Social-Psychological Insights on Improving Blind People’s Employment Outcomes

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SWIMMING UPSTREAM:
SOCIAL-PSYCHOLOGICAL INSIGHTS ON IMPROVING BLIND PEOPLE’S EMPLOYMENT OUTCOMES

by
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Swimming Upstream:
Social-Psychological Insights on Improving Blind People’s Employment Outcomes

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The final copy of this thesis has been examined by the signatories, and we find that both the content and the form meet acceptable presentation standards of scholarly work in the above mentioned discipline.

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Abstract

Silverman, Arielle (Ph.D., Department of Psychology and Neuroscience)

Swimming upstream: Social-psychological insights on improving blind people’s employment outcomes

Thesis directed by Leaf Van Boven, Associate Professor, Department of Psychology and Neuroscience

An estimated 39 million individuals worldwide are legally blind. Despite technological advances and legal protections, blind people are unemployed or under-employed at much higher rates than their counterparts without disabilities. In this dissertation, I propose that common perceptions of blind people as dependent and incompetent can cause them to under-perform in the employment domain, in much the same way that negative stereotypes can cause stereotyped students to under-perform in academics. In three papers, I investigate how perceptions of blind people can be influenced, how stereotype threat affects blind people, and how ingroup friendships can protect blind people’s achievement. First, when people briefly simulate blindness, they perceive blind people as being less capable of work and independent living (Chapter 2, Studies 1 and 2). This occurs because the challenging simulation experience makes perceivers think that they would be less capable if they were blind themselves, and that they would adapt to blindness more slowly (Chapter 2, Study 2). Second, blind adults who worry about being perceived as dependent and incompetent experience lower self-integrity, which is associated with unemployment and less challenge-seeking (e.g., traveling to new places independently less often); Chapter 3, Study 1). However, blind students make better progress in a rehabilitation program if they have bolstered their self-integrity through a values-affirmation (Chapter 3, Study 2). Finally, having more blind
friends is associated with positive well-being and achievement outcomes (Chapter 4, Study 1), and merely thinking about a blind friend can improve persistence on stereotype-relevant tasks (Chapter 4, Studies 2 and 3). Together, the findings suggest that relatively simple interventions can empower blind people to overcome negative public attitudes, allowing them to realize their potential as contributing members of society.

Keywords: disability, achievement, perspective-taking, stereotype threat, self-affirmation, stigma
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Chapter 1: Introduction

An estimated 6.6 million Americans are blind or have serious difficulty seeing, according to the 2011 American Community Survey (Erickson, Lee, & Von Schrader, 2012). Worldwide, an estimated 39 million individuals are blind (World Health Organization, 2013). The prevalence of blindness and visual impairment is expected to increase dramatically in the coming decades, as the population ages (National Federation of the Blind, 2013).

Using adaptations such as Braille and assistive technology, blind people possess the ability to attain postgraduate education, to participate in most professions, to live independently, and to raise families (Omvig, 2002). Yet blind people still face significant socioeconomic disadvantages. In 2011, only 36.8% of visually disabled Americans of working age (ages 21-64) were employed, compared with 75.6% of their peers without disabilities. Furthermore, only 13.3% of unemployed Americans with visual disabilities were actively looking for work, compared with 29.4% of unemployed Americans without disabilities. Finally, even those blind/visually disabled Americans who were employed full-time earned nearly $10,000 less per year than Americans without disabilities (Disability Compendium, 2012). Employment inequities remain in spite of the Americans with Disabilities Act, which prohibits discrimination in hiring and requires employers to make job tasks accessible to employees with disabilities (Smart, 2003). These data suggest that a substantial socioeconomic achievement gap exists for blind persons, even in the United States, where resources and legal protections abound for this population.

In this thesis, I will argue that negative public perceptions of blind people can prevent them from participating in employment as actively as they are able, causing them to “under-perform” (Steele, 2010; Walton & Spencer, 2009). Specifically, blind people are commonly
perceived as lacking work-related competencies or being dependent on others. Such perceptions can motivate discrimination, but can also hinder performance indirectly by motivating people to avoid stereotype-relevant situations, such as declining to apply assertively for jobs or forgoing disability-related services. However, if blind people are armed with the psychological resources to “swim upstream” against the current of public perception, they can realize their achievement potential. This view suggests that the employment gap cannot be fully attributed to innate limitations of sight loss, nor to physical barriers such as lack of transportation. Forces in the psychological environment can restrain or facilitate blind people’s participation in society.

**Prior Explanations for the Socioeconomic Achievement Gap**

Medical models of disability posit that physical or mental impairments are innately disabling, limiting one’s potential to perform activities regardless of the social context. This is analogous to biological explanations for observed gender differences in math and science achievement (Steele, 2010). According to this view, blind people experience unemployment because blindness renders many work-related activities difficult or impossible. Medical models frame disability as a problem of individuals, not of societies, so they call for interventions that directly ameliorate impairments (Fein & Asch, 1988; Smart, 2003; Wright, 1983).

Medical models have been challenged on several grounds, and these challenges suggest that they incompletely explain the employment gap among blind Americans. First, medical models frame impairments as independent variables that exert unqualified effects on outcomes (e.g. employment rates) without examining moderating contextual forces (Fein & Asch, 1988). While medical models may explain differences between disabled and non-disabled populations, they do not explain differences within a disabled population; that is, why some individuals with the same impairment are successfully employed and others are not. Further, it is clear that
environmental forces do moderate the impact of impairments. For example, blindness limits one’s ability to drive a car, which causes significant restrictions in some settings (e.g., rural towns) but has a negligible effect in others (e.g., urban metropolises with abundant public transportation). Finally, the medical model implies that impairment is universally negative, both in objective and subjective terms. Such suppositions conflict with empirical evidence showing that people can construe impairments in neutral or positive terms (Bogart, 2014; Nario-Redmond, Knowle, & Fern, 2013; Schroeder, 1996).

In recent years, medical models have begun to give way to social models of disability, which posit that disability arises from an interaction between an impairment and a disabling environment (Smart, 2003; Wright, 1983). Social models call for intervention at the environmental level—namely, removal of physical and attitudinal barriers—in order to render impairments less disabling. This view is implicit in laws such as the Americans with Disabilities Act (ADA) which require the removal of recognized environmental barriers. These laws prohibit blatant discrimination on the basis of disability, and require educators and employers to make school and work environments physically accessible to disabled people. The ADA has successfully removed some environmental barriers, such as allowing wheelchair users to access public buildings.

Yet disabled people, and blind people in particular, still face socioeconomic underachievement in spite of these laws. In fact, some scholars have argued that the ADA has threatened employment for the disabled, citing employment declines for this group in the 1990’s (e.g., Houtenville & Burkhauser, 2004). Subtle discrimination can still operate within the restrictions of the ADA. For example, an employer may overestimate a blind employee’s accommodation needs, believe that a blind applicant cannot perform essential job duties
effectively, or simply disguise discrimination by falsely claiming a position is filled before interviewing the blind applicant—a situation that has been reported as recently as 2013 (Silverman, 2013).

The ADA’s limited efficacy suggests that removing obvious environmental barriers is necessary, but not sufficient, to close the socioeconomic achievement gap. Perhaps most troubling of all is the low rate of labor force participation among blind and other disabled americans. Blind people are not only less likely to hold employment, but those who are unemployed are only about half as likely to be actively looking for work. This suggests that even when workplaces are made physically accessible, disabled people may be disengaging from the workforce altogether. This in turn suggests that psychological barriers—specifically, stigmatization—may be at play.

In this thesis, I argue that stigmatization contributes to the socioeconomic achievement gap exhibited by blind Americans, just as it contributes to under-performance among other stigmatized groups, such as African Americans, Latino Americans, and women in quantitative fields (Steele, 1997, 2010). Specifically, blind people are commonly perceived as lacking competency and agency, and thus as incapable of performing many jobs, living independently, or parenting effectively (Ferguson, 2001; Nario-Redmond, 2010; Omvig, 2002). I propose that such beliefs originate, in part, from people’s intuitions that they would lack capability themselves if they became blind. I then suggest that these stereotypes can threaten a blind person’s sense of self-integrity, or adaptive adequacy in the environment (Steele, 1988). In order to preserve a sense of themselves as adaptively adequate, blind people may be inclined to avoid situations in which they might be stereotyped, such as applying for jobs or walking alone in public, which contributes to low rates of employment and workforce participation. Finally, I suggest two
intervention strategies to counteract the detrimental effects of stigma: reflecting on important personal values (self-affirmations) and building a friendship network of others who are also blind.

The Present Research

I will present three empirical papers that examine the problem of under-employment among blind people from a social-psychological perspective. Each research project tests hypotheses derived from well-developed theoretical models of social behavior, including models of emotional perspective-taking, social identity threat, self-affirmation, and coping. In addition to deepening our understanding of under-employment among blind people, each research project also generates new theoretical knowledge that enriches our understanding of social behavior more broadly.

Stumbling in Their Shoes: Disability Simulations Reduce Judged Capabilities of the Disabled (Chapter 2)

The first paper examines how direct embodied experiences with blindness shape people’s judgments of blind people. In many cases, briefly sampling other people’s experiences improves attitudes toward those people. However, sampling the experience of blindness is likely to emphasize the challenges and frustrations associated with initial sight loss rather than the mastery and success that blind people eventually attain. Thus, I hypothesized that simulating blindness could backfire by intensifying people’s beliefs that they would lose competency and agency if they became blind, thus causing them to judge blind people as less capable.

