


The causes of academic underperformance are a major concern of the educational community and policy makers in the United States. Of particular importance is the achievement gap between at-risk minority students and European American students and its potential remedies. Academically at-risk minority students, such as African Americans and Latino Americans, perform almost a standard deviation below European American students on intelligence tests and earn school grades below those of their European American peers (Jencks and Phillips, 1998; Nisbett, 2009). Between the years 2004 and 2007, while 6 out of every 100 European American young adults had not received a high school diploma or its equivalent, the corresponding figures for African Americans and Latino Americans were, respectively, 10 and 22 out of every 100 in their ethnic group (U.S. Department of Education, 2009). These achievement gaps persist in spite of the local and national initiatives aimed at closing them (Dillon, 2006; Neal, 2005). In a society such as that of the United States, where economic opportunity depends heavily on scholastic success, even a partial remediation of the achievement gap would lead to a positive change in the lives of many at-risk children.

Our research focuses on the impact that social psychological factors have on the academic outcomes reflected in this gap (Cohen and Garcia, 2008; Cohen et al., 2006; Walton and Cohen, 2007). At the heart of our effort lies the notion of the classroom as a tension in which various factors, including structural factors such as class size and psychological factors such as student perceptions, interact to produce a stable environment that elicits a consistent set of attitudes, behaviors, and outcomes over time. Differences among groups arise from consistent differences both in their objective experience and in their subjective perceptions. These notions can aid us in understanding student performance and help us to develop effective educational practices. They suggest an approach to the achievement gap that we have found to be productive and that has important social policy implications for addressing the pressing social problem of underperformance. Before reviewing our work, we will discuss the idea of a tension system and its relevance to academic performance.

**The Classroom as a Social Tension System**

Social environments, classrooms included, can be viewed as tension systems consisting of forces in a dynamic state of interaction that remains relatively stable over time (Lewin, 1948, 1951; Ross and Nisbett, 1991). Generally social tension systems transcend single instances. Children, for example, expect to be in a classroom with the same teacher through the year. Also, tension systems consist of forces that are unique to them and of other forces that are more general in nature, such as cultural norms and moral codes. In the United States, for instance, the classroom is seen as an environment designed to develop the appropriate and necessary social and intellectual competencies of individuals of a particular developmental stage. It is assumed that a number of forces or factors will be present to promote this goal, including trained instructors, appropriate teaching materials, an adequate physical space, and a program of learning that consists of goals and milestones. Beyond these general factors are others unique to individual classrooms, such as the teacher's personality, the demographic makeup of the students in the classroom, the curriculum priorities of the school, and the administrative leadership.

The forces in a social tension system can facilitate or restrain a given outcome. In both the classroom and the larger school environment, there are a number of
forces that can help or hinder academic performance. Schools are designed to promote learning, can also contain forces that make their tasks difficult, or in some cases impossible, to accomplish. For example, a school can lack sufficient material resources to provide students and teachers the necessary knowledge and skills, while also facing significant levels of financial strain, that may prevent successful learning. Thus, the relationship between students and teachers is often strained, making it difficult for students to receive the necessary support and resources needed to achieve their academic goals.

Because of the social nature of the school, processes can also be affected by social factors in the form of educational policy, social organization, and political ideology. For example, schools may have policies that prioritize standardized testing at the expense of other learning opportunities, which can lead to lower academic achievement among students.

Social factors are also important in the educational system, as they can affect the social environment and processes in the classroom, and therefore influence academic achievement. Social factors can include the size, culture, and diversity of the classroom, as well as the expectations of the community. For example, a classroom with a large number of students may have difficulties in providing individualized attention and support, while a classroom with a diverse population may face challenges in accommodating the needs of students from different cultural backgrounds.

In summary, both social and psychological factors have a large impact on academic performance. Schools are complex environments, and understanding the interactions between these factors is crucial for improving academic outcomes for all students.
this has not occurred to the degree one would expect given changes in the economic status of racial and ethnic minorities. At every level of social economic status in the United States, the racial and ethnic achievement gap persists in spite of the increasing number of minority individuals attaining college degrees and higher status levels (Hacker, 1995; Jencks and Phillips, 1998; Nisbett, 2001; Steele, 1997; see also Bowen and Bok, 1998).

