on their team for an academic competition or be part of their play group, even kindergarteners selectively choose smart peers as teammates and nice peers as playmates (Droege & Stipek, 1993).

It is clear that children demonstrate early precocity in ability related trait reasoning. However, young children also exhibit two limitations in trait reasoning that should be relevant to their ability (or willingness) to consider comparison peers’ traits. First, before middle childhood, children infrequently cite ability related traits *spontaneously* to explain academic outcomes. This limited use of traits to explain academic performance is purportedly related to children’s inferences that ability related traits are unstable over time and can change (e.g., Nicholls, 1978; Nicholls & Miller, 1984; Stipek & MacIver, 1989). As discussed previously, there are notable developmental shifts in children’s tendency to essentialize ability related traits. As children age, they are less likely to believe that traits can change and tend to endorse essentialized trait beliefs (i.e., they perceive traits as fixed, stable, and uncontrollable; Heyman & Gelman, 2000). Further, ability related traits, such as smartness, are essentialized to a greater degree than other traits (e.g., niceness) by late childhood (Heyman & Gelman, 2000). Thus, perceptions of ability related traits as largely malleable in early childhood should limit their relevance for interpreting social comparative outcomes.

Second, young children exhibit a positivity bias in their use of, and reasoning about, ability related traits. For example, the onset of the spontaneous use of trait explanations varies based on the outcome being explained. Spontaneous trait explanations of academic success (e.g., “because he’s smart”) emerge by 7 years of age, but not for academic failure until 10 years of age (Benenson & Dweck, 1986). Young children are also more likely than older children to perceive themselves as “smart” (e.g., Nicholls, 1979; Stipek & Tannatt, 1984) and predict that their future performance will be positive (Parsons & Ruble, 1977; Stipek, 1984; Stipek & Hoffman, 1980). This positivity bias also extends to children’s generalizations of traits. For example**,** 5-year-olds overgeneralize the significance of being smart to irrelevant domains and tasks (e.g., expect a smart child to be able to jump high), whereas 10-year-olds indicate that being smart is unrelated to athletic skill (Stipek & Daniels, 1990; Cain et al., 1997; Heyman et al., 2003; Kurtz-Costes et al., 2005; Saltz & Medow, 1971). Further, these instances of trait overgeneralization are greater for positive than negative traits (e.g., children are less likely to expect a “not smart” individual to also be “not athletic”; Heyman & Giles, 2004). Thus, children may more readily consider comparison peers’ positive rather than negative ability related traits.

In the current study, 5- to 6-year-olds and 9- to 10-year-olds were told that they were outperformed on a novel task by a peer with a positive or negative trait that was task-relevant (i.e., intelligence) or task-irrelevant (i.e., athleticism). Trait terms and related behavioral information (e.g., “does well in school) were supplied to support children’s consideration of such information in their self-evaluations. Additionally, relevant and irrelevant traits were included to examine whether young children would more readily consider positive traits, regardless of relevance, in a comparison context. Piloting indicated that 5- to 6-year-olds and 9- to 10-year-olds perceived athleticism as relevant to performance on the ToH due to the motor element of the task (i.e., moving the discs). Thus, this task was replaced with the Raven's Coloured Progressive Matrices (RCPM), which does not involve a motor response. Additionally, children's explanations of academic outcomes as due to ability related traits (i.e., entity reasoning) rather than malleable factors (incremental reasoning), were assessed. Because entity reasoning has implications for interpretations of failure (Dweck, 2003), and older children are more likely to hold entity beliefs (Heyman & Gelman, 2000), the provision of peer ability related traits should be particularly likely to influence social comparison outcomes in older children.

Hypothesis 1: Concerning 5- to 6-year-olds, one possibility was that traits would have little impact on self-evaluations, as in Experiment 1, due to the noted positivity bias in young children's ability related trait reasoning, as well as high perceptions of malleability. Yet, it was also possible that these children would be more sensitive to ability related trait labels than expertise cues, given the salience of trait labels in early childhood.

Hypothesis 2: Nine- to 10-year-olds were expected to report lower affect and performance self-evaluations after being outperformed by a target with a relevant negative trait, but to be unaffected by peers labeled with irrelevant traits (i.e., athletic/not athletic).

Hypothesis 3: As in Experiment 1, ability evaluations were expected to remain high for children of all ages.

Hypothesis 4: Individual differences in entity beliefs were expected to have implications for children's interpretations of comparative feedback. Specifically, children who tend to endorse entity beliefs about ability may be particularly sensitive to comparative feedback and to the ability related traits of comparison peers. Thus, higher endorsement of entity beliefs was expected to be associated with more robust effects of comparative feedback.

Method

Participants. There were 50 5- to 6-year-olds (M = 72.4 months, SD = 7.4, 28 males) and 48 9- to 10-year-olds (M = 119.9 months, SD = 6.9, 25 males). Demographic data indicated that 62.2% of participants were Caucasian, 19.4% African American, 11.2% mixed races, and 2% Hispanic. Also, 5.1% of families chose not to report their race or ethnicity. Participants varied in socioeconomic backgrounds, reporting incomes from less than $20, 000 to over $90, 000.

Materials. For the social comparison task, children completed the RCPM (Raven, Court, & Raven, 1995). The RCPM booklet is composed of 36 items. Each item consists of a pattern at the top of the page with a missing piece and six pieces to choose from to complete the pattern.

Design and Procedure. A between-subjects design was used to assess the effects of age (5- to 6-year-olds vs. 9- to 10-year-olds), trait valence (positive vs. negative) and trait relevance (relevant vs. irrelevant) on children's self-evaluations. Children completed the Entity/Incremental task, followed by the social comparison task.