This hypothesis suggests that common disability simulation exercises, though designed to reduce prejudice against people with disabilities, can unintentionally backfire and exacerbate common prejudices against blind people. More broadly, it suggests that people’s judgments of
outgroups can be shaped by their imagined experiences as a member of the outgroup. In the case of blindness, people may perceive blind people as lacking in competency or agency because they imagine that blindness would strip them of their own abilities, and brief encounters with blindness (such as moving about in the dark) support this intuition. Similar processes may support prejudiced attitudes toward other groups; for example, one may make judgments about those who are obese by imagining how the onset of obesity would impact their own experience or behavior. In short, intergroup attitudes may be influenced by egocentric, “bottom-up” processes of inference from one’s own experience, in addition to “top-down” stereotypes about outgroups.

**Stereotypes as Stumbling-Blocks: Effects of Stereotype Threat on People with Disabilities**

*(Chapter 3)*

The second paper examines how awareness of stereotypes can contribute to under-employment among blind people. I propose that chronic experiences of stereotype threat—worries about being judged stereotypically—can undermine a person’s sense of self-integrity. “Self-integrity” is the perception of oneself as having adaptive adequacy—being a good, efficacious person who is capable of adapting to environmental demands and living up to culturally important values (Cohen & Sherman, 2014; Steele, 1988). Common disability stereotypes portray the disabled person as possessing a broken body or feeble mind, lacking agency or capacity to adapt to environmental demands. Thus, I argue that awareness of these stereotypes can threaten self-integrity among people with disabilities, including blind people.

Because people have a fundamental motive to defend their self-integrity against threat (Cohen & Sherman, 2014; Sherman & Cohen, 2006), people are naturally inclined to avoid situations that have the potential to activate stereotype threat, if such avoidance is feasible. Thus,
I hypothesized that among blind people, stereotype threat would be associated with reduced striving in stereotype-relevant domains—particularly employment and travel (e.g. using public transportation alone). That is, blind people could be disinclined to apply assertively for jobs, to use public transportation alone, or to participate in other stereotype-relevant activities if they are highly concerned about being judged stereotypically. In addition to limiting achievement, constant vigilance against being stereotyped is stressful and depleting, undermining well-being (Inzlicht, Tullett, & Gutsell, 2011). Thus, I also hypothesized that everyday stereotype threat experiences would be associated with reduced subjective well-being.

I tested the foregoing hypotheses in two studies. First, I conducted a correlational study and performed path analyses to investigate the relationships between stereotype threat experiences, self-integrity, challenge-seeking, work achievement, and well-being. In Study 2, I tested whether an experimental manipulation of self-integrity—a values-affirmation exercise—could benefit achievement among blind adults. Values-affirmations benefit achievement among other stereotyped groups by improving coping with stereotype threat (for reviews see Cohen & Sherman, 2014; Sherman & Hartson, 2011). I conducted a randomized field experiment at a residential training center for the blind to test whether a values-affirmation could promote learning among the center students. Students attend these centers to master compensatory skills, such as Braille, nonvisual cooking, and cane travel skills. While the development of such skills is important and ultimately liberating, it also has the potential to produce stereotype threat. I thus hypothesized that the values-affirmation would benefit compensatory skill training.

This research program begins to explore the social-psychological barriers to employment that blind people experience. It suggests that worries about being stereotyped could lead them to under-perform relative to their potential, by electing not to participate in the workforce, avoiding
certain kinds of jobs, or opting not to use compensatory skills or services (Dodds & Ferguson, 1994; Goffman, 1963). Study 2 investigates a potential solution: an intervention that restores self-integrity by reminding people of their cherished personal values. More broadly, this work helps explain how stereotype threat’s impacts on stigmatized individuals persist and compound over time, highlighting how people’s attempts to guard their self-integrity against threat can exacerbate achievement disparities.

**Solace in Solidarity: Ingroup Affiliation Benefits People with Disabilities (Chapter 4)**

The final paper in this thesis examines a potentially important coping resource: friendships with other blind people. People often spontaneously choose to affiliate with others who share their circumstances (Schachter, 1959). Affiliating with others who share one’s stigma can change how that stigmatized identity is appraised and offer a buffer against the self-threats posed by stereotyping and discrimination (Ball & Nario-Redmond, in press). Though one could argue that having friends outside the blind community is important for achievement (e.g. by providing opportunities for job networking), I hypothesized that having blind friends could confer unique psychological benefits that support achievement and well-being. In Study 1, I examined the associations between participants’ proportion of blind friends and a host of well-being and work achievement measures. In two follow-up studies, I then examined whether experimentally manipulating the salience of friendships with other blind people (ingroup friendships) could increase striving on a stereotype-relevant task. I hypothesized that thinking about ingroup friendships, but not outgroup friendships, would increase striving by helping participants to appraise the tasks as challenges to be confronted rather than as threats to be avoided (Cohen & Garcia, 2005).
This final research project highlights an important, but perhaps under-appreciated, strategy to improve employment among blind people. Efforts to bring blind people together could help arm them with psychological resources needed to combat stereotype threat and to continue striving in spite of it. On a broader theoretical level, this research suggests that people prefer to affiliate with those sharing their circumstances because such affiliation is psychologically adaptive.
Chapter 2

Stumbling in Their Shoes:
Disability Simulations Reduce Judged Capabilities of Disabled People

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Abstract
Sampling the difficulties other people confront often improves attitudes toward those people. In the case of physical disabilities, however, such experience simulations can backfire. By highlighting the initial challenges of becoming disabled, experience simulations decrease the perceived capabilities of disabled people. In two experiments, participants engaged in a challenging blindness simulation and afterwards judged blind people as less capable of work and independent living than did participants after simulating a different impairment (Experiment 1), no impairment (Experiments 1 and 2), or after merely watching someone else simulate blindness (Experiment 2). Blindness simulators forecast that they would be less capable themselves if blind, which mediated their reduced capability judgments (Experiment 2). Experience simulations can unwittingly promote patronizing attitudes toward the disabled. The findings indicate that experience sampling can harm rather than help attitudes toward people who are in different situations from the self.
A great truth in psychology is that sampling other people’s experience improves attitudes toward those people. Individuals who sample experiences of hunger evaluate overeaters less harshly than do non-hungry people (Nordgren, Van Der Pligt, & Van Herreveld, 2007). People who are thirsty better predict the discomfort of others’ thirst than do people who are not thirsty (Van Boven & Loewenstein, 2003). People who are cold understand the need for warm clothing better than do people who are not cold (O’Brien & Ellsworth, 2012). People express more sympathy toward physically disabled people after simulating paraplegia by navigating in a wheelchair than do people who do not simulate paraplegia (Clore & Jeffery, 1972).

Of course, the opposite of a great psychological truth is also true (McGuire, 1973). This paper is about the unintended negative consequences of experience sampling. Experience sampling can harm rather than help attitudes toward others.

We hypothesize that brief experience simulations of disabilities can decrease judgments of disabled people’s capability. Because experience simulations highlight the challenges and failures associated with being newly disabled, they may lead people to forecast that they themselves would be less capable if they were disabled. Consequently, because people judge others based on their personal experiences and forecasts of how they would respond to other people’s situation, people may be lead to judge disabled people as less capable after these experiences of challenge and failure.

To understand why experience simulations may backfire, let us first consider why they often work as intended. Experience simulations can give people more realistic expectations of what their personal reactions would be to another’s situation (Gilbert, Gill, & Wilson, 2002; Loewenstein, O’Donaghue, & Rabin, 2003). These personal experiences and expectations then
serve as the basis for judging other people who are actually in those situations, which improves attitudes toward those people (Van Boven & Loewenstein, 2005; Van Boven et al., 2013).

Experiences are sometimes misleading, however. When they are, experience sampling may backfire. In particular, experience simulations of disability can be misleading, because they highlight the initial challenges and failure experiences of becoming disabled, rather than the competencies and adaptations of being disabled, of living life as a disabled person (French, 1992). Thus when people simulate disabilities, such as by wearing a blindfold to simulate blindness, they may have an exacerbated tendency to underestimate how thoroughly and quickly people can adapt to substantial changes in life circumstance.

Although there is extensive evidence that people adapt to substantial changes in life circumstance, people tend to underestimate the rate and degree of adaptation, a pattern of adaptation neglect (Gilbert et al., 1998; Gilbert & Wilson, 2009; Ubel, Loewenstein, & Jepson, 2005). Healthy people underestimate what their health-related quality of life would be if they became disabled or chronically ill, compared with people who are actually disabled or chronically ill (Boyd et al., 1990; Hurst et al., 1994; Riis et al., 2005; Sackett & Terranee, 1978). However, they show a reduced adaptation neglect when they are encouraged to imagine how they would adapt to disability (e.g., what technologies they would use), which suggests that their judgment is based partly on their forecasts of their own capability (Ubel et al., 2005). In contrast with imagining adaptations, disability simulations may have the opposite effect by providing people an embodied experience of the challenges and failures associated with being newly disabled.

These considerations led us to predict that embodied disability simulations cause people to judge disabled people as less capable. Specifically, we predicted that, after wearing a
blindfold to simulate blindness, people would be led to judge disabled people as less capable of working and living independently. We also reasoned that people would forecast that their own capabilities would be severely limited if they were disabled, and that this perception would shape their subsequent negative attitudes toward the disabled (Van Boven et al., 2013).

