

Inviting Confidence in School: Invitations as a Critical Source of the Academic Self-Efficacy Beliefs of Entering Middle School Students

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The purpose of this study was to examine whether constructs drawn from invitational theory serve as additional sources of self-efficacy beliefs of students in Grade 6 (N = 468). The hypothesized sources and the invitational constructs each correlated with academic self-efficacy. Invitations, mastery experience, and physiological state predicted the self-efficacy beliefs of boys and of girls. Social persuasions also predicted girls' self-efficacy. Invitations, mastery experience, and social persuasions predicted the self-efficacy beliefs of African American students. For White students, invitations and the four hypothesized sources predicted self-efficacy. Findings refine the tenets of social cognitive theory and suggest that invitations act as a powerful fifth source of self-efficacy.

Self-Efficacy Beliefs

Ample research has documented that students' beliefs about their capabilities to perform academic tasks or to succeed in academic activities—their *self-efficacy beliefs*—powerfully influence their academic performances (see Bandura, 1997). Students who are confident in their academic capabilities work harder, evaluate their progress more frequently, and engage in more self-regulatory strategies that promote success in school (Pajares, 2002). These students are also able to monitor their work time, are more efficient problem solvers, and show more persistence than do equally able peers with low self-efficacy. Indeed, researchers have consistently demonstrated what Albert Bandura contended three decades ago: individuals' self-efficacy beliefs are key determinants of human behavior and they powerfully predict performance in schooling contexts and beyond (see Pajares & Urdan, 2006).

Although self-efficacy's predictive prowess has by now been well established, less is known about how these beliefs take hold and are developed, and only a handful of studies have attempted to explain this phenomenon. Bandura (1997) hypothesized that students form their

self-efficacy beliefs as they interpret information from four principal sources, the most powerful of which he suggested is the interpreted result of one's own previous attainment, or *mastery experience*. Once students complete an academic task, they interpret and evaluate the results obtained, and judgments of competence are created or revised according to those interpretations. When students believe that their efforts have been successful, their confidence to accomplish similar or related tasks is raised; when they believe that their efforts failed to produce the effect desired, confidence to succeed in similar endeavors is diminished.

In addition to interpreting the results of their actions, students build their efficacy beliefs through the *vicarious experience* of observing others. It is for this reason that models can play a powerful role in the development of self-efficacy. Students are most likely to alter their beliefs following a model's success or failure to the degree that they feel similar to the model in the area in question (Bandura, 1997). Watching a classmate succeed at a challenging mathematics problem, for instance, may convince fellow students that they too can conquer the challenge.

The *social persuasions* that students receive

from significant others serve as a third source of self-efficacy. The encouragement students receive from parents, teachers, and peers whom they trust can boost their confidence in their academic capabilities. When they are not yet skilled at making accurate self-appraisals, students often depend on others to provide evaluative feedback and judgments about their academic performance. Supportive messages and encouragement can serve to bolster a student's effort and self-confidence, particularly when accompanied by conditions and instruction that help bring about success.

Finally, Bandura (1997) hypothesized that students interpret *emotional and physiological indexes* such as anxiety, stress, fatigue, and mood when judging their competence. Students learn to evaluate their own performances as they undergo different physiological states, and they interpret their arousal as an indicator of personal efficacy. Strong emotional reactions to school-related tasks can provide cues to expected success or failure.

Although he focused on four hypothesized sources, Bandura (1997) suggested that other important psychological processes may be at work in the formation of self-efficacy, and Pajares (1996) counseled researchers to "seek to identify sources of academic self-efficacy information other than those typically used" (p. 565). One prominent candidate emerges from the *invitational approach*, a perceptual tradition in psychology that maintains that the beliefs people develop about themselves and about others help form the lens through which they view the world and interpret experiences (Purkey, 2000; Purkey & Novak, 1996). Invitational theory posits that people can intentionally send uplifting and empowering messages to themselves and to others that serve to improve their own functioning and well-being. Through this process, people are summoned to realize their own potential and to enhance the potential of others (Purkey, 2000).