Entity/incremental task. Children were asked two questions about academic success (self and other) and two questions about academic failure (self and other; adapted from Benenson & Dweck, 1986). For example, children were asked "Think of kids in your class who get a lot wrong on their schoolwork. Why do they get a lot wrong?" Process responses (e.g., "They try really hard"), which reflect incremental views of academic outcomes, were coded as 0. Ability responses (e.g., "They're smart"), which reflect entity views of academic outcomes, were coded as 1 (see Appendix C for more examples). The number of Ability responses was summed across the four questions; thus, the possible range of scores was 0-4.

Social comparison task. Children were shown the RCPM and told, "This is the Matrix game. On each page you'll see a pattern with a missing piece, and you have to tell me which of the pieces at the bottom fills the missing piece." Standard task procedures were followed (Raven et al., 1995), except that children were told that they would get 5 minutes to complete as many items as possible. As in Experiment 1, children were actually given as much time as needed to complete the task. Responses were recorded and upon task completion, the experimenter told children, "Now I'll put your answers and how long it took you to finish into the computer. Then, the computer will tell us how you did on the matrix game." Children received feedback in the same manner as Study 1 except for the peer characteristics provided. Half of the children heard about a peer with a positive trait and half heard about a peer with a negative trait. The trait was either task-relevant (i.e., smart/not smart) or task-irrelevant (i.e., athletic/not athletic; see Appendix D). Children were asked a peer performance question based on condition. For example, in the positive, relevant condition they were asked "Did Lee get 11 stars because he is smart?"). Endorsements (i.e., "yes") were coded as 1 and rejections (i.e., "no") were coded as 0. Comprehension and self-evaluation questions were the same as those in Experiment 1. Reliability for self-evaluation explanations was high (kappas: .89-.95).

Results

All children in the sample answered all four comprehension questions correctly.

Peer Performance Question. Descriptive data are presented in Table 1. T-tests against chance indicated that older children reliably endorsed "smart" as the cause of the peer's performance (92%), $p < .01$, but none of the other traits (i.e., "not smart", "athletic", or "not athletic"). Conversely, younger children reliably endorsed "smart" (92%), $p < .01$, and "athletic" as the cause of the peer's performance marginally more often than expected by chance (75%), $p = .08$, but did not do so for the negative traits (i.e., "not smart" and "not athletic").

Are Entity/Incremental Explanations Related to Children's Self-Evaluations? Correlational analyses indicated that ability (i.e., entity) explanations increased with age, $r(96) = .28$, $p = .007$. Younger children provided at least one ability explanation 12% of the time, whereas older children did so 33.4% of the time. The overall low frequency of ability responses made it inappropriate to examine possible interactions between entity beliefs and the comparison manipulation. Thus, this variable was not analyzed further.

Do Children's Self-Evaluations Vary by Age, Trait Valence, and Trait Relevance? Self-evaluation measures were analyzed with a 2 (age: 5- to 6- year-olds vs. 9- to 10-year-olds) x 2 (trait valence: positive vs. negative) x 2 (trait relevance: relevant vs. irrelevant) between-subjects ANOVA. There were no significant effects or interactions involving gender; thus, it was excluded from final models. See Table 2 for descriptive data.

Affect. There were significant main effects of age, $F(1, 90) = 10.89$, $p = .001$, $\eta_p^2 = .11$, and trait valence, $F(1, 90) = 6.21$, $p = .02$, $\eta_p^2 = .07$, that were qualified by a significant interaction between age and trait valence, $F(1, 90) = 11.17$, $p = .001$, $\eta_p^2 = .11$. Younger children's affect ratings were relatively high and post-hoc independent samples t-tests indicated that they did not differ significantly when the peer was described with a positive trait ($M = 14.76$, $SD = 4.24$) as compared to a negative trait ($M = 15.32$, $SD = 2.84$), $t(47) = 0.55$, $p = .59$. In contrast, older children reported lower affect ratings when the peer was described with a negative trait ($M = 10.87$, $SD = 3.44$) as opposed to a positive trait ($M = 14.79$, $SD = 2.17$), $t(46) = -4.725$, $p < .001$, irrespective of trait relevance (see Figure 2a). Older children's affect in the positive condition did not differ significantly from younger children's affect ratings in the positive, $t(36) = -0.03$, $p = .97$,

Figure 2a. Mean Affect Ratings by Age and Trait Valence. *$p < .05$

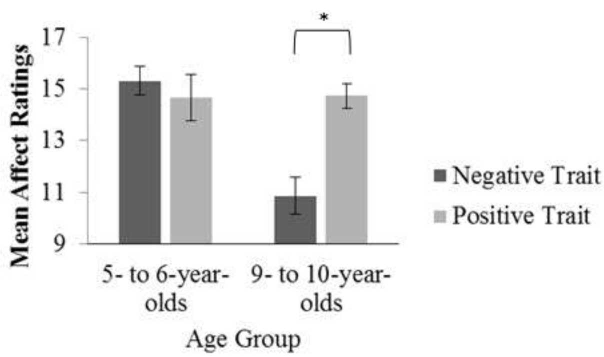


Figure 2b. Mean Performance Evaluations by Age and Trait Valence. *$p < .05$

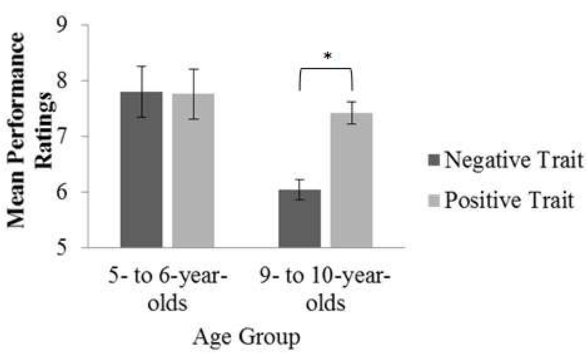
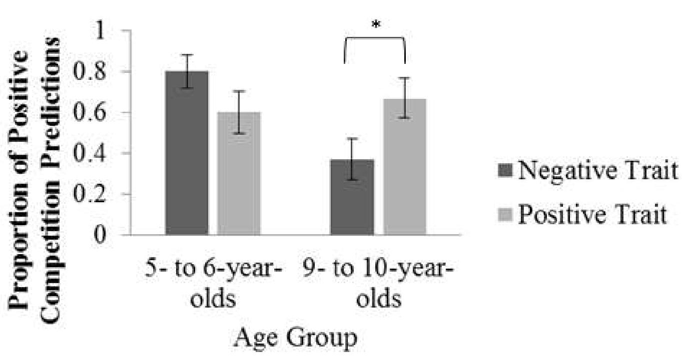


Figure 2b. Proportion of Positive Competition Predictions by Age and Trait Valence. *$p < .05$



or negative condition, $t(44) = 0.73$, $p = .47$. No other main effects or interactions were significant, ps > .05.