Given this, we revisited the problem of the achievement gap to reconsider the factors at work in the classroom and how these might interact to produce the gap. Our thinking shares the emphasis on the importance of the situation at the heart of the SES explanation: the individuals in lower-performing ethnic and racial groups are inherently less capable of performing well.

A Social Psychological Constraint on Performance: Identity Threat

The work of Claude Steele and his colleagues provided an intellectual underpinning for our initial thinking and the research results to buttress it. In a series of studies that have become seminal studies, Steele and his associates Joshua Aronson and Steve Spencer demonstrated that the achievement gap between African Americans and their European American peers on standard academic tests, and between males and females on the math portion of these tests, could be dramatically lessened by altering the psychological environment (Steele, Spencer, and Aronson, 2002; see also Davies, Spencer, and Steele, 2005; Schmader, Johns, and Forbes, 2004). Members of such groups may worry that their poor performance could confirm the negative stereotype about their group in the eyes of others, a preoccupation called stereotype threat (Steele, Spencer, and Aronson, 2002). This threat can cause stress that undermines performance. As a consequence, altering the psychological environment to render the stereotype irrelevant can boost performance. In a study conducted by Steele and Aronson (1995), African American college students were told that the Graduate Record Exam (GRE) they were about to take was "diagnosis of academic ability." This raised the possibility for them that they could reinforce a negative stereotype about their race's intelligence if they performed poorly. This preoccupation led African American students to perform at only half the level of European American students, controlling for prior ability level as roughly measured by previous test scores. However, African Americans' performance equaled that of European American students (again controlling for prior ability level) when the same test was presented as "non-diagnostic of ability," that is, irrelevant to the stereotype. Similar effects were shown for the performance of female college students on a difficult standardized math test in a series of studies conducted by Spencer, Steele, and Quinn (1999). Women's performance on a math test was significantly lower than that of their male peers. By contrast, when informed that the same test produced no gender differences—that men and women performed equally on it—women achieved a level of performance equal to that of high-performing White students. Such effects have been documented among other stereotyped groups, including Latino Americans (Schmader and Johns, 2003; see also Aronson, 2002) and low-SES students in schools of Coie and Claire (1998), high-performing White students reminded of the stereotype of Asian superiority in math (Aronson et al., 1999), and White men in the domain of sports (Stone et al., 1999). Stereotype threat has been replicated in more than a hundred studies and tends to occur on relatively difficult tasks that pose the risk of confirming a stereotype (Ben-Zeev, Fein, and Inzlicht, 2004; O'Brien and Crandall, 2003; Spencer, Steele, and Quinn, 1999). Among the replications are recent meta-analyses of studies by a variety of investigators (Steele et al., 2002; Rydell, McConnell, and Beilock, 2009; for reviews, see Schmader, Johns, and Forbes, 2008; Shapiro and Neuberg, 2007; Steele, Spencer, and Aronson, 2002). In other words, the stress associated with a chronically evaluative situation and the stress linked to their social identity, it is more likely that these students could reach stress levels that inhibit their performance. Interestingly, those who are highly identified with academics and invested in doing well are often the most likely to suffer such performance-inhibiting anxieties (Marx, Brown, and Steele, 1999; Steele, 1997).

There are two implications of the classroom that can be particularly troubling for minority individuals that are not generally present in the classroom environment of Whites (see also Branscombe, Schmitt, and Harvey, 1999). These students cannot necessarily lessen the threat of these psychological resources, by any strong performance, since they may understand that those holding a negative stereotype will often discount counter-stereotypic behavior. These others may characterize those who perform well as exceptions to the rule (Richards and Helmreich, 2001), or single out the behavior of a single minority that confirms the stereotype (Henderson-Ng and Nisbett, 1996). Such knowledge can lessen the likelihood that they, in spite of having performed well, will benefit from a positive recursive cycle in which high performance sustains itself or promotes even higher performance. Also, these students understand that regardless of how well they do, there will always be individuals in their group who will perform poorly and potentially provide evidence in support of the derogating stereotype. We have shown that the mere possibility that a fellow group member could do poorly on an intellectual task can change the psychological environment for an individual and trigger performance-detracting psychological effects even among elite college students (Cohen and Garcia, 2005).