With this in mind, it seems reasonable to posit a connection between the invitations that students send themselves and others and the confidence with which students approach their academic

work. Not only are "messages ... the basic unit in invitational education" (Purkey & Novak, 1996, p. 4), they also form the building blocks of students' self-beliefs, for the messages students send, both inward and outward, are a sieve through which their observations of themselves and the world necessarily pass. As Bandura (1997) has noted, "self-affirming beliefs promote development of skills and a sense of personal efficacy" (p. 101).

An important conceptual distinction between these invitational messages and the social persuasions hypothesized by Bandura (1997) bears noting. Whereas social persuasions refer to messages *received*, invitations as discussed here refer to messages *sent*. Positive invitations convey the message that people are able, valuable, responsible, and forgiving; negative invitations suggest that people are not valued and that they are incapable of participating positively in their own development. In spite of this distinction, it is likely that social persuasions and invitations, both messages of a sort, share features. As Purkey (2000) has suggested, "asking students to describe what significant others say about them reveals much about what students say to themselves" (p. 26). If indeed the invitations that students send to themselves are informed by the social persuasions they have received from others, it stands to reason that, like social persuasions, self-invitations should subsequently inform developing beliefs about competence and capability. The messages that students send to others also reveal important psychological self-processes. People who value others are likely to value themselves, those who forgive others will similarly be self-forgiving, and thoughtfulness toward others is mirrored by thoughtful attention to self (Cooley, 1902; Maslow, 1943; Purkey, 2000).

Pajares (1994) interviewed undergraduate students and found that the positive invitations they sent to themselves and to others helped them create or nurture their self-efficacy beliefs. These beliefs in turn helped students maintain the effort and perseverance needed to compensate for their low academic ability or to maximize the fruits of the high ability they already possessed. Pajares concluded that constructs

from social cognitive theory and from the invitational approach offer promising directions through which educators and researchers might better understand the ways they can help students develop their confidence and competence.

Most researchers who have investigated the relationship between self-efficacy and its four hypothesized sources have found that each source correlates with self-efficacy (e.g., Klassen, 2004; Lent, Lopez, & Bieschke, 1991). Strong correlations are not surprising given that the sources informing self-efficacy are often interwoven. In addition, empirical evidence supports Bandura's (1997) contention that mastery experience is the most influential source of self-efficacy information (Hampton, 1998; Klassen, 2004; Lopez & Lent, 1992). But with this exception, examination of the other three hypothesized sources has yielded inconsistent results.

These inconsistent findings are likely due to contextual differences in the various studies. For example, it is possible that the influence of the sources differs as a function of group membership, such as gender and race, both of which have received limited attention in previous investigations. For example, Usher and Pajares (2006) reported that social persuasions were predictive of the academic and self-regulatory efficacy beliefs of middle school girls, but not of boys, for whom vicarious experience was predictive, suggesting that girls may be more attentive to what others tell them when forming their beliefs about their capabilities. Graham (1994) reported that African American students retain markedly optimistic self-beliefs "even in the wake of achievement failure" (p. 95). It may well be that these self-beliefs, particularly as regards confidence in academic tasks and domains, are nourished by different sources.

Investigating the predictive value of the sources of students' academic self-efficacy beliefs and determining whether this prediction varies as a function of gender or race is a matter of importance. If it is the case that these sources predict self-efficacy differently depending on group membership, school practitioners would do well to address these differences when preparing lessons or academic interventions for their students.

Furthermore, an investigation of invitations of self and others as possible predictors of self-efficacy in addition to those hypothesized by Bandura (1997) promises to buttress and refine the tenets of social cognitive theory regarding the formation of self-efficacy beliefs.