Thus, disability simulations may decrease the perceived capability of the disabled even as they may increase liking of and sympathy toward the disabled (Clore & Jeffry, 1972; Wadlington, Elliot, & Kirylo, 2008). Warmth and competence are distinct dimensions of evaluation (Cuddy, Glick, & Fiske, 2007; Fiske et al., 2002), so it is quite possible that disability simulations could have divergent effects on these two dimensions. Disability simulations could promote a pattern of patronizing discrimination in which disabled people are seen as less capable but more likable (“Blind people can’t live on their own, but they sure are nice.”).

We tested these predictions in two experiments using blindness simulation. We focused on blindness, because it is widely regarded as a highly impactful condition (National Federation of the Blind, 2013), because it is an increasingly common condition among an aging population, and because blindness is a commonly used disability simulation given its ease of operationalization (i.e., people are asked to wear blindfolds). In each experiment, some participants performed a series of tasks while blindfolded as an embodied simulation of blindness, whereas others performed the tasks in various control conditions. Participants then evaluated blind people’s abilities to live independently and to perform professional activities, such as being a schoolteacher.

In Experiment 1, participants performed tasks either while blindfolded, while simulating an alternate impairment (arm amputation), or with no impairment. We designed Experiment 2 to more precisely isolate the embodied nature of blindness simulation. Some participants simulated
blindness; other participants watched videos of the blindness simulation or learned about the nature, but not the episodic details, of blindness simulation; other participants were told nothing about the simulation. In both experiments, we predicted that blindness simulators would judge blind people as less capable than would participants in the other conditions.

In Experiment 2, we also tested whether blindness simulators would predict that they themselves would be less capable if they became blind. We expected that blindness simulators would forecast lower capability than participants in the other conditions, and that the effect of blindness simulation on personal capability forecasts would mediate the effect of blindness simulation on judged capability of blind people. We also measured people’s predictions of adaptation to blindness over time. We expected blindness simulators to forecast slower and less complete adaptation compared with participants in the other conditions. Finally, participants in Experiment 2 reported their feelings of warmth toward blind people. We predicted that blindness simulators would feel greater warmth toward blind people, in contrast with their lowered capability judgments (Clore & Jeffry, 1972).

Experiment 1: Blindness and Amputeeism

Method

Intuition and informal pilot testing suggested the predicted difference would be a medium-sized effect. Given the time-intensive nature of running each participant, we aimed to recruit at least 30 participants per condition in each experiment, depending on availability of research participants within the semester when the experiment was conducted.

One hundred and two university undergraduates (34 per condition) participated in Experiment 1 as part of a course requirement. We did not measure participant gender, as we had no hypotheses about how gender would interact with our manipulation. All participants were
randomly assigned to condition and told that they would be completing a series of tasks either with or without impairment. Blindness simulators wore a blindfold during the tasks, while amputee simulators had their dominant arm tied behind their back in a sling. Finally, non-simulators completed the tasks unencumbered. Blindness and amputee simulators were asked to imagine the “experience and perspective” of a blind person (amputee) while performing the tasks. Non-simulators were asked to “perform these tasks as you normally would.”

There were four tasks. First, to simulate basic navigation, participants were instructed to walk twice around the lab room, once in a full circle around the perimeter of the room and then once from the far corner of the room to the door and back (see Figure 1). Second, participants were directed to a table with a pitcher of water and asked to fill a glass as much as possible without spilling. The pitcher was always sealed initially, such that its pour lid needed to be turned 90 degrees in either direction before the pitcher could pour any water, which participants had to figure out. Third, the experimenter scattered 5 nickels, 5 dimes, and 5 quarters on a table, and participants were tasked to gather the coins and sort them into piles according to their denomination. Finally, participants were instructed to write their identification number (a complex string of letters and numbers) and the date on the chalkboard.
Participants then answered eight questions about the capabilities of blind people.\footnote{1} Participants indicated “how well you think the average blind person could do this activity, compared with the average nondisabled person” (1 = could perform the activity much worse than a nondisabled person; 4 = could perform the activity as well as a nondisabled person; 7 = could...
perform the activity much better than a nondisabled person). The activities were: living independently, walking around downtown, accountant, chef, construction worker, schoolteacher, small business owner, and tour guide. We averaged these eight items into a judged capability index (α = .67). We selected these activities based on anecdotal reports that blind people face especially strong discrimination in these fields (Omvig, 2002) and our intuitions that these activities are especially relevant to competence and independence.

**Results**

We excluded one blindness simulator who was more than 6.5 studentized residuals above the predicted mean in our key analyses.

As predicted, blindness simulators judged blind people as less capable (M = 2.26, 95% CI [2.04, 2.48]) than did amputee simulators (M = 2.61, 95% CI [2.42, 2.80]) and non-simulators (M = 2.54, 95% CI [2.35, 2.74]). To estimate the size of this effect, we regressed capability judgments on two orthogonal contrasts (contrast weights in parentheses). The first estimated the difference between the blindness simulators (+1) and the other two conditions (amputee simulators = –1/2, non-simulators = –1/2); the second contrast estimated the difference between the amputee simulators (+1) and the non-simulators (–1). The first contrast confirmed that blindness simulators rated blind people as less capable than the other two groups did, b = -.21, t(98) = -2.72, 95% CI [-.06, -.36], d = .55. The second contrast implied little or no difference between amputee-simulators and non-simulators, b = .03, t(98) = .56, 95% CI [−.23, .29], d = .11. Blindness simulation thus caused people to judge blind people as less capable of living and working independently.

**Experiment 2: Blindness and Vicarious Blindness**
We next sought to replicate and extend the results of Experiment 1 in four ways. First, to more precisely examine the effect of embodied, experiential blindness simulation, we compared the capability judgments of blindness simulators with those of vicarious simulators. These vicarious simulators watched films of blindness simulators, but they did not engage in simulation themselves. In the simulation-knowledge condition, participants learned about the blindness simulation, but they neither engaged in nor watched a simulation. Finally, in the no-information control condition, people did not receive any information about the blindness simulation. We predicted that blindness simulators would judge blind people as less capable than the three other groups, none of whom directly experienced the challenges and failures of blindness simulation.

Second, we measured people’s forecasts of how capable they would be if they became blind, as a potential mediator of the effect of blindness simulation on the judged capability of the blind. Third, we measured people’s forecasts of how much their lives would be impacted at increasing temporal distance from disability onset, estimating whether disability simulators predicted that they would adapt more slowly and less completely than non-simulators. Finally, we measured people’s warmth toward blind people, estimating whether disability simulators would feel more warmth toward blind people than non-simulators (Clore & Jeffery, 1972), even as they judged blind people as less capable.

Method

One hundred and fifty-three university undergraduates (37-39 per condition) participated as partial fulfillment of a course requirement. Participants were first randomly assigned to one of two pairs of conditions: the blindness-simulation pair or the non-simulation pair. Within the blindness-simulation pair, participants were assigned either to be blindness simulators or vicarious simulators. Blindness simulators personally simulated blindness. Their simulation was
videotaped and shown to the next-scheduled participant, a vicarious simulator. This avoids the stimulus issues of using a single video for all vicarious simulators.

Blindness simulators completed the water-pouring and coin-sorting tasks from Experiment 1. To strengthen the manipulation, the room-navigation task was replaced with a more extensive walk, in which participants navigated the hall of the lab building using a white cane. Simulators were instructed to locate a stairwell in a neighboring hallway, and then to find their way back to the lab room.

Each blindness simulator was filmed, and the film was shown to a vicarious simulator. Vicarious simulators were told they would be viewing a video of another participant who had been asked to imagine becoming completely blind and to perform tasks while blindfolded. Vicarious simulators thus witnessed a blindness simulation, affording detailed episodic knowledge about the simulation but without the personal experience of the blindness simulators.

Within the non-simulation pair, participants were randomly assigned to the simulation-knowledge or no-information condition. In the simulation knowledge condition, participants were told that they would not be asked to perform tasks with an impairment themselves, but that some other participants had been randomly assigned to pour water, sort coins, and walk down the hall while blindfolded. The experimenter showed the participant the blindfold, water pitcher, coins, and cane. These participants thus had knowledge of blindness simulation, but they had neither personal experience (in contrast with blindness simulators) nor detailed episodic knowledge (in contrast with vicarious simulators). No-information control condition participants were simply told that they would not be assigned to complete any tasks, and they skipped ahead to the dependent measures.
All participants completed the judgments of blind people’s capability using the same dimensions as in Experiment 1, using a 13-point scale (1 = *a non-disabled person would do much better*; 7 = *non-disabled and blind people would do equally well*; 13 = *a blind person would do much better*; averaged into a single index, $\alpha = .79$). The scale was expanded to reduce ceiling and floor effects. In addition, we asked participants to forecast their own capability if they became blind. Participants were asked to consider the same tasks and to estimate how well they would be able to perform each task themselves if they became blind, compared with how well they perform the task as a sighted person (1 = *I would do much better while sighted*; 7 = *I would do equally well while blind and sighted*; 13 = *I would do much better while blind*; averaged into an index, $\alpha = .85$).