Not only do the social environments of at-risk minority students and White peers differ in critical ways, but the environment in which the former students function makes it more likely that they will suffer long-term performance deficits. Like their White peers, their skills as students are continually being evaluated, and so they are subject to all the psychological consequences that follow from being in such an environment. However, beyond the possible aver- se consequences present for them personally, they carry an additional burden. They must also contend with the potentially aversive consequences that the environment holds for their group, and by extension, that aspect of their identity related to their group, known as their social identity. Because their group is the target of a negative stereotype and faces intellectual abilities of its members, these students must be concerned about whether they and their fellow group members will be judged in light of this widely disseminated and salient social judgment. This can intensify psychological factors that lead to stress inhibiting motivation and performance. It will also increase the chance that poor performance will yield still poorer performance in a prolonged recursive process.

The Identity Engagement Process

The presence of an identity threat for targeted minority students that their White peers do not experience underlies differences in the psychological environments between these groups and is key to understanding the differences in their performance. While it is imperative to gain a greater understanding of identity threat processes and how these interact with other factors in a range of social environments, the urgency and importance of the issue of minority achievement leads us to focus on examining these processes in school context (see Cohen et al., 2007) for the role of similar processes in intergroup conflict.

Obviously there are a number of factors that identity threat could interact with in the classroom. However, we will limit our examination here to those factors that could interact with identity threat in a way that affects the academic performance of minority students. Our general notions about how such
interactions can play out in the social context of the classroom are introduced in figure 19.1 (see Cohen and Garcia, 2008). It displays our model of how identity processes can affect performance and is more fully developed in the discussion that follows.

Upon entering an important social environment, like a classroom, an individual tends to make a general assessment. He or she asks, "Is this a situation in which my identity could be a factor in my outcomes?" If the answer is yes, the person's identity will be psychologically engaged. Here we focus on cases where the person's identity has positively, rather than negatively, consequences for the individual. For instance, African American students have been shown as positive as White students to critical feedback when it was made clear that the critical nature of the feedback was motivated not by racial bias but by high standards and a belief in their ability to reach those standards (Cohen, Steele, and Ross, 1999). When the threat of group-based devaluation was disconfirmed, students could better assimilate the learning opportunities in the feedback.

If, on the other hand, the cues confirm the relevance of their identity to the situation, a threat-appraisal phase follows. People will assess whether they have the ability to deal with the threat, and, if they do, whether reducing prejudice and stereotyping, so as to change the actual and perceived outcomes associated with a social identity. This is done in programs designed to reduce prejudice in schools, such as the jigsaw classroom described in this chapter (Aronson and Patow, 1997). The process has been shown to be effective in reducing prejudice and stereotyping.

The process of identity engagement suggests four important approaches to intervention. The first, most obvious, involves reducing prejudice and stereotyping, so as to change the actual and perceived outcomes associated with a social identity. This is done in programs designed to reduce prejudice in schools, such as the jigsaw classroom described in this chapter (Aronson and Patow, 1997). The second approach highlights the value of changing the failure process in the social environment, so as to block downward recursive processes fueled by the social environment (Woodhead, 1988). Such changes could include substituting remedial programs with programs that challenge even low-performing students with high standards (Fulero and Trimarchi, 1990; Steele, 1997; Steele et al., 2004). Modifications could also involve broadening the criteria of merit by using alternative modes of assessment, for instance student portfolios, that are less susceptible to identity-threat processes (see Teyner et al., 2008).

Reducing an individual's tendency to interpret their experience in light of social identity at the vigilance stage and buffering individuals from any detrimental psychological or emotional impact of this tendency at the threat-appraisal stage are two psychological intervention strategies suggested by the identity engagement process (Cohen and Garcia, 2008).