Performance. Older children rated their performance as lower than younger children, $F(1, 90) = 8.52$, $p = .004$, $\eta p^2 = .09$. There was a significant interaction between age and trait valence, $F(1, 90) = 3.94$, $p = .05$, $\eta_p^2 = .04$ (see Figure 2b). Younger children's performance ratings were high and post-hoc independent samples t-tests indicated that they did not differ significantly when the peer was described with a positive trait ($M = 7.76$, $SD = 2.24$) as compared to a negative trait ($M = 7.80$, $SD = 2.25$), $t(48) = 0.06$, $p = .95$. Older children rated their performance more favorably when the peer was described with a positive trait ($M = 7.42$, $SD = 0.97$) as opposed to a negative trait ($M = 6.04$, $SD = .91$), $t(44) = -5.05$, $p < .001$. Older children's performance ratings in the positive condition were high and did not differ significantly from younger children's performance ratings in the positive, $t(33) = 0.70$, $p = .48$, or negative condition, $t(32) = 0.78$, $p = .44$. No other main effects or interactions were significant, ps > .05.

Ability. Ability ratings decreased with age, $F(1, 90) = 19.08$, $p < .001$, $\eta_p^2 = .18$, but were relatively high (see Table 2). No other main effects or interactions were significant, ps > .05.

Do Children's Competition Predications Vary by Age, Trait Valence, and Trait Relevance? Children's responses to the competition question were analyzed using a logistic regression. A model with age, trait valence, and trait relevance was used to predict competition predictions. Additional variables were added in blocks (i.e., all two-way interactions, followed by the three-way interaction) and the likelihood ratio test was used to determine whether they contributed significantly to the model (Kleinbaum & Klein, 2010). Addition of the two-way interactions made a marginally significant contribution to the model, ΔLR = 7.59, p = .06. The addition of the three-way interaction did not significantly improve the model, ΔLR = 2.27, p > .10. Thus, the best fitting model included age, valence, relevance, and all two way interactions (see Table 5). The overall regression model was marginally significant, χ^2 = 11.61, p =.07, Nagelkerke R^2 =.15. There was a significant interaction between age and valence as displayed in Figure 2c, β = 2.26, Wald χ^2 = 6.29, p = .01. Chi-square analyses indicated that older children were more likely to indicate that they could win a competition when the peer possessed a positive rather than negative trait, $\chi^2(1, N = 48) = 4.09$, $p < .05$. Conversely, younger children's responses did not differ significantly by valence, $\chi^2(1, N = 50) = 2.38$, $p > .10$.

Older children's responses did not differ significantly from chance in either condition, *p*s > .05. Younger children were more likely than expected by chance to indicate that they could win a competition when the peer possessed a negative trait, $t(24) = 3.67$, $p = .001$, whereas their responses did not significantly differ from chance when the peer possessed a positive trait, $t(24) = 1.00$, $p = .33$.

Do Children's Difficulty Ratings Vary by Age, Trait Valence, and Trait Relevance? There were no significant effects of any of the predictors on children's ratings of task difficulty, *p*s > .05. Younger children (M = 4.86, SD = 3.55) and older children (M = 5.17, SD = 2.25) rated the task as moderately difficult.

Table 5

Logistic Regression Models for Competition Predictions in Experiment 2

	Model 1			**Model 2**			**Model 3**		
Variables	**β**	**SE**	**Wald χ^2**	**β**	**SE**	**Wald χ^2**	**β**	**SE**	**Wald χ^2**
Age	0.78	0.43	3.33†	-0.48	0.75	0.41	-1.10	0.88	1.55
Trait Valence	-0.18	0.42	0.18	-0.82	0.75	1.19	-1.44	0.89	2.62
Trait Relevance	-0.30	0.42	0.51	-0.13	0.90	0.03	-0.76	0.89	0.74
Age x Valence				2.26	0.89	6.29*	3.83	1.49	6.64**
Age x Relevance				0.38	0.89	0.18	1.57	1.22	1.67
Valence x Relevance				-0.84	0.90	0.87	0.41	1.23	0.11
Age x Valence x Relevance							-2.80	2.15	2.15
(Constant)	0.33	0.42		0.76	0.58		1.10	0.67	
Model χ^2	4.03			11.61†			13.89*		
Nagelkerke R^2	0.05			0.15			.18		
Change in LR				7.59†			2.27		

$^{\dagger}p < .10$, $*p < .05$, $**p<.01$, $***p<.001$

Do Children's Self-Evaluation Explanations Vary by Age? Data for participants who responded "I don't know" were not analyzed (affect: 10%, performance: 5.1%, ability: 13.3%). See Table 6 for full descriptive data. Individual Chi-Square analyses for each type of explanation indicated that all types of explanations varied significantly by age: affect, χ^2 (4, N = 88) = 28.71, p < .001; performance, χ^2 (3, N = 93) = 13.69, p =.003; ability, χ^2 (3, N = 85) = 11.54, p =.01.