The shift from the personalized environment of elementary school to the more impersonal, institutional environment of middle school leaves many early adolescents struggling to reestablish their sense of self and their academic self-beliefs (Eccles & Midgley, 1989). This transition marks a critical time for researchers to examine how the sources of academic self-efficacy unique to middle school boys and girls influence the development of their self-beliefs and subsequent achievement. With this in mind, the aim of this study was to refine and extend the theoretical tenets of social cognitive theory and self-efficacy by (a) testing Bandura's (1997) contention regarding the predictive utility of the hypothesized sources of self-efficacy using a sample of students in their first year of middle school, (b) investigating the possibility that invitations serve as an additional source, and (c) examining the predictive utility of these sources as a function of gender and race.

Method

Participants

Participants were 468 Grade 6 students (238 girls and 230 boys) attending two public middle schools in the Southeastern United States. Of the total group, 263 students were Caucasian, 165 were African American, 21 Hispanic, 9 Asian, and 10 of other ethnicity. Only White and African American students were used in analyses by race. One group of students ($n = 205$) attended a public middle school situated in an affluent neighborhood on the outskirts of an urban setting. Approximately 31% of students at this school qualify for free or reduced-price lunch. The remaining students ($n = 263$) attended a suburban middle school that is largely middle class, in which approximately 17% of students qualify for free or reduced-price lunch. Student-level socioeconomic status was not available for

use in this study. Instruments were group administered in reading classes during one class period. Students were given verbal instructions and encouraged to seek clarification of any word or item they did not understand. Anonymity was ensured, and teachers were not present during the administration.

Instruments and Variables

The *Sources of Self-Efficacy* scale consisted of 24 items assessing students' evaluations of the four sources theorized to inform self-efficacy beliefs (Lent et al., 1991). Six items addressed mastery experience (e.g., "I got good grades in school last term"), 6 addressed vicarious experience (e.g., "Most of my friends do well in school"), 5 addressed social persuasions (e.g., "People often tell me that I am a good student"), and 7 addressed physiological/affective factors (e.g., "School work makes me nervous and uncomfortable"). Previous findings from factor analyses have shown that the vicarious experience items comprise two factors, one tapping vicarious experiences from peers and another tapping those from adults (e.g., Lent, Lopez, Brown, & Gore, 1996). Because we found the reliability estimate of the peer items problematic, we used adult items as our assessment of vicarious influence. Alpha coefficients for the four sources were .84 for mastery experience, .81 for vicarious experience, .83 for social persuasions, and .83 for physiological state.

Invitations were assessed with the *Inviting/Disinviting Index-Revised*, which consists of 10 items representing the degree to which individuals are inviting to themselves or to others (Valiante & Pajares, 1999; and see Schmidt, Shields, & Ciechalski, 1998; Wiemer & Purkey, 1994). Exploratory factor analysis results have revealed that one factor reflecting inviting self and a second factor reflecting inviting others underlay the items, with factor structure coefficients ranging from .53 to .76 (Pajares, 2001). We subjected the items to factor analysis and similarly found that two factors underlay the items. Factor loadings for the first factor, which comprised the inviting self items, ranged from .40 to .83; loadings for the second factor, which

comprised the inviting others items, ranged from .51 to .68. The interfactor correlation was .43. Cronbach's alpha coefficients have ranged from .76 to .81 (e.g., Pajares, 2001). In the present study, we obtained .78 for inviting self and .77 for inviting others.

Academic self-efficacy was assessed with 13 items taken from Bandura's (2006) *Children's Self-Efficacy Scale*, which measures students' judgments of their capability to learn academic subjects and skills and to use various self-regulated learning strategies. Alpha coefficients ranging from .69 to .85 have been previously reported for the academic subject subscale (e.g., Pajares, 2001). Coefficients ranging from .80 to .87 have been reported for the self-efficacy for self-regulation subscale (e.g., Valiante & Pajares, 1999). We obtained an alpha coefficient of .85 for the combined academic and self-regulatory items.

Academic achievement was assessed as the average (0-100 scale) of semester language arts, reading, and mathematics grades, which were provided by the school administration.