Contrary to common wisdom, neither approach involves directly confronting the stereotype. Instead, it is possible that doing so may do more harm than good, because directly raising the stereotype may be distressing to some individuals. Below we will review research featuring randomized, double-blind experimental designs testing these two strategies in real-world classrooms.
Two field experiments were conducted in a suburban middle-class middle school where African Americans made up approximately 50% of the student body. Seventh-grade students completed an affirmation exercise in class early in the school year, a stressful time. They wrote about a personally important value, such as religion or relationships with friends (Cohen et al., 2006). The exercises, which were usually given before a test or exam, had students integrate the value into their lives in the context of a series of structured writing assignments. Writing touched on diverse issues of personal significance. For instance, one student wrote, “Art is important to me because it makes me feel calm. When I’m very upset, like I’m going to cry, I sit down and start listening to music or start drawing a picture.” Another wrote, “My friends and family are most important to me when I have a difficult situation that needs to be talked about. My friends give me companionship and courage. My family gives me love and understanding.”

African Americans who had been given the opportunity to self-affirm earned a higher course GPA than students of their race completing control exercises requiring them to write about neutral topics (Cohen et al., 2006). The intervention produced a roughly 40% reduction in the race gap in GPA in the course in the fall term. Follow-up data indicate that the intervention had an effect on overall GPA that persisted, or for at least two years following the intervention, 50% of the difference in GPA that had existed between African Americans and European Americans in previous years (Cohen et al., 2009). Perhaps more tellingly, at the practical level the intervention reduced the percentage of African Americans earning a D or below in the first term of the course from 20% to 9%. The latter rate was no different from the rate observed for White students. The potential importance of the latter finding is underscored by the fact that the poorest performing students in school often require disproportionate amounts of a school system’s resources to provide for their needs. Additionally, preliminary follow-up data related to state achievement-test performance indicated that students who had benefited from the intervention improved their standardized test scores and were better prepared for the next school year. The intervention may have helped to reduce the effects of poverty and race on educational outcomes by reducing the impact of social identity threat at the appraisal stage.

Lessening the Impact of Social Identity Threat at the Appraisal Stage

Instead of affecting people’s sensitivity to the possibility of being stereotyped, the second psychological strategy demonstrates the efficacy of intervening at the threat-appraisal stage by increasing people’s psychological resources. Underpinning this strategy is the notion that people want and need to see themselves in the light—to have a sense of self-integrity. In other words, people want to believe that they are good people and that they can cope with their environments. Moreover, it is possible to assure people that they do indeed have self-integrity by having them engage in self-affirmation. In this process people reinforce self-integrity by reflecting on important domains of identity unrelated to the provoking stressor (Steele, 1988; see also Sherman and Cohen, 2006). People are better able to cope with threat in one domain, school for instance, if they can shore up their self-integrity in another, such as family. More important, as self-affirmation reduces stress arising from evaluative performance settings (Creswell et al., 2005), we assumed that this, in turn, could improve performance (Martens et al., 2004).
important, one in which they believe their teachers will recognize their success.

Social processes can also act as factors that facilitate the transformation of initial benefits into long-term ones. Students receiving the intervention, upon performing better, may be seen by their teacher as more able. Such students may then receive more attention, mentoring, and challenge in the classroom (Rosenthal and Jacobson, 1992). They may also be more likely than high-performing students to experience the powerful effects of peer influence could then be yet another factor contributing to the transformation of the intervention’s short-term impact into long-term effects (Cohen and Prinstein, 2006; see also Hanisch et al., 2006).

As a consequence of the impact of these processes, the social identity of minority students receiving the intervention may become even less of a source of concern. Psychological intervention in this sense is not at all small, as its effects can often be reinforced by the powerful self-validating nature of perception, motivation, and performance.