Table 6

Percentage of Each Explanation Type by Age and Evaluation Question in Experiment 2

	Affect					
Age	Positive Performance	Negative Performance	Effort/Practice	Enjoyment	Miscellaneous	Don't Know
5-6	24.0%	10.0%	20.0%	2.0%	32.0%	12.0%
9-10	12.5%	60.4%	8.3%	2.1%	8.3%	8.3%
	Performance					
Age	Positive Performance	Negative Performance	Effort/Practice	Enjoyment	Miscellaneous	Don't Know
5-6	34.0 %	12.0%	26.0%	0%	24.0%	4.0%
9-10	25.0%	43.8%	12.5%	0%	12.5%	6.3%

	Ability				
Age	Practice	Skill/Ability	Enjoyment	Miscellaneous	Don't Know
5-6	40.0%	16.0%	10.0%	18.0%	16.0%
9-10	14.6%	41.7%	12.5%	20.8%	10.4%

Affect. Younger children most frequently made miscellaneous responses (36.4%), or references to perceived positive performance (27.3%), and effort/practice (22.7%), whereas references to negative perceived performance (11.4%) and task enjoyment (2.3%) were relatively infrequent. Conversely, older children most frequently referenced their perceived negative performance (65.9%), whereas all other references were relatively infrequent: perceived positive performance (13.6%), effort/practice (9.1%), miscellaneous (9.1%), and enjoyment (2.3%).

Performance. No child in the sample referenced enjoyment in their explanation of performance; thus, this category was not included in the following analyses. Younger children most frequently referenced perceived positive performance (35.4%), effort/practice (27.1%), and made miscellaneous responses (25%), whereas references to negative perceived performance (12.5%) were relatively infrequent. Conversely, older children most frequently referenced their perceived negative performance (46.7%) performance, and to a lesser degree, perceived positive performance (26.7%). Effort/practice (13.3%) and miscellaneous responses (13.3%) were relatively infrequent.

Ability. Younger children most frequently referenced their effort/practice (47.6%), made miscellaneous responses (21.45), and referenced general skills/traits (19%). Enjoyment references were less frequent (11.9%). Older children most frequently referenced their general skills/traits (46.5%) and made miscellaneous responses (23.3%), whereas practice/effort (16.3%) and enjoyment (14%) explanations were less frequent.

Discussion

As in Experiment 1, younger children reported high self-evaluations and competition predictions regardless of comparison peer characteristics. Conversely, older children showed significant sensitivity to peer trait valence. These children's affective ratings and performance evaluations were impaired when they were outperformed by peers with negative traits, but were high when they were outperformed by peers with positive traits. Older children were also more certain that they could win a competition when they were outperformed by peers with positive rather than negative traits. However, these children failed to use trait relevance to inform their self-evaluations or competition predictions.

By late childhood, it is evident that peer traits have a substantial impact on children's interpretations of relative failure and thereby, self-evaluations. The fact that upward comparisons had no effect on younger children's self-evaluations likely reflects their interpretation of relative failure as stemming from temporary causes (Nicholls, 1978). Indeed, younger children explained academic success and failure on the entity/incremental reasoning task largely in terms of malleable factors (e.g., effort). Although young children generally view traits as malleable, negative traits are expected to be particularly malleable (Lockhart, Chang, & Story, 2002). Thus, children's disregard for comparison peer traits was likely driven by a disregard for *negative* trait information in particular, consistent with the positivity bias displayed at this age (Boseovski, 2010). Indeed, younger and older children reported similarly high self-evaluations when the peer was labeled with a positive trait.

It is also likely that younger children's disregard for the traits of their comparison peers was due in part to their limited understanding of how these traits are relevant to task performance. Younger children's frequent endorsement of athleticism as a cause of the peer's performance supports this explanation. The current findings extend previous work (e.g., Rhodes & Brickman, 2008) by documenting that peers' ability related traits appear to emerge as significant for self-evaluation later than more essentialized categories (e.g., gender; Taylor, Rhodes, & Gelman, 2009).

Given the significance of comparison peer traits for older children's self-evaluations, it is important to consider how such traits were integrated into self-evaluations. As expected, when older children were outperformed by peers with negative rather than positive traits, they reported less positive affect and lower performance ratings. As noted above, this finding is likely due to developmental changes in children's conceptions of ability as fixed. Additionally, this finding demonstrates that the provision of ability related traits, which are often essentialized at this age, is more influential to interpretations of comparative feedback than the provision of more malleable ability characteristics (i.e., expertise).

Unexpectedly, peer traits impacted self-evaluations even when they were irrelevant to the task (i.e., not athletic/athletic). In other contexts, older children typically recognize that athletic skill is unrelated to performance on cognitive tasks (e.g., Stipek & Daniels, 1990). However, in the current study, the fact that children were provided with trait information about the comparison peer may have prompted them to assume that this information must be relevant in some way. They may have relied on the trait valence alone in an attempt to use this information. Yet, this explanation seems unlikely because these children did not use irrelevant trait information when reasoning about the cause of the peer's performance. Specifically, they only reliably endorsed "smart" as the cause of the peer's performance.

A more likely explanation for older children's neglect of trait relevance is that they exhibit a halo effect when reasoning about traits in a social comparison context. That is, children may have inferred that the peer's possession of an irrelevant trait indicated that they also possessed other similarly valenced traits (Stipek & Daniels, 1990). For example, they may not have thought that athleticism per se caused the peer's superior performance, but that an athletic peer is also likely to be smart. This demonstrates that even older children exhibit a positivity bias in reasoning about trait information in self-relevant contexts. This explanation may account for the discrepancies between children's use of irrelevant peer traits (i.e., athleticism) in their explanations of the peer's performance versus their use in self-evaluation. Specifically, children only endorsed "smart" to explain peer performance, but viewed irrelevant traits as meaningful to their own performance. This explanation is consistent with previous findings that other aspects of trait reasoning are limited in self-evaluative contexts, particularly those that require children to reason about negative information. For example, children are better able to reason about negative covariation information when they must make attributions about others rather than the self (Schuster, Ruble, & Weinert, 1998).

