

The Impact of Generic Language About Ability on Children's Achievement Motivation

Andrei Cimpian
University of Illinois at Urbana–Champaign

Nuances in how adults talk about ability may have important consequences for children's sustained involvement and success in an activity. In this study, I tested the hypothesis that children would be less motivated while performing a novel activity if they were told that boys or girls in general are good at this activity (generic language) than if they were told that a particular boy or girl is good at it (non-generic language). Generic language may be detrimental because it expresses normative societal expectations regarding performance. If these expectations are negative, they may cause children to worry about confirming them; if positive, they may cause worries about failing to meet them. Moreover, generic statements may be threatening because they imply that performance is the result of stable traits rather than effort. Ninety-seven 4- to 7-year-olds were asked to play a game in which they succeeded at first but then made a few mistakes. Since young children remain optimistic in achievement situations until the possibility of failure is made clear, I hypothesized that 4- and 5-year-olds would not be affected by the implications of generic language until after they made mistakes; 6- and 7-year-olds, however, may be susceptible earlier. As expected, the older children who heard that boys or girls are good at this game displayed lower motivation (e.g., more negative emotions, lower perceived competence) from the start, while they were still succeeding and receiving praise. Four- and 5-year-olds who heard these generic statements had a similar reaction, but only after they made mistakes. These findings demonstrate that exposure to generic language about ability can be an obstacle to children's motivation and, potentially, their success.

Keywords: generic language, motivation, stereotype threat, children

Seemingly minor differences in what adults say to children can have striking effects on their motivation. To illustrate, praising children's success on a drawing task with "You are a good drawer" causes them to react more negatively to later mistakes than praising them with "You did a good job drawing" (Cimpian, Arce, Markman, & Dweck, 2007). The first sentence, although quite similar to the second, subtly implies the existence of an underlying skill or talent. This talent may then be threatened by the mistakes, leading to a stronger reaction. Most prior researchers investigating the influence of language on children's self-cognitions and motivation have focused on the wording of praise and criticism (e.g., Cimpian et al., 2007; Kamins & Dweck, 1999; Mueller & Dweck, 1998; Schunk, 1983). It is likely, however, that adults' words are

influential even when they do not comment directly on children's performance. For instance, talk about who is expected to possess an ability, and especially about whether that ability is tied to membership in particular social groups, may also shape children's achievement behavior. In the present study, I investigated the motivational consequences of talking about abilities using category-referring generic language (e.g., "Girls are good at X") versus non-generic language (e.g., "There is a girl who is good at X"). Generic language was hypothesized to impair children's motivation because it signals that they are expected to perform at a certain level due to their group membership—a potentially threatening stereotype—and because it implies that the abilities talked about are the result of stable traits rather than effort.

Features of Generic Language

Before elaborating this hypothesis, I highlight a few features of generic sentences (or, simply, generics). First, generics express facts about entire categories, which is notable because such facts cannot be acquired by perceptual means (Gelman, 2004; Prasada, 2000): One never observes the category *girl* being good at X but rather just particular instances of this category doing well on particular occasions. In contrast, a generic sentence such as "Girls are good at X" can relay precisely this type of category-wide fact, even in the absence of other supporting evidence.

Furthermore, the information learned from generics is particularly robust, in that it is resistant to counterexamples (e.g., Gelman, 2004; Krifka et al., 1995). One can hold on to the belief that girls

Many thanks to the University of Illinois at Urbana–Champaign for providing generous financial support; to Cindy Fisher, Vikram Jaswal, Ellen Markman, Meredith Meyer, Eva Pomerantz, and Joe Robinson for helpful comments on the article; to Ben Boldt and the Cognitive Development Lab team for their capable assistance in collecting and coding the data; to the children and families who participated in this research; and to the principals, teachers, and staff at the following schools in the Champaign–Urbana area: Barkstall Elementary, Child Development Laboratory, Early Learning Center, South Side Elementary, Unity West Elementary, and Washington Early Childhood.

Correspondence concerning this article should be addressed to Andrei Cimpian, Department of Psychology, University of Illinois at Urbana–Champaign, 603 East Daniel Street, Champaign, IL 61820. E-mail: acimpian@psych.illinois.edu

are good at *X* even in the face of evidence to the contrary. In an experimental illustration of this idea (Chambers, Graham, & Turner, 2008), children generalized a novel feature introduced via a generic statement (e.g., “Pagons are friendly”) just as strongly when they had been told about an exception as when they had not; features introduced via non-generic statements (e.g., “These pagons are friendly”) were not so robust.

In addition to having powerful semantics, generic sentences are common in speech to children, making up about 3%–4% of the total number of utterances they hear (Gelman, Chesnick, & Waxman, 2005; Gelman, Coley, Rosengren, Hartman, & Pappas, 1998; Gelman, Goetz, Sarnecka, & Flukes, 2008; Gelman & Tardif, 1998; Pappas & Gelman, 1998). There is also specific evidence that parents talk generically about social categories. For instance, when parents of 4- and 6-year-olds were asked to read picture books depicting boys and girls engaging in different activities (Gelman, Taylor, & Nguyen, 2004), more than 15% of the utterances they produced were generic (e.g., “Can girls play football?”). Since children can distinguish reliably between generic and non-generic sentences by preschool age (e.g., Cimpian & Markman, 2008; Gelman & Raman, 2003; Hollander, Gelman, & Star, 2002), it may well be that they are sensitive to the messages carried by this generic input.