How can psychological interventions be transformed into programs that can be implemented throughout a school, a district, or a nation? Scaling up interventions into pedagogical practices suitable for widespread dissemination constitutes a substantial scientific endeavor. Several empirical questions immediately present themselves. For instance, will intervention effects be generalizable, or will they be primarily moderated by important features of the context, such as its racial composition (Cohen and Steele, 2002)? Social identity threat appears to be more acute when people constitute a numerical minority (Inzlicht and Ben-Zeev, 2006). An implication following from this, although speculative, is that interventions aimed at lessening such threat may be relatively more effective for people who are members of White and other nonstereotyped individuals. Will teachers be able to administer the interventions independently without the input of researchers with equal success? Experimental trials often try to minimize practitioners’ ability to benefit from the success of the intervention. When these factors alter people’s underlying values, attitudes, or self-concepts, these effects are likely to persist (Freedman, 1965). This is especially true when these factors set in motion recursive cycles that can carry forward, and even augment, short-term effects (Cohen et al., 2009).

The notion that subtle shifts in psychological functioning can have considerable effects on important social outcomes can be seen not only in education but also in other domains, such as that of health. For instance, Pennebaker and his colleagues have consistently shown that having individuals engage in expressive writing requiring them to reflect on their past thoughts and feelings about stressful events can reduce stress. This in turn can improve health outcomes, even among cancer survivors and HIV patients (Petrie et al., 2004). Self-affirmation seems to underlie some of these health benefits (Creswell et al., 2007).

No Intervention Is an Island

A corollary of the notion that small things matter is the idea that the effects of an intervention can, in turn, depend on contextual factors that can be obvious or subtle (Bertrand et al., 2005). One critical implication of that concept is that the impact of any intervention will depend on the forces already at play in a given social environment. Interventions should not be thought of independently from the context in which they are administered (Bertrand et al., 2005). Although patently obvious, this point is often under-appreciated or even ignored. Social policy, including that involving education, is replete with instances, for example, the educational policy geared towards the reduction of class size. In response to educational research showing a negative relationship between class size and academic performance, well intentioned policy makers enacted initiatives designed to reduce the number of students in classes. However, implementing these initiatives could lead to teacher, health, well-being, and conflict (Bohm and Lyonsboum, 2009; Cohen et al., 2007).

Sometimes Small Things Matter

A theme that emerges in the research summarized in this chapter and in other chapters in this volume is that seemingly small interventions can have large effects when they target important social-psychological processes (Benarita, Pellegrini, and Thaler, 2005; Thaler and Sunstein, 2008; Wolinsky, this volume). This is not a new idea because much of what made classical research in social psychology so noteworthy is that demonstrated how seemingly subtle factors could have large-scale effects. When these factors alter people’s underlying values, attitudes, or self-concepts, these effects are particularly likely to persist (Freedman, 1965). This is especially true when these factors set in motion recursive cycles that can carry forward, and even augment, short-term effects (Cohen et al., 2009).

The notion that subtle shifts in psychological functioning can have considerable effects on important social outcomes can be seen not only in education but also in other domains, such as that of health. For instance, Pennebaker and his colleagues have consistently shown that having individuals engage in expressive writing requiring them to reflect on their past thoughts and feelings about stressful events can reduce stress. This in turn can improve health outcomes, even among cancer survivors and HIV patients (Petrie et al., 2004). Self-affirmation seems to underlie some of these health benefits (Creswell et al., 2007).

the impact of interventions can appear disproportionately large given the resources and time dedicated to them. This is what we believe occurred in the case of our affirmation intervention. Such an apparently disproportionate effect is contingent on existing factors that facilitate motivation and performance. Without adequately trained and committed teachers, sufficient material resources, social support, and students who have acquired the skills, better psychological interventions stand little or no chance of having a significant impact of any size. For example, although our affirmation intervention might lead a student who does not know how to spell to have a more positive sense of self, the inability to spell in the face of his or her inability to spell, it will not suddenly turn this student into an adequate speller. Moreover, psychological interventions might prove less effective in a disadvantaged school where students may have been consistently exposed to less qualified teachers and had fewer resources dedicated to them over time than in a middle-class school.

However, when such resources are present, psychological interventions can catalyze their impact (Cohen et al., 2006, 2009; Mencic et al., 2006), and lead to a situation in which an intervention’s effects seem unusually large or influential. What appears to be a small or brief event if viewed in isolation acts as a catalyst for a process that realizes the element of the environment so as to allow positive conditions, which were not previously fully realized, to manifest their impact more completely. For example, critical feedback had a strong and positive impact on the work of students performed in the classroom, but only when accompanied by a message that accorded the rigor of the feedback to the evaluator’s high standards and belief in the student’s potential (Cohen and Steele, 2002). When the identity threat was alleviated, the learning resources could assert their full impact.