To measure forecasted adaptation to blindness over time, we adapted a measure from Igou (2004, 2008). Participants were asked to consider how “the experience of being blind may or may not change over time” and to “imagine that you have become blind, and think about how much being blind would limit your everyday functioning at various time points since becoming blind. ‘Daily functioning’ means ability to take care of yourself, hold a job, and participate in leisure activities that you enjoy.” Participants were provided with a graph where the X-axis was time, ranging in 6 month intervals from 6 months following the onset of blindness to 36 months (3 years) after onset of blindness. The Y-axis represented intensity of limitation (0 = *not at all limited*; 10 = *extremely limited*). Participants forecasted the intensity of their limitation at each of the six times.

To measure warmth toward blind people, participants indicated how compassionate, empathetic, friendly, open, sympathetic, and warm they felt toward blind people (1 = *not at all*; 7 = *extremely*; averaged into a single index, $\alpha = .82$).
Results

Preliminary analyses. We analyzed blindness simulators and vicarious simulators as independent samples, because the intraclass correlation (ICC) between the judged capability ratings was only .05 (Griffin & Gonzalez, 1995). We excluded a vicarious simulator and a simulation knowledge participant from analyses of judged capability, because they had studentized residuals greater than 4.5 from the predicted mean.

Capability judgments. To estimate how much blindness simulators judged blind people as less capable than did the other three groups of participants, we regressed the judged capability index onto three orthogonal Helmert contrasts (weights in parentheses). The contrasts were constructed such that, starting with blindness simulators, each condition was compared with the mean of other conditions with relatively less information. Specifically, the first contrast tested the difference between blindness simulators (+3) and the other three conditions (–1 each), the second contrast tested the difference between the vicarious simulators (+2) and the two other control conditions (–1 each), and the third contrast tested the difference between the simulation knowledge (+1) and the no-information (–1) conditions.

As predicted, blindness simulators judged blind people as less capable ($M = 3.61$, 95% CI [3.20, 4.02]) than did participants in the other three conditions ($M = 4.13$), $b = -.12$, $t(147) = -2.33$, 95% CI [0.020, 0.240], $d = .38$ (see Figure 2). The vicarious simulators’ ratings ($M = 4.11$, 95% CI [3.73, 4.49]) did not differ from those of the other two conditions, $b = .01$, $t(147) = .13$, 95% CI [–.148, .162], $d = .02$. The simulation-knowledge ($M = 4.28$, 95% CI [3.87, 4.69]) and no-information control conditions ($M = 4.00$, 95% CI [3.62, 4.39]) did not differ, $b = .14$, $t(147) = .99$, 95% CI [-.137, .415], $d = .16$. Direct embodied experiences with blindness simulation thus reduced judgments of how capable blind people are, compared with simply having
knowledge of blindness simulation—even when that knowledge contained detailed, episodic, but third-person information about the simulation.

![Figure 2](image_url)

**Figure 2.** Experiment 2: Effect of simulation condition on capability judgments of blind people and on capability forecasts of one’s own capability if blind. Error bars show 95% CI.

**Capability forecasts.** Capability forecasts of one’s personal capability as a blind person followed a similar pattern. To estimate the size of this effect, we regressed the capability forecast index on the same three contrasts described above. Blindness simulators predicted that they would personally be less capable ($M = 2.25$, 95% CI [1.87, 2.63]) than did participants in the other three conditions ($M = 2.90$), $b = -.16$, $t(149) = -2.49$, 95% CI [.033, .292], $d = .41$ (see
Vicarious-simulators’ capability forecasts ($M = 2.91$, 95% CI [2.52, 3.30]) did not differ from those of the two other conditions, $b = .004$, $t = .04$, 95% CI [-.180, .187], $d = .01$, and neither was there a difference between the simulation-knowledge ($M = 3.09$, 95% CI [2.45, 3.73]) and no-information control conditions ($M = 2.70$, 95% CI [2.29, 3.11]), $b = .20$, $t(149) = 1.20$, 95% CI [-.126, .517], $d = .20$.

Consistent with our hypothesis that capability forecasts influence capability judgments, the negative effect of blindness simulation on judgments of own capability mediated the negative effect of blindness simulation on judgments of blind people’s capabilities. We added participants’ capability forecasts to the regression model estimating participants’ judgments of blind people’s capability from the three contrasts described earlier. The constant in the model was positive, reflecting that participants estimated that blind people were more capable than they themselves would be if blind, $b = 1.31$, $t(147) = 13.12$, 95% CI [1.11, 1.50], $d = 2.16$. This self/other difference likely reflects people’s tendency to perceive personally-experienced difficulties as more intense than others’ difficulties (White & Van Boven, 2012). More important for present purposes, there was a substantial effect of participants’ capability forecasts for themselves on their judgments of others’ capabilities, $b = .47$, $t(147) = 7.14$, 95% CI [.34, .60], $d = 1.18$, and the effect of the key contrast of blindness simulators versus the other conditions was reduced (from $b = -.12$, 95% CI [-.24, -.02]; to $b = -.06$, 95% CI [-.17, .05]), when capability forecasts were included in the model (bootstrap 95% CI [−.24, −.04]; Preacher & Hayes, 2004). Compared with simply having knowledge of blindness simulation, direct embodied experiences with blindness simulation reduced forecasts of how capable people would be if they were blind, and these capability forecasts explained their reduced judgments of blind people’s capability.
Adaptation forecasts. Blindness simulators forecasted that they would adapt more slowly and less completely to blindness over time. Using a hierarchical linear model, we computed the slope for each participant’s estimates of limitation intensity as a function of time. We then regressed these slopes on the three contrast codes described above. All participants estimated that blindness would become less limiting over time, $b = -6.24$, $t(149) = -43.03$, 95% CI [-6.52, -5.95], see Figure 3). More important for our purposes, the downward slope was shallower in the simulation condition ($M = -1.14$, 95% CI [-1.25, -1.03]) than in the other three conditions ($M$'s = -1.25, -1.33, and -1.28, 95% CI's [-1.34, -1.16], [-1.47, -1.19], [-1.40, -1.16] for the vicarious-simulation, simulation-knowledge, and control conditions, respectively), $b = -.038$, $t(751) = -3.84$, 95% CI [-.057, -.018], $d = .28$. The three control groups did not differ, t’s < 1.
Figure 3. Experiment 2: Effect of simulation condition on capability forecasts over time

As a result of estimating slower rates of adaptation, blindness simulators also estimated that their functionality would remain more limited three years after becoming blind ($M = 3.69$, 95% CI [3.15, 4.23]) than did participants in the other conditions ($M's = 2.56$, 2.78, and 2.76, 95% CI’s [2.06, 3.06], [2.16, 3.40], and [2.20, 3.32] for the vicarious-simulation, simulation-knowledge, and control conditions, respectively), $b = .25$, $t (202) = 3.9$, 95% CI [.12, .38] $d = .55$. The three control groups did not differ on this measure either, $t's < 1$. Personal embodied experience with blindness simulation thus caused people to forecast slower and less complete adaptation, consistent with their capability forecasts.

**Warmth toward blind people.** To estimate the effect of blindness simulation on warmth toward blind people, we regressed participants’ index of warmth on the same contrasts described above. Blindness-simulators expressed more warmth toward blind people ($M = 6.03$, 95% CI [5.77, 6.29]) than did participants in the other three conditions, $b = .09$, $t (149) = 2.33$, 95% CI [.01, .17], $d = .38$. This conceptually replicates previous findings that disability simulation increases warmth toward disabled people (Clore & Jeffrey, 1972). Vicarious simulators were also less warm toward blind people ($M = 5.37$, 95% CI [5.09, 5.65]) than were the simulation knowledge and no-information control participants ($M's = 5.79$ and 5.81, 95% CI’s [5.51, 6.07] and [5.54, 6.08]), $b = -.14$, $t(149) = -6.51$, 95% CI [-.25, -.03], $d = .41$. The simulation-knowledge and control conditions did not differ, $b = -.01$, $t (149) = -.11$, 95% CI [-.20, .08], $d = .02$. Embodied experience of simulating blindness thus increased warmth toward blind people, even as it lowered judgments of blind people’s capability.$^3$

**Discussion**
The results of two experiments indicate that embodied simulation of blindness causes people to judge blind people as being less capable. People who simulated blindness evaluated blind people as less capable of work and life activities than did those who simulated no impairment, a different impairment (Experiment 1), or who merely watched or learned about the simulation (Experiment 2). These negative effects of blindness simulation on judged capability occurred even as blindness simulation increased warmth toward blind people (Experiment 2).

These unintended consequences of disability simulation may occur because people are confronted with embodied challenges and failure experiences of becoming blind, which causes people to forecast that they would be less capable if they personally became blind. Indeed, the negative effect of disability simulation on personal capability forecasts mediated the negative effect of disability simulation on judged capability of blind people. Like attitudes toward other people generally, attitudes toward the disabled are highly self-referencing, shaped by people’s imagined or simulated experience of being personally disabled (Van Boven et al., 2013).

These results suggest that disability simulation may increase stigmatization of blind people. The combination of increased sympathy and reduced judgments of capability could motivate benevolent stigmatization (Fehr & Sassenberg, 2009), increasing discrimination against disabled job-seekers (Smart, 2003) and parents (National Council on Disability, 2013), to name a few.