Mechanisms Linking Generics to Motivation

Why might generics affect children’s motivation? Generic statements about social categories have prescriptive force—that is, they “express societal expectations” about what people of different groups can and should do (Gelman et al., 2004, p. 75). With respect to abilities, then, generics might signal to children how they are expected to perform as a result of their group membership. When such stereotypes are activated in an achievement situation, they trigger a cascade of defensive emotional and behavioral reactions. The threat of confirming the low expectations set up by a negative stereotype (e.g., Steele & Aronson, 1995) has been shown to lead to increased vigilance, anxiety, and frustration (e.g., Bosson, Haymovitz, & Piel, 2004; Marx & Stapel, 2006), as well as avoidance of the task (e.g., Davies, Spencer, Quinn, & Gerhardtstein, 2002; Murphy, Steele, & Gross, 2007). Even young elementary school children seem to be vulnerable to these stereotypes (Ambady, Shih, Kim, & Pittinsky, 2001). It is not only negative stereotypes that have this effect, though: Having to live up to the high expectations set up by a positive stereotype, and the prospect of failure to do so, can also be threatening (e.g., Brown & Josephs, 1999; Cheryan & Bodenhausen, 2000). For example, although Asian Americans’ math abilities are positively stereotyped, Asian American undergraduates performed worse on a math test—relative to a control group—if their ethnicity was made salient prior to the test (Cheryan & Bodenhausen, 2000). Positive stereotypes are particularly likely to become threatening when they are activated blatantly, as would certainly be the case if, say, a girl heard an explicit generic statement such as “Girls are good at *X*” (see Shih, Ambady, Richeson, Fujita, & Gray, 2002, for discussion). In sum, if generic sentences about ability are effective in creating new ability stereotypes (or in activating preexisting ones), it is plausible that the negative motivational consequences would follow, regardless of the valence of the stereotypes.

A second mechanism linking generics to motivation may be the following: Generics often express essential attributes of their referents (Dahl, 1975; Gelman, 2004; Krifka et al., 1995; Prasada, 2000; cf. Prasada & Dillingham, 2006), and children are sensitive to this aspect of their meaning (Cimpian & Markman, 2009; Gelman, Raman, & Gentner, 2009; Hollander, Gelman, & Raman, 2009). What might this mean with respect to abilities? In some very recent work (Cimpian & Markman, in press), preschoolers were told either that a particular boy or girl or that boys or girls in general were good at a novel activity. Children were then asked to explain the origin of this ability. Those who heard the ability talked about in generic terms (e.g., “Boys are good at a game called *gorp*”) tended to refer to stable traits (e.g., boys are smart), which suggested that abilities introduced via generics do indeed become construed as “essential” (Gelman, 2003)—as rooted in the referents’ internal biological nature. In marked contrast, children who heard non-generic sentences (e.g., “There’s a boy who is good at a game called *gorp*”) were more likely to emphasize in their explanations effort-based processes such as learning and practice (e.g., his mom taught him how to play it). This difference in how children think about an ability based on the language used to describe it may well translate into a difference in how they actually behave in achievement settings. For example, if generics imply being good at *gorp* is the result of a stable internal attribute such as being smart, then children who are exposed to this type of language may think that their performance at *gorp* will reveal how smart they are. As a result, they may become more anxious about the outcome, more vigilant for signs that they are failing, less likely to enjoy the activity, and more upset and quicker to give up when they make mistakes (see Dweck, 1999, 2006). Because non-generic sentences seem to foster thinking about the role of effort in becoming good at *gorp*, children exposed to this type of language may be less inclined to measure their traits from their performance. Thus, they may be able to avoid some of these maladaptive tendencies.

Note that neither of these mechanisms is tied to a particular categorical distinction. Although this study uses gender as the relevant category because of its familiarity and salience to children (e.g., Bradbard & Endsley, 1983; Gelman, Collman, & Maccoby, 1986; Martin, Eisenbud, & Rose, 1995; Rhodes & Brickman, 2008), similar predictions could be made about other social categories that children may know that they belong to. For example, generic sentences about ethnic groups might also affect children’s motivation, especially since these groups are a common target of stereotypes related to academic performance, both positive (e.g., Asian Americans; see Cheryan & Bodenhausen, 2000) and negative (e.g., African Americans; see Steele & Aronson, 1995).

Age-Related Developments in the Influence of Generics?