In sum, the current study extends and complements the findings of Experiment 1 by documenting more robust effects of highly essentialized ability related traits on self-evaluations as compared to expertise. Additionally, the study further documents a robust positivity bias in young children's reasoning about relative failure and ability related traits, as well as some evidence of a positivity bias in older children's reasoning in a self-evaluative context. These findings add to our knowledge of developmental change in interpretations of comparative feedback by documenting the importance of ability conceptualizations in reactions to relative failure.

CHAPTER IV

GENERAL DISCUSSION

The current studies examined how peer competence cues– expertise and ability related traits – alter children's reasoning about comparative feedback in early to late childhood. Overall, young children's self-evaluations were highly positive and unaffected by comparative feedback (i.e., regardless of peer characteristics, young children reported positive affect and high performance perceptions). By late childhood, children's self-evaluations varied based on peers' ability related traits and, in some cases, expertise. Across studies, younger and older children reported high ability evaluations despite relative failure.

These studies uniquely document that with age, peer characteristics matter for children's responses to relative failure. Moreover, children's conceptions of ability are a key factor in the emergence of social comparative feedback as a tool for self-evaluation. Although there is currently no comprehensive developmental model of social comparison, the current findings can be interpreted in the context of relevant developmental theories of ability conceptions, reflection, and self-awareness. Additionally, the studies contribute to adult social comparison models by providing insight about mechanisms involved in the development of social comparison. Below, I discuss how extant theories and models are related to three main aspects of the findings: age-related change in the impact of peer characteristics, the limited effects of expertise as compared to traits, and the overgeneralization of irrelevant traits in children's self-evaluations.

Ability Conceptions as a Mechanism of Social Comparison Development

The current studies make a novel contribution to the social comparison literature by providing insight into the role of ability conceptions in the development of social comparison. Although ability conceptions are thought to be important to the development of social comparison sensitivity (e.g., Butler, 1989), little research has actually addressed this hypothesis directly, particularly in early childhood. The current studies provide support for ability conceptions as a pivotal developmental factor in children's emerging sensitivity to comparative feedback. Specifically, the studies suggest that the provision of expertise, as compared to ability related traits, likely cues reflection about different ability conceptions across early and middle childhood because of the differences in the extent to which these characteristics are essentialized. The provision of expertise information likely creates a context in which malleable ability interpretations are accessible (Lockhart et al., 2016), thereby limiting the effects of comparative feedback on younger and older children's self-evaluations (e.g., inconsistent and less robust effects in Exp. 1 as compared to Exp. 2). Conversely, trait information may cue more malleable ability reasoning in younger children and essentialized ability reasoning in older children, as these are the predominant ways in which children view ability related traits at these ages (Gelman et al., 2007). Therefore, trait information results in more robust effects of comparative feedback than expertise for older, but not younger children's self-evaluations.

Children's reliance on ability explanations of relative failure may be influenced by developments in executive functioning (e.g., inhibition and cognitive flexibility). According to the Hierarchical Competing Systems Model (HCSM), behavior is guided via two systems: the habit and representational systems (HCSM; Marcovitch & Zelazo, 2009). The habit system relies largely on previous experience and typically guides behavior, unless it is overridden by the representational system, which largely relies on conscious reflection. When children have sufficient attention and cognitive control, environmental cues may evoke reflection and override prepotent responses. Initially, HCSM was used only to describe the development of executive functioning, but it has since been applied to the social domain (e.g., Richardson, Mulvey, & Killen, 2012). In a social context, reliance on familiar performance schemas may represent a habit-based response (e.g., attributions of ability as the cause of performance discrepancies). This habit may be overridden via the representational system that enables children to reflect on the available evidence (e.g., peer expertise) rather than responding impulsively. As executive control skills mature, children may be more likely to reflect on such evidence (Boseovski & Marcovitch, 2012). This may explain in part why older children, but not younger children, were sensitive to peer expertise and ability related traits.

Given young children's limited executive functioning skills, more elaborate or essentialized ability cues (e.g., gender) may be necessary to increase reflection on the ability schema in early childhood. Although no studies have examined this proposition directly, Heyman & Compton (2006) found that environmental cues (i.e., questioning children about task difficulty as a cause of relative failure) could alter even young children's reliance on effort versus ability schemas in reasoning about achievement. Similarly, the finding that gender information influenced preschoolers' responses to social comparison suggests that highly essentialized environmental cues may elicit an ability schema in young children (Rhodes & Brickman, 2008). Indeed, children report coherent essentialist beliefs about gender (Taylor et al., 2009) earlier in life than they do for traits (Gelman, et al., 2007).

Three main aspects of the current findings provide support for the proposition that ability conceptions underlie the development of social comparison. First, both studies document the emergence of comparative feedback as influential to social comparison between early and middle childhood. This converges with previous findings that conceptions of ability as fixed emerge between these same developmental periods (Nicholls, 1978). Second, participants in the current studies showed evidence of this same developmental shift in ability conceptions. Specifically, older children were more likely than younger children to provide ability explanations for real life academic outcomes (i.e., Entity/Incremental task), whereas younger children rarely provided such explanations. Although even older children provided fairly low rates of ability explanations for academic outcomes, the Entity/Incremental task only assesses one aspect of essentialism (i.e., malleability). Thus, the assessment of various essentialist beliefs (i.e., beliefs that ability related traits are innate, biologically based, and stable across time, Gelman, et al., 2007) would likely result in more robust evidence of essentialism in this age group.

Third, the provision of expertise information as compared to ability related trait information not only affected self-evaluations differently, but also altered the types of explanations children provided. When expertise was made salient, younger and older children explained their own capabilities with explicit reference to ability (e.g., "I'm smart") as well as effort (e.g., "I do them all the time"). Conversely, when trait information was provided, younger children largely explained their capabilities in terms of effort, whereas older children largely referred to ability. This provides evidence that expertise likely cued younger and older children to reflect on the importance of practice because it is not conceived of in an essentialist way. In contrast, the provision of essentialized ability related traits cued older children to reflect on the importance of inherent skill. Developmental changes in positivity and reflection on fixed ability are likely fostered by parents' and teachers' emphasis on personal growth in early childhood and relative performance in middle childhood (Cimpian, in press).