Look Before You Intervene and Above All Do Not Oversimplify

The fact that key outcomes in tension systems can rarely, if ever, be attributed to a single factor carries with it still another implication, that is, to question explanations and initiatives that seek to oversimplify the processes underlying intervention effects. In a classic article concerning this issue, Woodhead (1988) observed, “One of the problems in communicating the messages of [intervention research] is that the experimental design itself is so important that attention to be directed toward the critical manipulated variable as the cause of observed differences between experiment and control groups, no matter how remote in time or nature the outcome measures are.
For instance, during a careful observation of classrooms, researchers discovered a factor that exacerbated interracial antagonism in the classroom—competition over scarce resources, in particular the students’ struggles for their teacher’s attention and praise (Aronson and Patnoe, 1997). Given that competition can increase ingroup conflict and prejudice, the researchers reasoned that restructuring the classroom to facilitate more cooperative relationships among students would provide the basis for effective intervention. The resulting jigsaw classroom, as their intervention was termed, accomplished exactly this. The children in a classroom were first separated into groups. Each child was then given a piece of the lesson plan to learn and to convey to others in his or her group. In order to learn the whole lesson plan, children were obliged to acknowledge and depend on others in their group regardless of their race or ethnicity. In other words, the intervention made it in the students’ self-interest to cooperate with one another irrespective of each other’s race or ethnicity. The jigsaw classroom creates a structure in which the processes leading to desired outcomes are more integrative and less conflictual. As such, ingroup intergroup antagonism is lessened. Although seemingly small, this intervention promoted positive intergroup relations by triggering processes that reduced what was often thought to be intractable intergroup antagonisms.

Sometimes It Is Psychological

The observable level of student performance or other school-related behavior could be an inaccurate display of students’ actual abilities. Indeed, Vygotsky (1978), the renowned education psychologist, introduced the construct “the zone of proximal development” to indicate the differences between what students can do on their own and what they can do with the help of their teacher. The Vygotsky zone is defined as the difference between a student’s current level of performance and the level that he or she would be capable of attaining under optimal situational conditions. The restraining forces in an environment may depress students’ willingness or ability to demonstrate their true ability. Understanding this can be characterized as an “ecological problem” (Cole and Bruner, 1971). Obviously, restraining forces can include objective impediments. An overcrowded classroom could lessen a student’s likelihood that any individual student could be called upon to demonstrate what they know. However, there are also psychological factors that can act as restraining forces in such environments. A classic study showed that while young street vendors were able to solve complex arithmetic problems in out-of-school settings, for instance rapidly adding up the price of several coconuts, they failed to solve the same basic problem when it was presented on a written test in school (Carraher and Schliemann, 2002).

The label of “underachiever” captures the essence of such situations, because it implies that an individual has a level of skill that he or she is unwilling or unable to demonstrate. Work on test-anxiety has shown that the stress related to taking tests can impede performance, so much so that simply reducing their anxiety can result in considerable gains in performance for all students (Blackwell et al., 2007). Furthermore, the message of optimism that often surrounds such interventions may contradict students’ actual experiences in the classroom, and lead to increasing frustration, disappointment, or mistrust (Wilson, Danmani, and Shelton, 2002). Interventions suggesting that the concerns of minority students are common and shared by majority-group members may be ineffective, and even counterproductive, when cues in institutional settings are continually reinstating identity threat in these students. For example, color-blind messages that downplay the importance of ethnicity can undermine minority students’ trust and belonging when such messages are provided in the absence of a supportive institutional environment. In those situations in which the positive distinctive qualities of one’s culture will be ignored or should be suppressed (Purdie-Vaughns et al., 2008). In summary, psychological interventions will be more effective if the institutional setting provides adequate materials for students, and generally, interventions need to be rigorously tested in any new context to monitor for unforeseen consequences, and ideally they should be given only to those who would benefit from them.