Another aim of this research was to investigate developmental trends in the influence of generic language on children’s motivation. One reason to expect such trends is that, over the preschool and elementary school years, children’s perceptions of their own abilities undergo considerable changes. Preschoolers and kindergartners grossly overestimate their competence (e.g., Flavell, Friedrichs, & Hoyt, 1970; Nicholls, 1978) and thus remain optimistic about the outcome of achievement situations until their

failure is made very obvious, such as when a teacher explicitly points out their mistakes (Burhans & Dweck, 1995; Heyman, Dweck, & Cain, 1992). Owing to this relative optimism, younger children may not display the performance-related anxiety and self-doubt that generic language is hypothesized to induce until the prospect of failure is made clear. Older children, on the other hand, are more aware of the possibility that their performance could be inadequate (e.g., Benenson & Dweck, 1986; Flavell et al., 1970; Nicholls, 1978; Stipek, 1981). For instance, when Nicholls (1978) asked children of various ages to rank their reading ability relative to others in their class, 5-year-olds' average self-rated rank was 3.06 (out of 30 children), while 7-year-olds' was a more realistic 9.06. Similarly, when shown a set of 10 pictures and asked how many they would be able to remember later, about 60% of preschoolers and kindergartners said they would be able to remember all of them; only 25% of second graders were so confident (Flavell et al., 1970). More accurate self-perceptions are likely to bring along worries about one's ability level. Generic language may exacerbate these worries because of the expectations it signals, leading to a decrement in motivation even when there is no objective reason for concern (i.e., even before children make any mistakes or receive any criticism).

Summary of Procedure and Predictions

In this study, 4- to 7-year-old children were asked to play a novel pretend game in which they did well at first but then made a few obvious mistakes. The experimenter talked about ability at this novel game either in generic terms (e.g., "Girls are really good at this game!") or in non-generic terms (e.g., "There's a girl who is really good at this game!"). The predictions were as follows: Generic language should affect the motivation of all children, regardless of age. However, children's age may determine when during the game they start showing the detrimental effect of generics. Owing to their more realistic self-perceptions (which may lead them to wonder whether their abilities are sufficient), 6- to 7-year-olds should be affected by generic language from the very beginning, even while they are still doing well. The 4- to 5-year-olds, on the other hand, should show the effect of the language manipulation only in reaction to the mistakes, after the possibility of failure is made apparent.

Method

Participants

Forty-nine 4- and 5-year-old children (24 girls; mean age = 5 years 1 month; range = 4 years to 5 years 11 months) and forty-eight 6- and 7-year-old children (24 girls; mean age = 6 years 11 months; range = 6 years to 8 years) participated in this study. One additional child was tested but not included in the final sample because of experimenter error. Participants were recruited either from a database of families who had previously participated in developmental studies at the University of Illinois or from preschools and elementary schools in the Champaign-Urbana area. All participating children were native English speakers. Although demographic information was not collected formally, the participants were predominantly European American and represented a range of socioeconomic backgrounds.

Materials, Design, and Procedure

Children were told they would play a pretending game called *gorp* in which a wooden doll that represented them (and that they handled) would be asked to "make different things out of paper" by a teacher-doll (that the experimenter handled).

Two crucial variables were manipulated, both between subjects: First, the teacher-doll talked about *gorp* ability in generic terms (e.g., "Girls are really good at this game! Girls are really good at the *gorp* game") for half of the children and in non-generic terms (e.g., "There's a girl who is really good at this game! She is really good at the *gorp* game") for the other half. These statements were always positive in valence (i.e., about who is good at the game). The second variable manipulated was whether the positive ability statements were about children of the same gender as the participants (which signals high performance expectations) versus of the opposite gender (which signals low performance expectations). The latter statements signaled low expectations only indirectly: For example, a boy who hears that girls are good at *gorp* might infer that his own gender is not. Albeit indirect, this means of conveying negative stereotypes was preferred over making potentially distressing statements such as "Boys are not good at the *gorp* game." Equal numbers of children were randomly assigned to the four conditions that resulted from crossing these two variables. Random assignment was stratified by gender (male vs. female) and age group (4- and 5-year-olds vs. 6- and 7-year-olds).

Aside from the nature of the ability statements, the four conditions were identical: The experimenter read aloud five stories in which the teacher-doll asked the child-doll to play *gorp* (see Table 1 for excerpts from the script). The children were given a small square of colored paper (about 3 cm × 3 cm in size) for each story, out of which they pretended to make the requested object (e.g., an apple, a cat). Some children actually manipulated the paper during the stories (e.g., folding it in half), but they were not required to. In the first three stories, the child-doll was said to succeed in completing the object and was praised by the teacher (e.g., "That really looks like an apple. You did a great job playing the *gorp* game"). In the last two stories—which were designed to make the possibility of failure apparent even to the youngest participants—the child-doll was said to make a mistake, prompting criticism from the teacher-doll (e.g., "That doesn't look like a cat; it has no ears"). Since children did not actually create any objects during the task (i.e., they just pretended to make them), the stories simply stated that there was a mistake.

The teacher-doll talked about who is good at *gorp* when the game was first introduced and then once during each of the stories (see the underlined statements in Table 1).

Children were asked two sets of questions, one before the mistake stories and one after. The questions, adapted from Cimipian et al. (2007) and Kamins and Dweck (1999), provided a broad assessment of children's motivational state, including their perceived competence, their liking for the game, their emotional reactions, and their strategies for fixing mistakes (see Table 2 for details).

At the end of the session, the experimenter read the mistake stories again, except this time the child-doll received praise from the teacher-doll for completing the task successfully.