The current findings can also inform the vast literature on theories of intelligence. Entity theories of intelligence (i.e., assumption that intelligence is fixed) promote the avoidance of challenges and possible failure (for review, see Yeager & Dweck, 2012). Conversely, incremental theories of intelligence (i.e., assumption that intelligence is something that can be developed over time) promote an appreciation of challenges as learning opportunities. Incremental theories are beneficial to academic outcomes, particularly in instances of academic failure (Blackwell et al., 2007). Encouragement of children to focus on the expertise of others, as opposed to their ability related traits, may foster incremental views. Further, the current findings suggest that incremental mindsets serve to improve academic resilience in part by decreasing the negative impact of upward social comparisons.

Expertise and Ability as Related Concepts

The findings that expertise and ability related traits had some similar effects on children's self-evaluations suggests that these two types of information are conceptually related. With age, the provision of characteristics that indicated low competence (i.e., novice status or negative traits) resulted in lower performance evaluations than the provision of high competence characteristics (i.e., expert status or positive traits), although this was limited to the familiar domain for 10-year-olds in Experiment 1. Further, children demonstrated similar age-related changes in their use of these characteristics to explain peer performance. Integration of these characteristics in a similar framework will require further inquiry into how children perceive expertise and ability related traits as related across development. Given the current findings and previous research, there are at least three ways that these characteristics are likely to be viewed as increasingly related between early and middle childhood.

First, as children age, they may begin to appreciate ability as a causal factor in achieving expertise. Early in life, these two concepts are not likely well differentiated and effort is conceived of as the most important factor in obtaining either expertise or ability. As children age, they generally view high ability as an indicator that an individual needs less time and effort to achieve high performance on a particular task (Nicholls & Miller, 1984). Thus, similar conceptions may develop for children's beliefs about ability as influential to the mastery of specialized knowledge. For example, an individual with high ability may be expected to gain expertise more quickly and with less effort than an individual with low ability. Although even young children use information about an individual's traits to infer their areas of expertise (e.g., a smart individual is expected to have different knowledge than a nice individual; Danovitch & Keil, 2007), children's beliefs about ability related traits as a *causal* factor in the attainment of expertise (e.g., expertise is achieved faster and/or with less effort when ability is high) have not been examined.

Second, with age, children may be better able to make specific ability-to-expertise inferences (i.e., use ability related traits to make inferences about the type of expertise an individual may have). Given that ability related traits are increasingly essentialized with age (i.e., seen as biologically based, unchangeable, innate, and stable across time and situations), they may readily guide inferences about an individual's mental states, including knowledge. Indeed, it is well documented that even 5-year-olds use traits readily to make inferences about emotions (Yuill & Pearson, 1998). Further, preschoolers sometimes attribute expertise based on irrelevant traits (e.g., expect a "nice" expert to know more than a "mean" expert; Landrum, Pflaum, & Mills, 2016). The few other studies that have assessed how children conceptualize ability related traits as relevant to expertise have largely focused on children's beliefs about "smartness" (e.g., Danovitch & Keil, 2007). This particular ability related trait is broad and may be viewed as a domain general skill (i.e., intelligence may suggest that an individual has, or can obtain, expertise in a number of domains). With age, other ability related traits may be viewed as more closely related to specific areas of expertise (e.g., artistic individuals should be expected to know a lot about drawing and painting, but not other domains). This proposition is likely given that in middle childhood, more narrow domains of expertise are understood (Keil et al., 2008) and trait distinctions also become more sophisticated (e.g., distinguishing smart and nice; Kurtz-Costes et al., 2005).

Third, expertise-to-ability to inferences also likely improve with age, but may be more difficult than ability-to-expertise inferences because expertise is not essentialized like ability related traits. Thus, the provision of a trait label may make generalizations to expertise easier than the reverse. This process may be similar to children's reasoning about the relations between behaviors and traits. Specifically, children more easily make trait-to-behavior inferences (e.g., infer that a nice individual will share) than behavior-to-trait inferences (e.g., infer that an individual who shares is nice; Liu et al., 2007). It may also be appropriate to make expertise-to-ability inferences more cautiously than ability-to-expertise inferences because, in reality, individuals could feasibly know a lot about a domain in which they have little skill (e.g., an art curator may know a lot about art history and techniques, but they may not be artistic). Thus, like behavior-to-trait inferences, children may require greater frequency information to make expertise-to-ability inferences (Boseovski & Lee, 2006).

Relevance of Age-Related Change in Positivity for Social Comparison

A critical aspect of adult social comparison theories is perceived similarity. Specifically, an individual's sense of similarity to a comparison other can serve as a trigger for assimilation (i.e., belief that one can attain another's level of achievement), which results in positive, rather than negative, self-evaluations after relative failure

(Mussweiler 2003). Young children's overly positive self-evaluations in the current study, regardless of peer characteristics, may suggest that such a process is not relevant to social comparison outcomes in early childhood. In these studies, peers were chosen as the comparison targets given their salience as a reference group in early as well as late childhood (e.g., school setting; Pomerantz et al., 1995). However, younger children still may not engage in similarity testing to the same extent as older children and adults. Thus, peer similarity, regardless of peer characteristics, would have little influence on self-evaluations. It is possible that younger children generally believe that they can achieve what others have achieved regardless of perceived similarity.

Younger children's optimism may be influenced by their interactive experiences with others, which promote self-awareness and may inform how children respond to social comparison across development. Decety & Sommerville's (2003) self-awareness model presents four discrete content areas of self-awareness (i.e., physical, capabilities, traits, and social roles). In each content area, interactions with others that promote reflection help to develop children's distinct self-other representations. The model can be further specified to take into account the divergent developmental trajectories associated with each content area. For example, it is likely that young children's interactions with others serve to promote reflection on variability in mental states (e.g., desires, beliefs; Lagattuta, Sayfan, & Blattman, 2010), more often than capabilities (e.g., negative performance feedback; Stipek & MacIver, 1989). With age, interactions that emphasize differences in self-other capabilities may become more frequent. Peer comparisons may be one type of interaction that serves to inform self-awareness. Positivity and a lack of reflection on similarity or dissimilarity is likely fostered by the ways in which parents and teachers emphasis personal growth rather than relative performance in early childhood (Boseovski, 2010; Cimpian, in press).