Since judgments of the disabled are self-referencing, disability simulations can be improved. Rather than simply confronting people with the challenges of becoming disabled, psychologically-informed interventions might also provide people with successful adaptation experiences (e.g., Robinson & Rosher, 2001). Disability simulation should have less harmful consequences if people are led to anticipate that being disabled is challenging, yet adaptable.
In conclusion, this research underscores the importance of theoretically-grounded examination of psychological interventions. When under-examined, interventions such as disability simulations can present unexpected harms and even backfire (Yeager & Walton, 2011). Our findings indicate that disability simulations can have both intended beneficial and unintended detrimental consequences. Even when well-intended and when appearing to be supported by previous research, interventions should be subjected to empirical scrutiny.
Footnotes

1 We also collected exploratory measures of global trait judgments along dimensions of competence and warmth (Fiske et al., 2002). Because trait judgments are associated with more abstract, stable stereotypes (Fiske et al., 2002; Cuddy, Fiske, & Glick, 2007), they are less malleable than judgments of specific abilities, so we were agnostic about whether disability simulations would influence trait judgments. Specifically, participants rated the standing of blind people on six competence traits and six warmth traits (Fiske et al., 2002). We averaged the trait competence and warmth judgments into separate indices (α’s = .74 and .79, respectively). Because we did not expect trait inferences to follow the same pattern as ability to perform specific activities, we submitted the trait ratings to an ANOVA rather than a regression with planned contrasts. The ANOVA on the trait ratings of competence revealed no overall condition effect, \( F(2, 99) = 1.65, \eta^2 = .03 \). There was an overall condition effect on warmth ratings, \( F(2, 99) = 5.28, \eta^2 = .05 \). Participants in the amputee-simulation condition rated blind people as less warm \( (M = 4.15, 95\% \text{ CI} [4.06, 4.24]) \) than did participants in the no-disability control condition \( (M = 4.46, 95\% \text{ CI} [4.29, 4.63]) \); \( b = -.30, t(99) = -3.25, 95\% \text{ CI} [-.49, -.12], d = .65 \). Blindness-simulation participants’ warmth ratings were midway between the other two conditions \( (M = 4.280, 95\% \text{ CI} [4.16, 4.40]) \), and did not differ from either condition.

2 We followed the new statistical reporting recommendations presented by Cumming (2013) in reporting all of our results.

3 Participants completed the same competence measures as in Experiment 1. An ANOVA did not reveal any effect of condition, \( F(2, 149) = .35, \eta^2 = .007 \).
Chapter 3

Stereotypes as Stumbling-Blocks:

Effects of Stereotype Threat on People with Disabilities

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Abstract

Stereotype threat, the concern about being judged in light of negative stereotypes, is a well-documented cause of underperformance in evaluative situations. However, less is known about how coping with stereotypes can aggravate underperformance over time. We propose a model in which ongoing stereotype threat experiences threaten a person’s sense of self-integrity, which in turn prompts defensive avoidance of stereotype-relevant situations, impeding growth, achievement, and well-being. We test this model in the context of an important but under-studied population in social psychology, the physically disabled. In Study 1, blind adults who reported higher levels of stereotype threat not only reported lower self-integrity and well-being but were more likely to be unemployed and to report avoiding stereotype-threatening situations. In Study 2’s randomized field experiment, blind students in a compensatory skill training program performed better in the program if they had completed a values-affirmation, an exercise shown to mitigate the effects of stereotype threat by bolstering self-integrity. The findings suggest that social identity threat poses a chronic threat to self-integrity and undermines real-world outcomes for people with disabilities.
Stereotypes as Stumbling-Blocks:

Effects of Stereotype threat on People with Disabilities

Social psychologists have challenged the notion that minority groups underperform due to innate group weaknesses. Rather, underperformance can be partially attributed to the social context in which groups are embedded. In particular, some contexts arouse stereotype threat: a concern that one could be viewed negatively in light of stereotypes about one’s group. In such contexts, stereotyped individuals may perform below their potential, as when women underperform in science and math, or some ethnic minorities underperform in school more generally (for reviews see Aronson & McGlone, 2009; Major & O’Brien, 2005; Shapiro & Neuberg, 2007; Steele, Spencer, & Aronson, 2002). Stereotype threat impairs short-term performance through several well-examined mechanisms (for a review, see Schmader, Forbes, & Johns, 2008). However, less is known about how chronic experiences of stereotype threat contribute to outcomes over the long term. Furthermore, there is ample evidence that self-affirmations, such as reflecting on one’s important values, reduce the chronic impact of stereotype threat (for reviews see Sherman & Hartson, 2011), but it is not yet entirely clear how this occurs.

In this paper, we propose that chronic stereotype threat can threaten a person’s sense of self-integrity, or their perception of adaptive adequacy (Steele, 1988), and that this threat to self-integrity can exact costs for motivation, performance, and well-being. We explore a group for whom chronic experiences with stereotype threat may have particular relevance—people with serious physical disability. A key feature of the stereotype threat for this group is that it is pervasive and chronic. It indicts their competence in a wide range of sectors in modern life,
ranging from school to work to relationships to even the simple act of going out in public (Goffman, 1963; Nario-Redmond, 2010). In each of these sectors, the disabled, such as the blind, may worry about being seen as clumsy, incompetent, and not fully belonging.

To contend with such a stereotype may thus pose a chronic and pervasive threat. This threat arises from the challenge that the stereotype poses to people’s fundamental desire to be and to be seen as “adaptively adequate,” as able to meet the standards for worth set forth by their group or culture (Steele, 1988; see also Cohen & Sherman, 2014; Sherman & Cohen, 2006). People may cope with the threat by avoiding situations where the stereotype could be used against them. A blind person, for example, might avoid public spaces or decline to apply for a job. To do otherwise could risk exposure to judgment or, worse, humiliation. We hypothesize that self-reported levels of stereotype threat among the disabled would be associated with a tendency to avoid stereotype-relevant situations such as using public transportation and attending social gatherings. We further expected that self-reported levels of stereotype threat would predict unemployment and lower well-being. That is, the more the disabled are worried about the stereotype, the more they should avoid stereotype-relevant situations, and this avoidance should compromise their occupational achievement. Moreover, the continual stress and social avoidance triggered by stereotype threat may undermine well-being (see also Cacioppo & Patrick, 2008). We test this model correlationally in a large sample of blind adults.

We further expected that an intervention which bolsters self-integrity, known as self-affirmation, would buffer the disabled against stereotype threat by fortifying their global sense of adaptive adequacy. Better performance and learning should follow. We test this prediction in a skill-training program for the blind, an important context because success in such programs
constitutes one of the strongest predictors of occupational success and social integration for the blind (e.g., Omvig, 2002).

**A Model of Stereotype Threat Impacts Over Time**

Being stereotyped as lacking competence or agency conflicts with a view of oneself as an adaptive agent, evoking a state of threat (Schmader, Johns, & Forbes, 2008). Chronic stigma may challenge one’s sense of adaptive adequacy in stereotype-relevant contexts (e.g. school, work, family; cf. Crocker & Major, 1989). For example, African American students who performed poorly in school experienced a dip in their sense of adequacy in school by the end of the academic term, but white American students’ sense of adequacy in school was unrelated to their prior performance (Cohen, Garcia, Purdie-Vaughns, Apfel, & Brzustoski, 2009; see also Cook, Purdy-Vaughns, Garcia, & Cohen, 2012; Stangor, Carr, & Chiang, 1998). If repeated in a socially sacred domain like work or school, such threat to self-integrity could be chronic and costly.

The threat posed by stereotypes can motivate people to avoid future stereotype-relevant situations in order to preserve an image of themselves as adaptively adequate. Consistent with this, negatively stereotyped students may disengage from threatening academic domains (Steele, 1997) or opt out of taking stereotype-relevant tests (Cohen & Garcia, 2005; Davies, Spencer, Quinn, & Gerhardstein, 2002). They may self-handicap, such as by refraining from practice so that future failure reflects less on their ability (Steele & Aronson, 1995; Stone, 2002). Indeed, poor people may forego social services in order to avoid the stigmatizing label of “welfare queen” (Bissett & Coussins, 1982; Kissane, 2003). Such defensive strategies shore up self-integrity in the short term but can undermine growth and learning in the long term (Cohen & Sherman, 2014; Sherman & Hartson, 2011). The continual process of guarding against negative
Chronic experiences with stereotype threat should therefore be associated with lower self-integrity, and this, in turn, should be associated with more avoidance of stereotype-relevant situations and lower performance in stereotype-relevant contexts—a prediction we test. We also expected chronic stereotype threat to predict lower well-being, consistent with research implicating stereotype threat as a chronic stressor and research showing that chronic stress undermines well-being (e.g., Pascoe & Smart Richman, 2009). Such findings would help explain how stereotype threat not only undermines performance in the short term but propagates negative effects over the long term.

The foregoing analysis implies that shoring up self-integrity should improve achievement under chronic stereotype threat. Self-affirmations, in which people reflect on important sources of positive identity, bolster self-integrity in the face of threat (Sherman et al., 2009; see also Cohen & Sherman, 2014). They do so by allowing people to find anchorage for their self-integrity in a domain beyond the provoking threat (Cohen & Sherman, 2014). A blind individual, reminded of the value he or she places on religion, for instance, might be more willing to enter a public space or practice blindness-specific skills and do so with less trepidation as a result of having bolstered his or her self-integrity in another domain. If timely, such a moment could touch off a virtuous cycle in which exposure to the stereotype meets with success, leading to greater self-integrity, prompting more exposure to challenge, in a recursive cycle (Cohen & Sherman, 2014; Cohen, Garcia, Purdie-Vaughns, Apfel, & Brzustovsky, 2009; Sherman et al. 2013; see Miyake et al. 2010, and Bowen, Wegmann, & Webber, 2013, for other affirmation replications with threatened groups in classroom settings). Such recursive cycles are
apt to occur in institutional systems, such as schools and workplaces, that reinforce positive change when it occurs and thus propel the initial effects of the affirmation through time in a series of mutually reinforcing interactions between the self system and the social system, a “cycle of adaptive potential” (Cohen & Sherman, 2014).