Table 1

Excerpts From the Script: Introduction to the Gorp Game, Sample Success Story, and Sample Mistake Story

Type	Excerpt
Introduction to the gorp game	[The experimenter speaks as the teacher–doll:] “[Child’s name], I wanted to tell you about this game that I ask children to play sometimes. It’s called <i>gorp</i> , and it’s a lot of fun. In this game, you have to make different things out of paper. So this is how you play it: I give you a bunch of little pieces of paper, and I tell you what you should make out of them. For example, I could ask you to make a butterfly, or a ball, or other things. When you’re done, you can show me what you made. And that’s how you play the gorp game! Oh, and here’s something else about the gorp game: [e.g.,] <u>Girls are really good at this game! Girls are really good at the gorp game.</u> ”
Sample success story	On another day when you’re at school, Teacher Debbie comes to you and says, “[Child’s name], I’d like you to play gorp now. Here is some red paper [hand child the red piece of paper], and I’d like you to make an apple for me out of this paper” and you say, “OK, teacher.” Before she leaves, the teacher also says, “And remember what I said before: [e.g.,] <u>Girls are really good at this game! Girls are really good at the gorp game.</u> ” After the teacher left, you started playing the gorp game. First, you used the paper to make a red circle for the apple. Then you made a stem and a leaf coming out of the top. You wanted to show the teacher the apple you made, and so you called her and said “Teacher, I’m done with the gorp game! I made an apple for you,” and you looked back at the game and thought to yourself, “Yep, I made an apple.” When Teacher Debbie came over and saw the apple you made, she said, “That really looks like an apple. You did a great job playing the gorp game.”
Sample mistake story	On another day at school, Teacher Debbie comes to you and says, “[Child’s name], I’d like you to play gorp now. Here is some black paper [hands child the black piece of paper], and I’d like you to make a cat for me out of this paper” and you say, “OK, teacher.” Before she leaves, the teacher also says, “And remember what I said before: [e.g.,] <u>Girls are really good at this game! Girls are really good at the gorp game.</u> ” After the teacher left, you started playing the gorp game. First, you used the paper to make a circle for the cat’s face. Next you made the body of the cat. You look at what you did and think to yourself, “Uh-oh, the cat doesn’t have any ears,” but you want to show the teacher how you played the gorp game, and so you call her and say, “Teacher, I’m done with the gorp game! I made a cat for you.” The teacher looks at the cat you made and says, “That doesn’t look like a cat; it has no ears.”

Note. The pretending game in this study was called *gorp*. Stories were adapted from “Subtle Linguistic Cues Affect Children’s Motivation,” by A. Cimpian, H. C. Arce, E. M. Markman, and C. S. Dweck, 2007, *Psychological Science*, 18, 314–316. Copyright 2007 by the Association for Psychological Science, and from “Person Versus Process Praise and Criticism: Implications for Contingent Self-Worth and Coping,” by M. L. Kamins and C. S. Dweck, 1999, *Developmental Psychology*, 35, p. 842. Copyright 1999 by the American Psychological Association. The statements about who is good at gorp (underlined above) were constant across all stories for any one child but varied in genericity and gender across children, depending on their condition. These statements constituted the only difference between the conditions.

Results

To obtain an overall index of children’s motivation, I standardized and then averaged their answers to the pre- and postmistake questions (see Cimpian et al., 2007, for a similar analysis). Higher scores on the resulting pre- and postmistake aggregate measures indicate more adaptive responses to the task (e.g., higher perceived competence, more positive affect). Cronbach’s alphas for the pre- and postmistake aggregates were .77 and .65, respectively, suggesting that these measures had acceptable internal consistency (e.g., Clark & Watson, 1995; Peterson, 1994).

Motivation Before the Mistakes

Each age group’s scores on the premistake aggregate measure were submitted to analyses of variance, with wording (generic vs. non-generic), gender of the ability statement (own gender vs. other gender), and participant gender (boys vs. girls) as between-subjects factors. These analyses of variance tested the prediction that only the older children’s motivation would be sensitive to the language manipulation during this part of the task.

Indeed, younger children’s premistake motivation was not affected by the generic–non-generic manipulation, $F(1, 41) = 0.76$, $p = .785$ (see Figure 1). Since they have no clear reason to worry about their performance, children this age are not yet threatened by the implications of generic language. Older children, however, did

react to the language manipulation even in the premistake assessment, displaying lower motivation in the generic condition ($M = -0.08$) than in the non-generic condition ($M = 0.20$), $F(1, 40) = 4.73$, $p = .036$, $d = 0.62$. That is, despite being told repeatedly that they were doing “a great job playing the gorp game,” the 6- and 7-year-olds who heard the teacher–doll use generic language to talk about who is good at gorp felt less happy and less competent, and liked the game less. In fact, none of the five premistake questions showed a generic advantage (binomial $p = .031$). Also, this generic–non-generic effect did not interact with whether the ability statements were about the child’s own gender ($M_{\text{generic}} = 0.11$ vs. $M_{\text{non-generic}} = 0.28$) or the opposite gender ($M_{\text{generic}} = -0.27$ vs. $M_{\text{non-generic}} = 0.13$), $F(1, 40) = 0.47$, $p = .495$. However, the 6- and 7-year-olds who heard that children of their own gender are good at the game were overall more motivated, regardless of whether the phrasing was generic or non-generic ($M_{\text{own gender}} = 0.19$ vs. $M_{\text{other gender}} = -0.07$), $F(1, 40) = 4.15$, $p = .048$, $d = 0.58$. This last result is consistent with previous research suggesting that children around this age view things associated with their own gender in a more positive light (Bradbard & Endsley, 1983; Martin et al., 1995).