Analysis

Hierarchical regression analyses were used to ascertain the independent contribution made by the four hypothesized sources to the prediction of academic self-efficacy beliefs and to determine whether invitations of self and others serve as additional sources of self-efficacy. Because the students in our sample attended two different middle schools, we entered school as a predictor of self-efficacy in the first step of each regression to control for school effects. At the second step, Bandura's (1997) four hypothesized sources were entered. The invitations were added at the third step. Separate models were run by gender and by race. We included the interactive terms of school with each predictor variable in the models to account for potential school effects. All interactions were nonsignificant and were removed from the final models. Because previous results (Usher & Pajares, 2006) and theoretical guidance (Bandura, 1997) suggested that the relationship between physiological state

and self-efficacy is potentially curvilinear, we included the quadratic term of this variable in each initial model. Multivariate analysis of variance was used to examine mean differences by gender and by ethnicity.

Results

Consistent with the tenets of social cognitive theory, self-efficacy correlated with each of the hypothesized sources for all groups (see Tables 1A-B). Likewise, inviting self and inviting others correlated with academic self-efficacy. Also as expected, self-efficacy was related to academic achievement for all groups. Few mean differences by race or gender were detected. Girls reported social persuasions and being inviting others to a greater degree than did boys. African American students reported higher self-inviting scores than did White students.

Results of the hierarchical regression by gender revealed that, for boys, all four of Bandura's (1997) hypothesized sources predicted self-efficacy (see Table 2). For girls, mastery experience, social persuasions, and physiological state were predictive. The inclusion of the invitations at Step 3 added to the prediction of self-efficacy for both groups, and both inviting self and inviting others made a significant individual contribution to the prediction of self-efficacy for boys ($\beta = .194$ and $\beta = .137$, respectively) and for girls ($\beta = .195$ and $\beta = .174$). The introduction of the invitations in this step rendered social persuasions nonsignificant for boys but not for girls, for whom persuasions remained predictive of self-efficacy ($\beta = .190$). Vicarious experience remained predictive of self-efficacy in Step 3 for boys ($\beta = .148$) but not for girls.

The four hypothesized sources consistently predicted the efficacy beliefs of White students, but only mastery experience, social persuasions, and physiological state consistently predicted the efficacy beliefs of African American students. As in the analyses by gender, the inclusion of inviting self and inviting others in the models added to the prediction of self-efficacy for African American students ($\beta = .198$ and $\beta = .172$, respectively) and White students ($\beta = .127$ and $\beta = .132$). Except

for African American students in Step 2, the relationship between physiological state and self-efficacy was quadratic for all groups, such that self-efficacy was highest at the lowest level of anxiety, decreased as anxiety became more moderate, and then stabilized as anxiety grew more acute.

Discussion

Our first aim in this study was to investigate the relationship between Bandura's (1997) four hypothesized sources of self-efficacy and students' academic efficacy beliefs. Our findings provide support for Bandura's contention that four hypothesized sources of self-efficacy—mastery experience, vicarious experience, social persuasions, and physiological state—predict self-efficacy. Perceived mastery experience proved a consistent predictor of the academic self-efficacy of all students. Clearly, students who interpret their school work as successful approach subsequent academic tasks with a greater sense of confidence, whereas those who report fewer mastery experiences have lower self-efficacy beliefs. Social persuasions were also predictive of the academic self-efficacy beliefs of all students in Step 2, indicating the important role others play in sending encouraging messages to students about their capabilities.

The second and central aim of this study was to discover whether invitations serve as additional sources of self-efficacy when the four hypothesized sources are controlled. We were surprised by the magnitude of the effects obtained and encouraged by the implications they hold. Invitations predicted the academic self-efficacy beliefs of boys and of girls, as well as of White students and African American students.

Our findings also shed light on several important group differences. For girls, social persuasions predicted self-efficacy, even when the invitations were included in the model. This lends support to the contention that social persuasions may be more relevant to girls than to boys as girls form their academic confidence. These findings have been foreshadowed by those of Zeldin and Pajares (2000) in their qualitative study of the self-

efficacy of women who pursued careers in science, mathematics, and technology. In that study, the researchers posited that, when forming their academic self-efficacy beliefs, women rely strongly on others' judgments of their capabilities, perhaps even to a greater extent than on their own mastery experience.