Timing Is Almost Always Important

The most critical aspect of an intervention can often determine whether an intervention works. Research on leadership offers an example with findings that show that a leader in work or school can change an organization’s norms for the better, but only at certain junctures. Specifically, a leader’s greatest impact occurs early in a project when norms have been set; in the middle of the project, when groups naturally monitor their progress; and at the end, when group members take stock of the project (Hackman, 1995). A similar example is provided by research in early childhood education showing that interventions that target early childhood experiences, through preschool enrichment programs for instance, have particularly high returns (Heckman, 2006).

The importance of timing can have in psychological interventions cannot be overstated. Psychological interventions, for instance, may be most effective
when administered at times of high stress as a means of interrupting a downward slide in functioning. In the educational domain, it could prove worthwhile to administer interventions at times of academic transition, such as those into middle school, high school, or college. These are times when the performance standards students are expected to meet shift upward, when their sense of identity is in flux, and their existing social support circles are disrupted. Each of these factors, in isolation or in concert, can heighten stress and feelings of exclusion. Intervening early in these transitions can have relatively larger benefits because they can interrupt recursive cycles triggered by such factors that would otherwise sedate students on a downward trajectory (Cohen et al., 2009).

It is also important to time an intervention to occur during the period in which it will have the most impact on an individual’s psychological environment. If given too early, for instance, before students feel uneasy, the attributional retraining intervention could set off the very concerns it is intended to alleviate. It could, by suggesting to students that they should be wondering about their ability and belonging, make them anxious; otherwise, would not have been (Wilson, Damiani, and Shelton, 2002; see also Pennebaker, 2001). Similarly, counting one’s blessings or engaging in altruistic acts, activities that are purposefully designed to increase people’s happiness, can be rendered ineffective by subtle changes in their timing or frequency (Boehm and Lyubomirsky, 2009).

One implication issuing out of the importance that timing can have in the development of interventions is the necessity of being able to identify not only who needs an intervention, but also when it is most needed. As in medical science, because the effects of psychological interventions can be harmful, uninfluenced, or nonexistent for certain individuals, it is as a general rule inadvisable to administer interventions indiscriminately. Likewise, for many of the same reasons, as well as others, it is inadvisable to administer an intervention too often, or not often enough, at times when it is inappropriate or irrelevant. Given this, developing an intervention it is often critical to create methods for determining who needs it and when they need it. For instance, in our affirmation intervention we have used, in conjunction with the intervention itself, validated climate assessments designed to assess students’ perception of the school environment, as well as their psychological state, at more or less regular intervals to aid us in administering the intervention in a more targeted manner and at the most appropriate time. It is even possible to micro-time psychological interventions to occur at moments of maximal need for a given individual. For instance, through mobile technology it is possible to deliver interventions to people as they go about their normal lives and to tailor the timing and content of the intervention to each person’s distinctive experiences and needs (see Harris and Smyth, 2010). We hope that ultimately practitioners and researchers will be able to apply psychology-based interventions in the way that physicians intervene medically. They will use a body of scientific research knowledge and a diversity of associated diagnostic technologies to help identify who should receive a treatment and when they should receive it.

Conclusion

The obvious but often overlooked notion that social environments such as schools and classrooms are complex tension systems composed of interacting factors, including recursive psychological processes, deserves the attention of researchers, practitioners, and policy makers. So does the idea that timely interventions, of whatever duration and magnitude, that address the factors that people believe are causing their behavior can have large and long-lasting effects on behavior and attitudes. Because of the interactive nature of social environments, an intervention’s duration and magnitude depend on how it interacts with important and complex processes in the development of the individual and the development and implementation of psychological interventions of long-lasting and widespread impact.

Notes

We thank Sarah West and Eden Davis for comments on an earlier draft. Portions of the authors’ research cited in this article were supported primarily by grants from the National Science Foundation’s Research and Evaluation on Education in Science and Engineering program, the W. T. Grant Foundation, and the Spencer Foundation. Additional support was provided by the Russell Sage Foundation and the Nellie Mae Education Foundation.

References