Reaction to the Mistakes

I predicted that the mistake scenarios would prompt the younger children to start worrying about their performance, which might in

Table 2
The Pre- and Postmistake Question Sets

Question	Answer format	Coding	Premistake		Postmistake	
			<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Do you like the apple ^a [cat ^b] you made or do you not like it?	6-point scale	1 = really not like it 6 = really like it	4.91	1.45	3.90	1.99
Did what happened in the apple ^a [cat ^b] story make you feel happy or sad?	6-point scale	1 = really sad 6 = really happy	5.02	1.35	3.31	1.71
Did everything that happened in the apple ^a [cat ^b] story make you feel like you were good at the gorp game or not good at the gorp game?	Forced choice	0 = not good 1 = good	0.89	0.32	0.47	0.50
Did everything that happened in the apple ^a [cat ^b] story make you feel like you were a good [boy, girl] or not a good [boy, girl]?	Forced choice	0 = not good 1 = good	0.97	0.17	0.58	0.50
Do you like the gorp game or do you not like it? ^{a,b}	6-point scale	1 = really not like it 6 = really like it	5.03	1.47	4.80	1.60
On another day, if you had a chance to make one of these again, would you want to make the bus [mistake], or would you want to make the tree [success], or would you want to make the cat [mistake]? ^b	Forced choice	0 = tree [success] 1 = bus or cat [mistakes]			0.49	0.50
If you had a chance to do something tomorrow, would you play the gorp game or would you do something else? ^b	Forced choice	0 = something else 1 = gorp game			0.30	0.46
Think about the story where you made a cat and forgot the ears. What would you do now? ^b	Open ended	0 = helpless ^c 1 = solution oriented ^c			0.78	0.41
Think about the story where you made a bus and forgot the wheels. What would you do now? ^b	Open ended	0 = helpless ^c 1 = solution oriented ^c			0.81	0.39

Note. The pretending game in this study was called *gorp*.

^a These five questions comprised the premistake set. ^b These nine questions comprised the postmistake set. ^c Examples of helpless responses: “I don’t know,” “play my Gameboy,” “play something else.” Examples of solution-oriented responses: “put ears on it,” “fix the cat and put ears on it,” “make ears.” Interrater agreement was 97% (Cohen’s $\kappa = .91$), calculated over all open-ended responses.

turn cause them to become more vulnerable to the implications of generic language. To test this prediction, I analyzed each age group’s standardized postmistake aggregate using analyses of covariance, with the premistake score as a covariate. This analysis estimates children’s reaction to the mistakes per se, adjusting for preexisting differences in motivational state.

As expected, when their mistakes were explicitly pointed out, the 4- and 5-year-olds who had heard generic language (adjusted $M = -0.15$) reacted more negatively than did those who had heard non-generic language (adjusted $M = 0.18$), $F(1, 40) = 6.89, p = .012, d = 0.76$ (see Figure 1). The 4- and 5-year-olds in the generic condition scored lower than those in the non-generic condition on eight of the nine postmistake questions (binomial $p = .020$). This effect seemed somewhat stronger when the ability statements were about the other gender (and thus signaled low expectations; adjusted $M_{\text{generic}} = -0.27$ vs. $M_{\text{non-generic}} = 0.25$) than about children’s own gender (and thus signaled high expectations; adjusted $M_{\text{generic}} = -0.03$ vs. $M_{\text{non-generic}} = 0.10$), but the interaction with the own-gender/other-gender factor was not in fact significant, $F(1, 40) = 2.46, p = .125$.

In contrast to the younger children, 6- and 7-year-olds’ reaction to the mistakes did not differ depending on the type of language they heard (after covarying out their premistake scores), $F(1, 39) = 0.26, p = .614$. This null result suggests that the mistake stories did not exacerbate the generic–non-generic differences that were already in place before these older children experienced the setback. The analysis of covariance on 6- and 7-year-olds’ post-

mistake scores also revealed an unanticipated three-way interaction between wording, gender of the ability statement, and participant gender, $F(1, 39) = 4.50, p = .040$. After the teacher pointed out their mistakes, the boys in the non-generic/other-gender condition were more motivated than the girls, $F(1, 9) = 5.54, p = .043$, possibly because males tend to be less affected than females by others’ negative evaluations (Roberts, 1991; see also Dweck, 1986; Licht & Dweck, 1984). However, none of the other conditions showed strong gender differences, leading to the significant three-way interaction. It is not uncommon for gender differences of this sort to appear only in certain conditions or in certain studies (Dweck, 1986). In addition, given the small size of the cells involved in computing this three-way interaction (there were only six boys and six girls in each condition within this age group), it should be interpreted with caution.

Discussion

This study demonstrates that exposure to generic language about ability is detrimental to children’s motivation when compared with exposure to analogous non-generic language. The fact that a manipulation involving only a few generic versus non-generic sentences (whose content was otherwise identical) had such a dramatic impact on children’s behavior and attitudes toward a novel activity is a compelling illustration of the power of this linguistic distinction.