The Present Research

We tested the role of self-integrity in stereotype threat, and the efficacy of affirmation in countering the effects of such threat, among an important, but under-studied, minority group: people with a visible physical disability, specifically blindness. Our blind samples enabled us to investigate the ongoing effects of stereotype threat on important but under-studied outcomes: employment, willingness to enter stereotype-relevant situations, and subjective well-being. Based on our model, we propose that disability-related stereotypes can undermine self-integrity among the disabled, who may protect their self-integrity by striving less in stereotype-relevant domains such as employment. Thus, stereotypes can act as stumbling-blocks that limit the achievement of the disabled. However, the present analysis suggests that a self-affirmation should improve achievement among the disabled.

The foregoing hypotheses were tested in two field studies. As a correlational study, Study 1 assessed the associations between stereotype threat on the one hand and self-integrity, work achievement, challenge-seeking, and well-being on the other, among a heterogeneous sample of legally blind adults. It was predicted that, controlling for demographic differences, self-reported stereotype threat would be associated with (a) less work achievement, (b) less global satisfaction with one’s life, (c) greater stress, and (d) less frequent challenge-seeking behavior. We also explored a path model to determine whether these effects were mediated through reductions in
self-integrity. We predicted that the effects of stereotype threat on each outcome would be primarily indirect, mediated through self-integrity.

Study 2 examined whether a values-affirmation could, by bolstering self-integrity, promote learning in a situation that is important, but potentially threatening: a structured training program to master blindness-related skills. Extending previous field research, we predicted that the affirmation would benefit learning and performance.

**Study 1: Stereotype threat and Real-World Outcomes**

We began with a correlational study to determine whether everyday experiences of stereotype threat are associated with under-performance, challenge avoidance, and reduced subjective well-being. We also explored the role of self-integrity as a mediator. Though the study was correlational in nature, and thus could not determine causality, this large survey enabled us to assess if the posited relationships were sufficiently robust to occur in a large, heterogeneous sample of blind participants and with meaningful real-world outcomes like employment status.

**Method**

**Participants**

Five hundred and sixty-four legally blind adults living throughout the United States completed an online survey in exchange for a raffle ticket. Of these, 67 were eliminated because they failed to complete one or more of the critical measures, resulting in a final sample of 497. The final sample consisted of 189 men, 290 women, and 18 individuals of unspecified gender. Most (86%) were European-American. Participant age ranged from 18 to 90 years ($M = 44.36$, $SD = 14.83$). Sixty-six percent of the participants had become blind at birth or before the age of 2, 12% became blind during childhood (between ages 2 and 18), and the remaining 22% became blind in adulthood (after the age of 18). Participants were recruited from online discussion
groups sponsored by the two major blindness advocacy organizations in the United States, the American Council of the Blind (ACB) and the National Federation of the Blind (NFB), as well as from registries of legally blind adults who had volunteered to participate in research studies.

**Measures**

**Stereotype threat.** We developed four items to tap experiences of stereotype threat: “In public places, I worry that people will expect less of me because I am blind;” “I often worry that sighted people will think I need help when I don’t;” “In public places, I worry that sighted people will expect me to make a mistake;” and “If I make a mistake in public, I worry about making blind people look bad.” These items were based upon the first author’s participation in listserv discussions in which blind individuals described negative encounters with the public, including frequent instances of assumptive help or patronizing treatment from others. These items were also designed to tap participants’ fears of confirming stereotypes by “making a mistake” or “making blind people look bad”. Participants rated their agreement with each item on a scale from 1 (strongly disagree) to 7 (strongly agree). Responses to the four items were averaged into a composite ($\alpha = .78$).

**Self-integrity.** Participants completed the Self-Integrity Scale (Sherman et al., 2009), consisting of eight items assessing perceptions of adaptive adequacy (e.g., “I have the ability and skills to deal with whatever comes my way;” “I am comfortable with who I am”) using the same scale as above. Responses to the eight items were averaged ($\alpha = .83$).

**Work achievement.** We asked participants to report their current employment status by selecting one of the following options: employed full-time, employed part-time, employed on a temporary basis, student, both a student and employed, stay-at-home parent, retired, or unemployed.
Subjective well-being. Participants completed two validated scales of well-being: a Life Satisfaction Scale (Diener, Emmons, Larsen, & Griffin, 1985) and a Stress Scale (Cohen, Kamarck, & Mermelstein, 1983). The Life Satisfaction Scale consists of five statements assessing global satisfaction with one’s life as a whole (e.g., “So far I have gotten the important things I want in life”). Participants responded to these statements using separate scales ranging from 1 (strongly disagree) to 7 (strongly agree). The Stress Scale consists of ten items assessing overall stress experienced during the preceding month (e.g., “In the last month, how often have you felt that you were unable to control the important things in your life?”). Participants responded to these items by indicating how frequently they had had these experiences during the preceding month, using separate scales ranging from 1 (never) to 5 (very often). Reliabilities for the scales were .89 and .90 for the Life Satisfaction and Stress Scales, respectively.

Challenge-seeking. Participants reported how often they had engaged in four potentially challenging activities during the past month: going to an unfamiliar place by themselves, using public transportation, attending a social gathering, and going outside at night, on separate seven-point scales ranging from 1 (not at all during the past month) to 7 (at least once daily during the past month). These activities were chosen because they have been described as challenging and stereotype-relevant by blind people in listserv discussions, as well as autobiographical reports (e.g. Omvig, 2002) and because they could potentially activate stereotypes linking blindness with disorientation or general incompetence. The items were averaged into a challenge-seeking composite (α = .61).

Procedure

Participants completed a questionnaire either via the Internet or, in approximately 4% of cases, by telephone dictation. Participants first completed the subjective well-being measures
(Life Satisfaction Scale and Stress Scale). They then completed a series of items assessing their beliefs about blindness, which included the four stereotype threat items. Then they completed the self-integrity scale. Finally, participants completed demographic measures, including the challenge-seeking items and the employment measure. The demographic questionnaire also assessed several potential control variables: gender, age, ethnicity, presence of additional disabilities besides vision loss, age of blindness onset (congenital vs. acquired), degree of vision loss (using a five-point scale ranging from total blindness to still able to read print letters), and parental education level as an indicator of childhood socioeconomic status. Participants reported the educational level attained by both their father and mother using a five-point scale ranging from 1 (some high school) to 5 (post-graduate study) and the education scores for father and mother were averaged into a parental education index ($r = .56$). After completing all questionnaire items, participants were thanked and debriefed.

**Results**

**Analytic Overview**

Table 1 presents the zero-order correlations between stereotype threat, self-integrity, unemployment (coded as 1 for unemployed and 0 for all other employment categories), life satisfaction, stress, and challenge-seeking. All correlations were significant ($p < .05$) except the zero-order correlation between threat and challenge-seeking, which was nearly significant ($p = .056$). Consistent with predictions, stereotype threat was negatively related to self-integrity, $r (495) = -.24$, $p < .01$. Consistent with the posited negative effects of stereotype threat, stereotype threat was associated with higher unemployment, lower life satisfaction, higher stress, and less frequent challenge-seeking. Self-integrity, on the other hand, showed the reverse pattern, with
higher self-integrity being associated with lower unemployment, higher life satisfaction, lower stress, and more frequent challenge-seeking.
Table 1: Zero-Order Correlations

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<td>-0.30**</td>
<td>0.17**</td>
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<td>0.23**</td>
<td>-0.23**</td>
<td>1.00</td>
<td>0.24**</td>
<td>-0.15**</td>
</tr>
<tr>
<td>Satisfact</td>
<td>-0.19**</td>
<td>0.56**</td>
<td>-0.30**</td>
<td>0.24**</td>
<td>1.00</td>
<td>-0.59**</td>
</tr>
<tr>
<td>Stress</td>
<td>0.35**</td>
<td>-0.45**</td>
<td>0.17**</td>
<td>-0.15**</td>
<td>-0.59**</td>
<td>1.00</td>
</tr>
</tbody>
</table>

* p < .05
** p < .01

We first tested the associations between threat and each outcome using separate regression analyses, controlling for several demographic factors that could potentially act as third variables: gender, age, parental education level, ethnicity (white vs. non-white), degree of vision loss, onset of blindness (congenital vs. acquired), and presence of additional disabilities besides vision loss (yes vs. no). Then, we tested the mediating role of self-integrity using a path model. We predicted that these effects would be mediated through self-integrity.¹

**Unemployment**

We hypothesized that stereotype threat would be associated with a greater likelihood of unemployment among blind adults of working age. Of the 457 participants aged 18-65 years, 95 (21%) reported being unemployed (i.e. neither employed nor a student nor a stay-at-home parent nor retired). We tested the association between stereotype threat and unemployment odds by performing a logistic regression analysis with unemployment (1=yes, 0=no) as the outcome

¹ We tested whether the relationships between stereotype threat and each outcome were moderated by degree or onset of vision loss. Neither of these factors interacted with stereotype threat to predict self-integrity, $F < 1$, or any of the outcome measures, all $F$’s $< 2.75$, $p$’s $> .098$. It appears that the associations between stereotype threat, self-integrity, and outcomes are relatively constant across the spectrum of blindness.
variable and stereotype threat as the predictor variable, controlling for gender, age, ethnicity, parental education, degree of vision loss, timing of blindness onset, and presence of additional disabilities. Stereotype threat emerged as a significant predictor of unemployment, $\Delta \chi^2 (457) = 3.86$, $p = .049$, $or = 1.17$.