As children age, an increased awareness of similarities with others, and differences from others, may in part underlie the emergence of sensitivity to comparison peer characteristics. Indeed, perceived similarity affects older children's reasoning about peers in many contexts (e.g., desire for intergroup contact; Stathi, Cameron, Hartley, & Bradford, 2014). It is likely that assimilation toward the comparison peer played a role in the self-evaluations of older children. In particular, when comparison peers were labeled positively (i.e., high expertise or positive traits), older children's self-evaluations were overwhelmingly positive and did not differ significantly from those of younger children. Older children may have more confidence that they can attain a peer's level of success when the peer is said to possess desirable traits (e.g., smart and athletic), regardless of whether they are relevant to the task at hand, because they view these types of peers as similar to themselves. This is consistent with findings that other peer attributes that are related to perceived similarity, but not the performance domain (e.g., friendship status; Altermatt & Pomerantz, 2003), are linked to children's academic evaluations. Trait labels may enhance similarity perceptions more than expertise because traits are easily accessible categories to which children are often told they belong (Schunk, 1994). This may account for why older children were more certain that they could win a competition when outperformed by peers with positive rather than negative traits, but this finding was reversed in the context of peer expertise (i.e., children were more certain that they could win a competition when they were outperformed by a novice rather than an expert).

Similarity may emerge as a salient cue in late childhood as children begin to experience more frequent critical performance feedback or engage in upward comparisons. These experiences may foster an awareness of distinctions between the self and others. In the current studies, older children's self-evaluations were more consistently influenced by peer expertise in the familiar domain (i.e., drawing) than the novel domain (i.e., flerping). This may reflect greater distinction in self-other representations of their drawing abilities as a result of prior experiences (e.g., parental or peer criticism, upward comparisons with siblings or peers), thus leading to differentiated self-evaluations based on peer expertise. In contrast, children had no reference point or prior experience to inform their representations of "flerping" ability.

Changes in socialization practices across early and middle childhood also likely lead to developmental differences in motivations in self-evaluative contexts. Indeed, there is evidence that younger children's motivations in a social comparison setting center around learning about a task and improving performance, whereas older children focus on outperforming others (Feldman & Ruble, 1977). The age-related changes in these motivations occur at the same time that teachers' achievement criteria also shift from a focus on self-improvement to meeting normative standards (Blumenfeld et al., 1983; Stipek & MacIver, 1989). Peer expertise and traits are likely viewed as irrelevant when an individual's motivation is self-improvement, whereas these types of information are considered important for self-evaluation. Further research is necessary to establish the contributions of the mechanisms discussed (e.g., executive function and socialized achievement motivations) toward the differential treatment of expertise and trait information in self-relevant contexts across development.

Limitations and Future Directions

The current studies provide fruitful directions for research on children's ability conceptions. Further work is necessary to establish how children perceive the relation between expertise and ability related traits. Future studies could address systematically children's willingness to make ability related trait attributions when provided with expertise information (i.e., expertise-to-ability) and vice versa (i.e., ability-to-expertise). Additionally, further research is necessary to establish children's beliefs about ability as a causal mechanism in the development of expertise. Specifically, this work could address whether children believe that individuals labeled with particular ability related traits (e.g., smart) would be able to master specific knowledge at faster rates and with fewer effort than individuals labeled with other traits (e.g., nice or artistic). The inclusion of relevant and irrelevant ability related traits would help to establish whether children view such traits as domain general skills as opposed to domain specific skills.

The current studies also provide a number of avenues for future social comparison research, four of which are discussed below. First, additional research is needed to establish the role of ability conceptions in the development of social comparison. The degree to which individual differences in ability conceptions affected reactions to social comparison could not be examined in the current studies due to the small number of children that reported entity beliefs. This low response may reflect the fact that only one aspect of essentialism was examined (i.e., malleability). Future research could examine how coherent essentialist beliefs about ability related traits may underlie children's consideration of comparative feedback. Another possibility is to manipulate children's ability beliefs to assess the systematic influence of ability conceptions on the use of comparative feedback. One promising way to manipulate ability beliefs is to adopt a paradigm used by Heyman & Compton (2006) in which they were able to elicit fixed ability conceptions in preschoolers. In this study, children were cued to reflect on ability as a fixed trait through the presentation of questions concerning whether performance discrepancies are due to task difficulty. If this procedure elicits fixed ability beliefs, then subsequent social comparison should be influential to self-evaluations even in young children.

Second, it is important to identify which level of expertise (i.e., high vs. low) or trait type (i.e., positive vs. negative) accounts mainly for the current findings. The overall pattern of results, considered in the context of previous studies, seems to suggest that self-evaluations *improve* when peers are described with high expertise or positive traits (relative to unspecified peer characteristics). This is likely the case given that older children's self-evaluations were as high as young children's self-evaluations in these cases. Conversely, when peer characteristics are not described, older children report lower self-evaluations than younger children after relative failure (Ruble et al., 1994). It is also possible that failure relative to novices and peers with negative traits impairs self-evaluations even further, but this cannot be determined from the current data because an unspecified peer condition was not included. Thus, future studies should include such a condition.

Third, as discussed above, perceived similarity may play a role in children's responses to relative failure, however this was not assessed directly in the current studies. Indeed, perceived similarity may account in part for the emergence of the effects of comparative feedback on self-evaluations. Thus, it is critical that future work directly assess children's perceived similarity to comparison targets. Such an assessment would allow researchers to examine how perceived similarity may moderate the effects of comparison information on self-evaluations. Further, if perceived similarity is an underlying factor that drives the effects of social comparison in childhood, then peer characteristics may also be important for children's responses to relative success. For example, if a child outperforms another peer whom they perceive as particularly similar to themselves, then they may form somewhat negative self-evaluations regardless of their superior performance.