The results also suggest that, with age, children become more vulnerable to the effects of generic language. The 4- and 5-year-olds

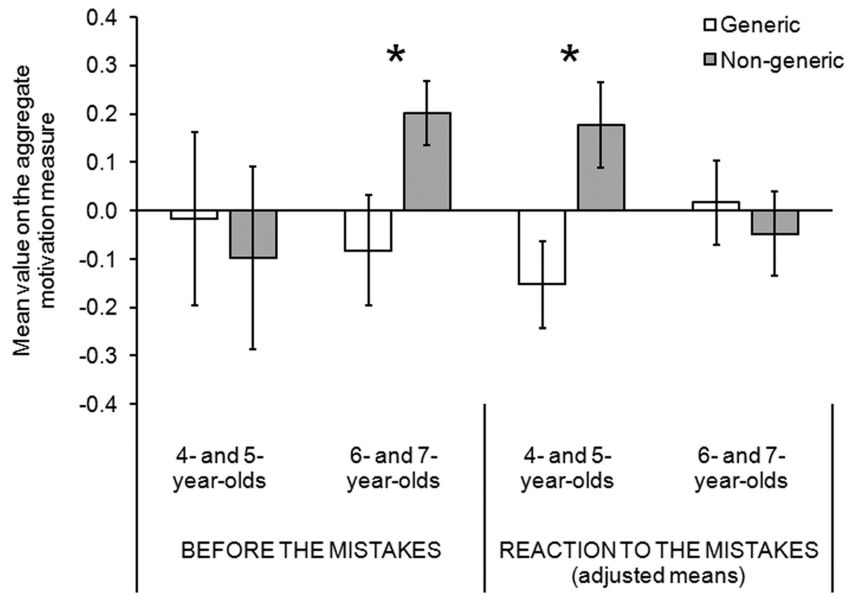


Figure 1. The pre- and postmistake motivation scores by type of language (generic vs. non-generic) and age group (4- and 5-year-olds vs. 6- and 7-year-olds). The error bars represent ± 1 standard error of the mean. * $p < .05$.

reacted to the generic–non-generic manipulation only when it became apparent that they were not doing well. Since children this age are overconfident in their skills (e.g., Nicholls, 1978), the expectations conveyed by generic language are not, under most circumstances, threatening: Awareness of others' expectations, be they high or low, can only lead to worries about one's performance if it is accompanied by awareness of the possibility of failure. The mistake stories raise this possibility for the younger children, and that is probably why they trigger these children's reaction to the generic language about ability. As children's perceptions of their own abilities develop (and their overconfidence wanes), the demotivating effect of generics may become more immediate: Increased awareness of one's fallibility is likely to cause some level of performance-related anxiety and pressure as soon as one is exposed to the relevant generic input. As predicted by this account, the older children's motivation was affected even before the mistake stories and while they were, in fact, still receiving praise for their performance.

Generic language appears to impair children's motivation regardless of whether the expectations it conveys are negative or positive. The detrimental effect of group-based positive expectations may be counterintuitive: For example, saying "Girls are good at X" might seem like an effective way to encourage a girl who is performing X. The present results suggest that it is not. On the contrary, hearing generic sentences about the high ability of one's own group (a positive stereotype) led to lower motivation scores, just as did hearing generics about the high ability of the outgroup (an implied negative stereotype). Not only were the effects of the positive and negative stereotypes in the same direction, but they were also statistically equivalent—at least as indicated by the nonsignificant interactions between the generic/non-generic factor and the own-gender/other-gender factor.

As argued above, there are two plausible pathways by which generic language might affect children. First, generics' normative–prescriptive connotations (Gelman et al., 2004) set up powerful ex-

pectations for performance, which may cause children to worry about not living up to them (if positive; e.g., Cheryan & Bodenhausen, 2000) or confirming them (if negative; e.g., Marx & Stapel, 2006). Note that, in this experiment, generic language was able to create a stereotype about an entirely novel task. In many real-life situations, however, generics may activate preexisting stereotypes (e.g., about girls and math) instead; the effect of such language may be even stronger in these cases, since the activated expectations would be rooted in children's previous experiences, hence more vivid and threatening. Second, generics also imply that there is an essential and stable traitlike ability that underlies performance (Cimpian & Markman, in press), which may cause children to worry about how the outcome will reflect on this fixed ability (e.g., Dweck, 2006). In all probability, these two mechanisms operate in concert to produce the effects documented here. It is known, for example, that inducing more malleable views of intelligence can reduce the detrimental effects of stereotype threat (Aronson, Fried, & Good, 2002; see also Bastian & Haslam, 2006; Levy & Dweck, 1999). Thus, the fact that generics promote thinking in terms of stable traits rather than effort may exacerbate children's vulnerability to the threat induced by group-based expectations.

Note that this study does not speak directly to whether the generic–non-generic effect is mediated by performance-related anxiety. Strictly, the results document only that exposure to generic language is detrimental to children's motivation to engage in a new activity. However, feelings of worry and anxiety have been found to underlie both stereotype threat effects (e.g., Bosson et al., 2004; Marx & Stapel, 2006) and the maladaptive reactions associated with fixed (or entity) mindsets (e.g., Dweck, 1999, 2006). Thus, to the extent that generic language sets up a stereotype threat context or promotes fixed trait thinking, it is reasonable to assume that anxiety is present and contributes to the observed low motivation scores.