To verify that this effect was robust to the exclusion of students and stay-at-home parents (coded as 0 in the above analysis), we conducted the same analysis after excluding 109 participants who reported being either students, stay-at-home parents, or retirees, so the remaining 348 participants were either employed or unemployed. Stereotype threat was associated with higher unemployment odds (or lower employment odds) in this sample too, $\Delta \chi^2 (348) = 5.02$, $p = .025$, $or = 1.21$.

**Life Satisfaction, Stress, and Challenge-Seeking**

Controlling for demographic factors, stereotype threat predicted lower levels of global life satisfaction, $F (1,490) = 17.66$, $p < .01$, $r^2 = .04$. Threat also predicted higher levels of global perceived stress, $F (1,490) = 60.53$, $p < .01$, $r^2 = .12$. Finally, higher threat was associated with less frequent challenge-seeking behavior, $F (1,490) = 4.08$, $p = .044$, $r^2 = .01$. Table 2 presents the predicted values of life satisfaction, stress, and challenge-seeking frequency for people low in threat (1 SD below the mean), average in threat (at the mean), and high in threat (1 SD above the mean; Aiken & West, 1991).

**Table 2: Outcomes by Threat Level**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Low threat</th>
<th>Average Threat</th>
<th>High threat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unemployment</td>
<td>16%</td>
<td>21%</td>
<td>26%</td>
</tr>
<tr>
<td>Life satisfaction</td>
<td>4.96</td>
<td>4.67</td>
<td>4.38</td>
</tr>
<tr>
<td>Stress</td>
<td>2.22</td>
<td>2.44</td>
<td>2.66</td>
</tr>
<tr>
<td>Challenge</td>
<td>3.15</td>
<td>3.05</td>
<td>2.95</td>
</tr>
</tbody>
</table>
Self-Integrity as a Mediator

We have theorized that chronic stereotype threat could depress self-integrity and that in turn, this could contribute to the negative outcomes illustrated above. We tested this prediction using path analyses conducted in Mplus Version 7.11. We began by testing a path model that specified indirect paths between threat and all four outcomes through self-integrity as the mediating variable. Inspection of the standardized residuals showed that there was an additional direct path between threat and stress unrelated to self-integrity, $t = 5.52, p < .01$, so we respecified the model with this direct path between threat and stress included. The final path model is presented in Figure 1. Inclusion of demographic variables did not influence the model fit or the significance level of any direct or indirect effect, so we report the more parsimonious model without these covariates.

Figure 1: A path model of stereotype threat’s associations with work achievement, challenge-seeking and well-being.
The model showed good fit: $\chi^2 (3) = 4.65$, $p = .200$; closeness-of-fit index (CFI) = 0.996; root mean square error of approximation (RMSEA) = .034. The model accounted for 5.8% of the variance in unemployment, 5.7% of the variance in challenge-seeking, 7% of the variance in self-integrity, 32.2% of the variance in life satisfaction, and 28.5% of the variance in stress. Figure 1 presents the standardized regression coefficients for all paths in the model. All were significant, $p$’s < .01. Coefficients marked with a D represent disturbance (error) variances for each outcome.

We tested the indirect effects of stereotype threat on each outcome, mediated through self-integrity. To do this, we multiplied the unstandardized regression coefficient for the threat-integrity relationship and the unstandardized coefficient for the relationship between self-integrity and each outcome, using the Sobel procedure to estimate standard errors for each effect (Klein, 2010). All indirect effects were significant ($Z = 3.74$, -5.44, 4.09, and -3.83 for unemployment, life satisfaction, stress, and challenge-seeking, respectively; all $p$’s < .01). The additional direct effect of threat on stress was also significant, $t = 5.60$, $p < .01$.

We also analyzed the fully identified model which included all direct paths between threat and the outcomes, to determine whether threat had a direct effect on any of the other outcomes besides stress. No other direct effect of threat reached significance, $t$’s < 1.64, $p$’s >.10. This suggests that self-integrity fully mediated stereotype threat’s effects on all outcomes except stress.

Discussion
Stereotype threat is associated with meaningful life outcomes for stigmatized individuals in a naturalistic field setting. To the extent that participants worried about being stereotyped or judged negatively because of their disability, they reported lower levels of self-integrity. They also experienced more stress, less global satisfaction with their lives, engaged in less frequent challenge-seeking, and were more likely to experience unemployment, and such associations were mediated through reductions in self-integrity. This suggests that stereotype threat can promote under-achievement in the long term, in part, by motivating people to protect their self-integrity by avoiding stereotype-relevant situations. Under chronic threat, people may defend their self-integrity against further damage by avoiding threatening or evaluative situations, such as interviewing for jobs, which can lead to underperformance. However, this pattern suggests that if self-integrity is bolstered, stereotype threat should exert less of a negative impact on life outcomes. Additionally, a direct relationship between threat and stress appeared. This is consistent with research linking identity threat with physiological stress responses in the short term, such as blood pressure increases (Blascovich et al., 2001) and with stress-related health problems in the long term (Pascoe & Smart Richman, 2009).

Importantly, since the findings from Study 1 are correlational, there are multiple causal interpretations of the results. For example, it is possible that blind people who are unemployed due to hiring discrimination are more vigilant to potential threat and stigma, or that unemployment itself depresses self-integrity. Alternatively, third variables could play a role, though we tried to control for some of them. In study 2, we tested whether an experimental manipulation of self-integrity—a values-affirmation—could improve learning and performance outcomes for blind students at a skill-training center.

**Study 2: Values-Affirmation and Compensatory Skill Training**
To be successful in the world, people with disabilities must often master compensatory skills for accessing information, communicating, and traveling through their environment. For example, blind people must learn to read and write Braille and to walk with a cane or guide dog in order to be self-sufficient and employable (Dodds et al., 1991; Omvig, 2002). Though important, mastering these skills can be threatening, because it usually requires tools that publicly present the self as having a disability (e.g., the white cane). Furthermore, like any learning process, compensatory skill training requires repeated practice and involves the potential for temporary failure and frustration (e.g., mis-measuring ingredients while preparing a simple meal). Such struggles could arouse self-as-source stereotype threats (Shapiro & Neuberg, 2007), as students may wonder if their struggles serve as evidence for the accuracy of negative stereotypes about blind people. Such threats could undermine motivation and learning (Nussbaum & Dweck, 2008; Nussbaum & Steele, 2007; Taylor & Walton, 2011). However, if self-integrity is affirmed in another domain, experiences of stereotype threat exert less impact on the overall self-concept (Cohen & Sherman, 2014; Sherman & Hartson, 2011; Sherman et al., 2013). Therefore, after self-affirmation, people are less defensive and better able to persist under threat (Cohen et al., 2009; Creswell et al., 2005; Martins et al., 2006; Sherman et al., 2009; Silverman, Logel, & Cohen, 2013; see Cohen & Sherman, 2014, 2006, for a review).

We hypothesized that blind students in the midst of skill training would show better training progress if their self-integrity was affirmed. To test this, we conducted a randomized, controlled field experiment at a private residential rehabilitation center for blind students. The center provides blind adults with comprehensive training in Braille, assistive technology, cane travel, and daily living skills (home management). The nine-month curriculum is designed for adult students who have either experienced recent sight loss or who did not master these essential
skills during childhood (because of gradual sight loss or a lack of educational services). Students take four courses: Braille, computer, home management, and travel.

The residential training program includes challenging learning activities that have the potential to arouse stereotype threat. For example, students are frequently assigned to find their way to a local business that they have not previously visited, using only the business’ address. They must rely on their knowledge of the city’s layout and also ask directions from bystanders to find their destination nonvisually, while using a cane and wearing a prominent blindfold to prevent them from using any residual vision. In another class, students are ultimately required to prepare a complete meal for fifty people by themselves, and in a third class, students may be expected to prepare and format PowerPoint presentations independently. While excellent learning opportunities, these assignments could present the risk of confirming negative stereotypes either in the students’ own eyes (self-as-source stereotype threats) or in the eyes of others, such as those being asked for directions (other-as-source stereotype threats). Furthermore, since completion of training assignments is self-paced, successful progress in the training courses is highly dependent upon students’ motivation to complete the assigned tasks.