Fourth, future research should assess whether domain significance underlies, in part, age-related change and individual differences in children's reactions to comparative feedback, given that some of the current findings differed by domain (i.e., 10-year-olds' disregard to feedback in the novel domain in Exp. 1). In particular, it may be important to examine children's responses to social comparison in domains that are more significant to their daily lives. The current studies established that perceptions of task difficulty across were similar age groups, and thus could not explain developmental differences in children's self-evaluations. However, children's beliefs about the importance of different tasks likely change across development. Younger children may need more relevant tasks that they view as important to consider comparative feedback. Perceived importance of a domain has been shown to affect older children's, but not younger children's, responses to social comparison (Bers & Rodin, 1986). However, few domains have been examined. Perhaps younger children need feedback in more familiar and significant areas, such as writing their name or riding a bike.

Given the pervasiveness of social comparison in the classroom (Frey & Ruble, 1985) and Western culture at large, these results have practical implications for children's daily lives. Although knowledge about one's relative failure can sometimes be detrimental, it also provides the opportunity for children to identify areas that could be improved. Although not always the case, a major goal of social comparison is to determine accurate self-evaluations (Festinger, 1954). Therefore, it is critical to identify circumstances under which children are able to learn from negative feedback, rather than ignore it or respond helplessly. Further, it is important to establish how these circumstances may differ across development and across individuals. It may be particularly informative to investigate the role of learning orientations (Kamins & Dweck, 1999) and persistence (i.e., grit; Duckworth, Peterson, Matthews, & Kelly, 2007) in social comparison, and self-evaluation, in childhood.

Conclusion

In sum, the present research contributes to the current literature on the development of social comparison. In particular, the findings emphasize the complex role of comparative feedback as a means of self-evaluation across early and middle childhood.

Younger children maintain positive self-views despite relative failure, whereas older children consider who outperformed them. Age-related changes in positivity, as fostered by socialization practices, are likely relevant to ability conceptualization and thereby, resilience in relative failure situations. The current findings provide further evidence that ability conceptions are a mechanism of age-related change in reactions to social comparison. At a theoretical level, these results contribute to our understanding of how expertise and ability conceptions are related in early to middle childhood. From a practical standpoint, the findings could inform how parents and educators frame (or reframe) relative failure to focus older children on malleable causes of performance (e.g., expertise) and lessen detrimental effects on self-evaluations.

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APPENDIX A

EXPERIMENT 1: PEER EXPERTISE INFORMATION

Expert Novel Domain

"Casey is a boy your age. He goes to a school like yours and likes to play with his friends. He knows a lot about flerping. After school, he often takes special lessons on how to flerp. He knows how to flerp with lots of discs and posts. He flerps in front of lots of people. He has won competitions for his flerping."

Expert Familiar Domain

"Lee is a boy your age. He goes to a school like yours and likes to play with his friends. Lee knows a lot about drawing. He has taken the art class at school that all kids take, but also other special art classes outside of school. He knows how to draw lots of things. He shows his art to a lot of people. He has his won awards for his drawings."

Novice, Novel Domain

"Casey is a boy your age. He goes to a school like yours and likes to play with his friends. Casey doesn't know a lot about flerping. When he came in to see us, he had never heard of flerping before and he had never tried flerping. It was the first time he ever flerped."

Novice Familiar Domain

"Lee is a boy your age. He goes to a school like yours and likes to play with his friends. Lee knows a little about drawing. He has taken the art class at school that all kids take, but no other special art classes outside of school. He knows how to draw a few things. He only shows his art to a few people. He's never put his art in a competition to try and win a prize."

APPENDIX B

SELF-EVALUATION EXPLANATION CODING AND EXAMPLES

(EXPERIMENT 1 AND 2)

Affect & Performance

Positive Performance: “I got a lot right” “I did a good job”

Negative Performance: “I made a lot of mistakes” “I didn't think it turned but so well”

Effort/Practice: “I tried my best” “I’ve never played flerping before” “I draw all the time”

Enjoyment: “The game was fun” “I liked that game”

Miscellaneous: “I got 9 stars” “I feel that’s where I belong” “I listened”

Don’t know (not included in analyses): “I’m not sure” “I have no idea”

Ability

Practice: “I do them all the time” “I’m used to playing them a lot”

General Skills/Abilities: “I’m smart” “I’m good at figuring out how to solve problems” “I'm not very good at drawing. It’s not my best strength” “I’m very good at drawing”

Enjoyment: “I like puzzles” “I don't like art that much” “It’s fun to do”

APPENDIX C

ENTITY INCREMENTEAL CODING

Questions

1. Think of kids in your class who get a lot wrong on their schoolwork. Why do you think they get a lot wrong?
2. Why do you think you get things on your schoolwork wrong?
3. Think of kids in your class who get a lot right on their schoolwork. Why do you think they get a lot right?
4. Why do you think you get things on your schoolwork right?

Coding

Process: "They pay attention." "They study really hard." "They don't listen" "They're not trying hard"

Ability: "They are smart" "They are academically gifted" "They're dumb or have a low IQ"

APPENDIX D

PEER TRAIT DESCRIPTIONS IN EXPERIMENT 2

Smart:

> Casey is a boy your age. Casey is a smart boy. He knows lots of things and does very well in school.

Not smart:

> Casey is a boy your age. Casey is not a smart boy. He doesn't know very many things and he does poorly in school

Athletic:

> Casey is a boy your age. Casey is an athletic boy. He is very good at running and jumping and does very well at sports.

Not athletic:

> Casey is a boy your age. Casey is not an athletic boy. He isn't very good at running and jumping and does poorly at sports.