The dimensions assessed in this study (e.g., perceived competence, persistence, attitudes toward the task, strategies for dealing with

mistakes) are essential to children's sustained involvement in any achievement domain, but particularly in domains that are challenging. Thus, the finding that generic language has a negative impact on these aspects of motivation might well have implications for children's success in academic settings. At the ages tested here, children are just entering the school system and are beginning to experience some of its challenges and setbacks. Extrapolating from the present findings to this context, it seems that one means of increasing the likelihood that children will stay motivated through this period is to avoid exposing them to generic language about ability.

References

- Ambady, N., Shih, M., Kim, A., & Pittinsky, T. L. (2001). Stereotype susceptibility in children: Effects of identity activation on quantitative performance. *Psychological Science, 12*, 385–390.
- Aronson, J., Fried, C. B., & Good, C. (2002). Reducing the effects of stereotype threat on African American college students by shaping theories of intelligence. *Journal of Experimental Social Psychology, 38*, 113–125.
- Bastian, B., & Haslam, N. (2006). Psychological essentialism and stereotype endorsement. *Journal of Experimental Social Psychology, 42*, 228–235.
- Benenson, J. F., & Dweck, C. S. (1986). The development of trait explanations and self-evaluations in the academic and social domains. *Child Development, 57*, 1179–1187.
- Bosson, J. K., Haymovitz, E. L., & Pinel, E. C. (2004). When saying and doing diverge: The effects of stereotype threat on self-reported versus non-verbal anxiety. *Journal of Experimental Social Psychology, 40*, 247–255.
- Bradbard, M. R., & Endsley, R. C. (1983). The effects of sex-typed labeling on preschool children's information-seeking and retention. *Sex Roles, 9*, 247–260.
- Brown, R. P., & Josephs, R. A. (1999). A burden of proof: Stereotype relevance and gender differences in math performance. *Journal of Personality and Social Psychology, 76*, 246–257.
- Burhans, K. K., & Dweck, C. S. (1995). Helplessness in early childhood: The role of contingent worth. *Child Development, 66*, 1719–1738.
- Chambers, C. G., Graham, S. A., & Turner, J. N. (2008). When hearsay trumps evidence: How generic language guides preschoolers' inferences about unfamiliar things. *Language and Cognitive Processes, 23*, 749–766.
- Cheryan, S., & Bodenhausen, G. V. (2000). When positive stereotypes threaten intellectual performance: The psychological hazards of "model minority" status. *Psychological Science, 11*, 399–402.
- Cimpian, A., Arce, H. C., Markman, E. M., & Dweck, C. S. (2007). Subtle linguistic cues affect children's motivation. *Psychological Science, 18*, 314–316.
- Cimpian, A., & Markman, E. M. (2008). Preschool children's use of cues to generic meaning. *Cognition, 107*, 19–53.
- Cimpian, A., & Markman, E. M. (2009). Information learned from generic language becomes central to children's biological concepts: Evidence from their open-ended explanations. *Cognition, 113*, 14–25.
- Cimpian, A., & Markman, E. M. (in press). The generic/non-generic distinction influences how children interpret new information about social others. *Child Development*.
- Clark, L. A., & Watson, D. (1995). Constructing validity: Basic issues in objective scale development. *Psychological Assessment, 7*, 309–319.
- Dahl, Ö. (1975). On generics. In E. L. Keenan (Ed.), *Formal semantics of natural language: Papers from a colloquium sponsored by the King's College Research Centre, Cambridge* (pp. 99–111). Cambridge, England: Cambridge University Press.
- Davies, P. G., Spencer, S. J., Quinn, D. M., & Gerhardtstein, R. (2002). Consuming images: How television commercials that elicit stereotype threat can restrain women academically and professionally. *Personality and Social Psychology Bulletin, 28*, 1615–1628.
- Dweck, C. S. (1986). Motivational processes affecting learning. *American Psychologist, 41*, 1040–1048.
- Dweck, C. S. (1999). *Self-theories: Their role in motivation, personality, and development*. Philadelphia, PA: Psychology Press.
- Dweck, C. S. (2006). *Mindset: The new psychology of success*. New York, NY: Random House.
- Flavell, J. H., Friedrichs, A. G., & Hoyt, J. D. (1970). Developmental changes in memorization processes. *Cognitive Psychology, 1*, 324–340.
- Gelman, S. A. (2003). *The essential child: Origins of essentialism in everyday thought*. London, England: Oxford University Press.
- Gelman, S. A. (2004). Learning words for kinds: Generic noun phrases in acquisition. In D. G. Hall & S. R. Waxman (Eds.), *Weaving a lexicon* (pp. 445–484). Cambridge, MA: MIT Press.
- Gelman, S. A., Chesnick, R. J., & Waxman, S. R. (2005). Mother-child conversations about pictures and objects: Referring to categories and individuals. *Child Development, 76*, 1129–1143.
- Gelman, S. A., Coley, J. D., Rosengren, K. S., Hartman, E., & Pappas, A. (1998). Beyond labeling: The role of parental input in the acquisition of richly-structured categories. *Monographs of the Society for Research in Child Development, 63*(1, Serial No. 253).
- Gelman, S. A., Collman, P., & Maccoby, E. E. (1986). Inferring properties from categories versus inferring categories from properties: The case of gender. *Child Development, 57*, 396–404.
- Gelman, S. A., Goetz, P. J., Sarnecka, B. W., & Flukes, J. (2008). Generic language in parent-child conversations. *Language Learning and Development, 4*, 1–31.
- Gelman, S. A., & Raman, L. (2003). Preschool children use linguistic form class and pragmatic cues to interpret generics. *Child Development, 74*, 308–325.
- Gelman, S. A., Raman, L., & Gentner, D. (2009). Effects of language and similarity on comparison processing. *Language Learning and Development, 5*, 147–171.
- Gelman, S. A., & Tardif, T. (1998). A cross-linguistic comparison of generic noun phrases in English and Mandarin. *Cognition, 66*, 215–248.
- Gelman, S. A., Taylor, M. G., & Nguyen, S. P. (2004). Mother-child conversations about gender: Understanding the acquisition of essentialist beliefs. *Monographs of the Society for Research in Child Development, 69*(1, Serial No. 275).
- Heyman, G. D., Dweck, C. S., & Cain, K. M. (1992). Young children's vulnerability to self-blame and helplessness: Relationship to beliefs about goodness. *Child Development, 63*, 401–415.
- Hollander, M. A., Gelman, S. A., & Raman, L. (2009). Generic language and judgements about category membership: Can generics highlight properties as central? *Language and Cognitive Processes, 24*, 481–505.
- Hollander, M. A., Gelman, S. A., & Star, J. (2002). Children's interpretation of generic noun phrases. *Developmental Psychology, 38*, 883–894.
- Kamins, M. L., & Dweck, C. S. (1999). Person versus process praise and criticism: Implications for contingent self-worth and coping. *Developmental Psychology, 35*, 835–847.
- Krifka, M., Pelletier, F. J., Carlson, G. N., ter Meulen, A., Link, G., & Chierchia, G. (1995). Genericity: An introduction. In G. N. Carlson & F. J. Pelletier (Eds.), *The generic book* (pp. 1–124). Chicago, IL: University of Chicago Press.
- Levy, S. R., & Dweck, C. S. (1999). The impact of children's static versus dynamic conceptions of people on stereotype formation. *Child Development, 70*, 1163–1180.
- Licht, B. G., & Dweck, C. S. (1984). Determinants of academic achievement: The interaction of children's achievement orientation with skill area. *Developmental Psychology, 20*, 628–636.
- Martin, C. L., Eisenbud, L., & Rose, H. (1995). Children's gender-based reasoning about toys. *Child Development, 66*, 1453–1471.
- Marx, D. M., & Stapel, D. A. (2006). It's all in the timing: Measuring emotional reactions to stereotype threat before and after taking a test. *European Journal of Social Psychology, 36*, 687–698.