Decades ago, Erikson (1968) posited that girls and boys interpret their accumulated experiences differently as they come to view themselves. Girls, Erikson argued, tend to define their developing identity in terms of their satisfaction in their relationships. Others have observed that men typically look to accomplishments and successes when defining themselves and developing their "voice," whereas women tend to describe themselves and develop their own voice in terms of their connections to others, their relational web (Gilligan, 1982). This helps explain why the self-efficacy beliefs of girls may be strongly in-

formed by the messages they receive from teachers, peers, family, and significant others. These messages may mean more to them than they mean to boys, who are more preoccupied with their personal accomplishments than with their relational persona.

For African American students, the effect of the invitations was even more striking. Their reported invitations accounted for 9% of the unique variance in self-efficacy. This is consistent with the contentions of scholars who suggest that African American students prefer a field sensitive learning orientation that focuses on people rather than on things and on social rather than nonsocial cues (Irvine & York, 1995). Such a focus on people and on the social relationships that emanate from interpersonal interactions is the very hallmark of invitational theory (Purkey, 2000; Purkey & Novak, 1996).

Table 1A. Means and Zero-Order Correlations for Variables in the Study for Girls and for Boys

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	<i>M</i>	<i>SD</i>
1. Academic self-efficacy	4.61	0.80		.67***	.36***	.62***	-.53***	.49***	.42***	.29***	4.67	0.75
2. Mastery experience	4.76	0.92	.60***		.42***	.61***	-.59***	.37***	.36***	.58***	4.88	0.90
3. Vicarious experience	4.96	1.01	.45***	.43***		.42***	-.27***	.21*	.36*	.25**	5.16	0.93
4. Social persuasions	4.43 _a	1.11	.50***	.58***	.42***		-.41***	.43***	.42***	.34***	4.83 _b	0.95
5. Physiological state	2.72	1.15	-.27***	-.23***	.01	-.04		-.24**	-.22**	-.46***	2.80	1.11
6. Inviting self	4.82	0.93	.49***	.42***	.35***	.49***	-.14*		.31***	.01	5.03	0.75
7. Inviting others	4.72 _a	0.83	.46***	.45***	.39***	.43***	-.05	.41***		.23**	4.97 _b	0.76
8. Academic achievement	86.05	7.12	.28***	.55***	.19*	.25***	-.26***	.06	.15*		86.73	7.28

* $p < .05$. ** $p < .001$. *** $p < .0001$.

Note. Correlations for girls ($n = 238$) are reported above the diagonal. Correlations for boys ($n = 230$) are reported below the diagonal. Means and standard deviations are reported in the columns on the left for boys and on the right for girls. Group means for a dependent variable (row) that are subscripted by different letters are statistically different (experiment wise $\alpha < .003$).

Table 1B. Means and Zero-Order Correlations for Variables in the Study for African American Students and White Students

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	<i>M</i>	<i>SD</i>
9. Academic self-efficacy	4.59	0.76		.66***	.29***	.53***	-.34***	.44***	.40***	.36***	4.73	0.78
10. Mastery experience	4.89	0.87	.59***		.36***	.56***	-.37***	.38***	.37***	.50***	4.71	0.97
11. Vicarious experience	5.07	0.95	.40***	.40***		.47***	-.09	.30***	.28**	.18*	5.04	1.03
12. Social persuasions	4.53	1.10	.53***	.65***	.37***		-.21*	.37***	.43***	.38***	4.78	0.95
13. Physiological state	2.66	1.09	-.43***	-.37***	-.10	-.19*		-.11	-.11	-.39***	2.92	1.18
14. Inviting self	4.75 _a	0.90	.47***	.47***	.30***	.49***	-.27***		.30***	.04	5.19 _b	0.69
15. Inviting others	4.90	0.80	.42***	.38***	.44***	.47***	-.09	.39***		.14	4.75	0.81
16. Academic achievement	88.77	5.76	.26***	.63***	.22**	.35***	-.26***	.21**	.14*		82.33	7.61

* $p < .05$. ** $p < .001$. *** $p < .0001$.