- Mueller, C. M., & Dweck, C. S. (1998). Praise for intelligence can undermine children's motivation and performance. *Journal of Personality and Social Psychology, 75*, 33–52.
- Murphy, M. C., Steele, C. M., & Gross, J. J. (2007). Signaling threat: How situational cues affect women in math, science, and engineering settings. *Psychological Science, 18*, 879–885.
- Nicholls, J. G. (1978). The development of the concepts of effort and ability, perception of academic attainment, and the understanding that difficult tasks require more ability. *Child Development, 49*, 800–814.
- Pappas, A., & Gelman, S. A. (1998). Generic noun phrases in mother–child conversations. *Journal of Child Language, 25*, 19–33.
- Peterson, R. A. (1994). A meta-analysis of Cronbach's coefficient alpha. *The Journal of Consumer Research, 21*, 381–391.
- Prasada, S. (2000). Acquiring generic knowledge. *Trends in Cognitive Sciences, 4*, 66–72.
- Prasada, S., & Dillingham, E. M. (2006). Principled and statistical connections in common sense conception. *Cognition, 99*, 73–112.
- Rhodes, M., & Brickman, D. (2008). Preschoolers' responses to social comparisons involving relative failure. *Psychological Science, 19*, 968–972.
- Roberts, T. (1991). Gender and the influence of evaluations on self-assessments in achievement settings. *Psychological Bulletin, 109*, 297–308.
- Schunk, D. H. (1983). Ability versus effort attributional feedback: Differential effects on self-efficacy and achievement. *Journal of Educational Psychology, 75*, 848–856.
- Shih, M., Ambady, N., Richeson, J. A., Fujita, K., & Gray, H. M. (2002). Stereotype performance boosts: The impact of self-relevance and the manner of stereotype activation. *Journal of Personality and Social Psychology, 83*, 638–647.
- Steele, C. M., & Aronson, J. (1995). Stereotype threat and the intellectual test performance of African Americans. *Journal of Personality and Social Psychology, 69*, 797–811.
- Stipek, D. J. (1981). Children's perceptions of their own and their classmates' ability. *Journal of Educational Psychology, 73*, 404–410.

Received September 22, 2009

Revision received January 5, 2010

Accepted March 1, 2010 ■