Note. Correlations for African American students ($n = 165$) are reported above the diagonal. Correlations for White students ($n = 263$) are reported below the diagonal. Means and standard deviations are reported in the columns on the left for White students and on the right for African American students. Group means for a dependent variable (row) that are subscripted by different letters are statistically different (experiment wise $\alpha < .003$).

Social persuasions remained predictive of African American students' academic self-efficacy even when invitations were included in the model. Researchers have posited that African American students' beliefs about themselves and schooling have profited from the positive messages sent to them by members of the African American community—teachers and parents in particular (Boykin, 1986; Denbo, 2002). Walker (2000) has observed that, historically, African American schools were driven by myriad forms of interpersonal and institutional caring that conveyed to students their capacity to achieve, despite the negative messages those students received in the larger world. Our own findings and Walker's observation suggest that personal and institutional invitations can help buttress behavioral and psychological mechanisms that can effect academic growth and well-being. Such invitations are part of a *culturally responsive pedagogy* in which teachers are sensitive to their students' growth and development, as well as to the needs, beliefs, learning preferences, and abilities of the students

in their care (Irvine, 2001).

Our findings refine the tenets of social cognitive theory as regards the hypothesized sources of self-efficacy in critical ways. The invitational messages students send themselves and others not only provide a lens through which students perceive efficacy-building information but also bear direct influence on students' academic efficacy beliefs. Indeed, the strong relationship displayed by the invitations suggests that researchers would be well served by including them in future studies of the sources of self-efficacy.

The invitations central to all students' learning are not only self-generated but are in large part the product of teaching that invites students to learn. Teachers who purposefully create situations that invite students to see themselves as able, valuable, and responsible boost academic confidence and wellbeing. Purkey and Novak (1996) wisely pointed out that "students develop best when they share the company of teachers

Table 2. Hierarchical Regression Analyses for the Prediction of Academic Self-Efficacy by Gender and by Race

	GENDER						RACE					
	Step 1		Step 2		Step 3		Step 1		Step 2		Step 3	
	Boys	Girls	Boys	Girls	Boys	Girls	White	African American	White	African American	White	African American
School	.200*	.083	.113*	.084	.136*	.129*	-.068	.304***	-.011	.175*	.034	.191**
Hypothesized sources												
Mastery Experience			.342**	.374**	.282**	.318***			.257***	.456***	.223*	.352***
Vicarious Experience			.205**	.031	.148*	-.001			.173**	-.008	.126*	-.063
Social Persuasions			.202*	.304**	.103	.190**			.265***	.243**	.183*	.165*
Physiological State			.480*†	.464*†	.497*†	.586*†			.499*†	-.104	.490*†	.844*†
Additional sources												
Inviting self					.194**	.195***					.127*	.198**
Inviting others					.137*	.174**					.132*	.172*
Model R^2	.04*	.01	.49***	.56***	.53***	.62***	.00	.09***	.48***	.52***	.51**	.59***
Change in R^2			.45***	.55***	.05***	.06***			.48***	.43***	.03*	.07***

†Quadratic term for physiological state was significant for self-efficacy in this model, hence the estimates presented in this variable represents the quadratic term and beta coefficients should be interpreted appropriately.

* $p < .05$. ** $p < .001$. *** $p < .0001$.

who see them as possessing relatively untapped abilities in myriad areas and who invite them to realize their potential" (p. 43). Indeed, the perceptions students send themselves about themselves are surely in part a product of the messages significant others send their way. In this regard, these messages determine the degree to which young people develop a perceptual stance that is inviting of self and others. As Bruner (1996) observed, "we carry with us habits of thought and taste fostered in some nearly forgotten classroom by a certain teacher" (p. 24). The messages teachers, parents, and other adults send to children become the messages students carry with them throughout their lives. In addition to fostering students' competence, teachers must also nurture students' confidence and carefully consider the impact of the messages they

send, for these messages might well turn into the very messages students send themselves.

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