In an intervention modeled after previous field research (Cohen et al., 2009; Cook et al., 2012; Sherman et al., 2013), students completed either a values-affirmation or a control writing exercise as an assignment for their computer class. One month later, their instructors evaluated their course progress, without being aware of students’ condition assignments. We predicted that affirmed students would show better course progress than would control students, consistent with previous research showing that such values-affirmations can, by bolstering self-integrity, promote the achievement of groups under stereotype threat (Cohen 2006, 2009; Martens et al., 2006; Sherman et al., 2013). Such interventions are brief, but can have long-lasting effects if
they interrupt a recursive cycle in which poor performance breeds threat, which further worsens performance and motivation (Cohen & Garcia, 2008; Cohen et al., 2009; Cook et al., 2012). For example, a student who struggles to prepare a simple meal in the home management class could find the experience threatening and be less motivated to practice cooking outside of class, resulting in poorer skill mastery. The threat experience could also cause stress that “spills over” into other classes (Inzlicht, Tullett, & Gutsell, 2011), distracting the student from exerting full effort in those courses too. However, values-affirmation could, by bolstering self-integrity, interrupt defensive avoidance responses, so the student remains persistent even after struggling, resulting in a positive learning trajectory. Over time, increased engagement could launch the student into a cycle of adaptive potential that further improves learning and performance (Cohen & Sherman, 2014). Thus, a values-affirmation could improve progress across courses that sustains itself over time (Cohen et al., 2009; Sherman et al., 2013).

**Method**

**Participants**

We made a great effort to recruit as many participants as possible across two years. As a consequence, 80% of the total students enrolled in the center participated. The total sample encompassed thirty-five adult students (21 women, 14 men). Two participant cohorts took part in consecutive years (n’s =19 and 16, respectively). Sample age ranged from 18-64 years (M = 27.24, SD = 13.56), with 51% European-American, 17% African American, 9% Hispanic/Latino(a), 9% Middle Eastern, and 14% reporting other ethnic backgrounds. All participants were legally blind; 47% reported being blind from birth or before age 2, 29% first became blind in childhood, and 24% became blind in adulthood.

**Procedures**
Prior to the first cohort’s participation, we held several meetings with the center director and course instructors to obtain permission, negotiate timing of the intervention, and develop the intervention materials. We worked with them to adapt the intervention materials used in past values-affirmation research so that they were accessible to blind students. During these preparatory meetings, we thoroughly trained the computer instructors to administer the intervention, which was carefully scripted to maximize both impact and control in the chaotic environment of the center. The importance of this initial preparation for maintaining experimental control cannot be underestimated and it required extensive cooperation and engagement with the program staff.

Approximately one month before the intervention, we visited the center to obtain informed consent from students, to administer demographic measures, and to obtain baseline performance measures from instructors (see below). Then, students completed the writing exercises, embedded as a typing assignment in their computer class. Finally, one month after the intervention, course instructors provided post-intervention progress evaluations of their students (see below).

**Values-Affirmation Intervention**

Each student was randomly assigned to complete either a control or a values-affirmation exercise during their computer class as a class project. We asked instructors to place the exercises in students’ electronic course folders. To keep instructors unaware of students’ condition assignments, we gave the two exercises arbitrary titles and did not inform the instructors about the research purpose of the exercises or the differences between them. Instructors were asked to distribute the exercises to students’ course folders without reading them, and they returned the completed exercises to us without reviewing their content.
Instructors circulated the writing exercises to students in the researchers’ absence. The writing activity was framed as an ordinary typing assignment, so students were unaware that they were receiving an intervention, a step that helps to lessen any stigmatizing message that assistance might send (Sherman et al., 2009, 2013; Silverman, Logel, & Cohen, 2013).

The exercises were adapted for electronic completion from previous research (Cohen et al., 2006, 2009; McQueen & Klein, 2006). Both exercises began by presenting participants with a list of 11 values (e.g. relationships with friends and family, music, religious values). The values-affirmation instructed students to type an X next to the two or three values on the list that were most important to them, and then to “write a few sentences about why these values are very important to you.” By contrast, the control exercise instructed students to type an X next to the two or three values that were least important to them, and then to “write a few sentences about why these values would be important to someone else, like another student at the center.” At the end of each exercise, students were instructed to review the values they had selected and to state their agreement or disagreement with three items that reinforced the manipulation: “These values have influenced my life [some people]”, “I [Some people] try to live up to these values”, and “These values are an important part of who I am [important to some people]”.

Students were told that the exercise was a typing assignment and that the exercises themselves would not be evaluated. Because the exercises were given as a typing assignment, students were encouraged to type their essays. However, newer students who had not yet mastered basic typing skills were given the option to complete the exercises in Braille or hand-written print if they chose. One student in the control condition completed the exercise in Braille; two students in the affirmation condition completed the exercises in print; and the remaining students completed the exercises electronically.
Student Progress Measures

The center does not issue formal grade reports for students. However, instructors informally evaluate their students’ progress in order to provide feedback and to tailor students’ instruction to individual strengths and challenges. We believed that instructors’ reports would serve as the best gauge of students’ progress, especially since instructors and students share a great deal of individualized contact (class sizes at the center range from 2-6 students each).

Before the intervention, the center instructors for each of the four courses students took (Braille, computers, home management, and travel) rated each student’s baseline performance using a conventional grading scale (A-F). One month after the intervention, the same instructors completed a questionnaire assessing students’ progress over the preceding month. They indicated how much they believed each student’s performance in their class had changed during the preceding month on a scale from 1 (has gotten much worse) to 4 (has not changed at all) to 7 (has gotten much better) and how much their students’ attitudes toward blindness had changed on a scale from 1 (has become much more negative) to 4 (has not changed at all) to 7 (has become much more positive). Since disability acceptance is a stated goal of many rehabilitation programs (Dodds et al., 1991, 1994), improvement in attitude toward one’s disability was an important indicator of progress. Additionally, instructors indicated the grade they would give their students for their cumulative course performance since beginning training, using a conventional grading scale (where A+ = 4.33, A=4.00, etc.). These three items were standardized to equate their metrics, and then averaged (alpha=.74). Again, instructors were unaware of the students’ condition assignments.

Results and Discussion
There were no differences between conditions on baseline performance, $t < 1$. Cohort proved a significant covariate, as the first cohort received higher progress scores from their instructors than did the second cohort, $t(33) = 2.62, p = .013$, so it was controlled in analysis. Baseline performance was also controlled. There was no interaction between either cohort or baseline performance and condition, $F_s < 1$.

As predicted, affirmed students progressed more in their courses overall ($adj. M = .25$) than control students, ($Adj. M = -.25$), $F(1, 31) = 4.71, p = .038, d = .64$.\footnote{Across the four courses, the ratings of performance improvement, attitude improvement, and course grades loaded on a single factor (all factor loadings > .7) suggesting that these three items tapped a single progress construct. However, examining the reported grades separately, analyses indicate that the intervention had a significant effect on grades in the computer course, $F(1,31) = 4.45, p = .043, d = .76$, and in the home management course, $F(1,31) = 4.40, p = .044, d = .75$, but did not affect grades in the other two courses, $F_s < 1$. Consequently, the intervention’s effect on grades averaged across the four courses was in the predicted direction but was not significant, $F(1,31) = 2.03, p = .16, d = .51$. We do not know the reason for this heterogeneity. As noted previously, instructors did not typically assign grades for the course, so the teachers’ estimated grades for students may have been anchored on the pre-intervention estimated grade they had provided earlier ($R = 0.43, p < .01$). However, examining the other two progress indices separately, analyses indicate that students were rated across all their courses as showing more positive change during the post-intervention month both in terms of their course performance, $F(1,31) = 4.29, p = .046, d = .73$, and in terms of their attitudes toward their disability, $F(1,31) = 4.84, p = .035, d = .79$. As the factor analysis suggests, the three performance measures together tap into the same underlying progress construct, and they are best regarded together, with each contributing to a holistic picture of students’ progress.}

In summary, this study provides experimental evidence that a manipulation of self-integrity can improve achievement, complementing the path analyses presented for Study 1. Blind students attending a training center to learn compensatory skills showed better progress in the following month if they had completed a values-affirmation intervention, as evaluated by their condition-blind course instructors. Results were observable one month after the affirmation, perhaps because the affirmation helped to counter a recursive cycle between stereotype threat, training setbacks, and disengagement from training (Cohen et al., 2009).
These results also contribute to a growing body of values-affirmation field research (Cohen et al., 2009; Havranek et al., 2012; Miyake et al., 2010; Sherman et al., 2013; Thomaes, Bushman, De Castro, & Reijntjes, 2012). They suggest that affirming important values can benefit people’s adjustment to a permanent disability, perhaps by mitigating barriers to adjustment such as stereotype threat. The results also offer further evidence that self-integrity may mediate the association between stereotype threat and defensive under-performance, as an affirmation of self-integrity allowed students to learn and progress in the face of potential threat.

**General Discussion**

In two field studies, we examine the consequences of coping with stereotype threat for meaningful life outcomes, and the role of self-integrity in mediating stereotype threat’s effects. In Study 1, stereotype threat was associated with reduced challenge-seeking, well-being, and employment in a heterogeneous sample of blind Americans. Path analyses suggest that identity threat can threaten one’s sense of self-integrity, or adequacy in the environment, and in turn, this can be associated with avoidance of challenge and lower well-being. In addition to this, a direct relationship between stereotype threat and global stress was observed, consistent with research linking stigma-related concerns with chronic stress and associated health problems (Inzlicht, Tullett, & Gutsell, 2011; Pascoe & Smart Richman, 2009). In Study 2, we tested whether an affirmation of self-integrity could mitigate the impact of stereotype threat in an important learning situation. The intervention benefited blind students’ performance in a potentially identity-threatening situation: a skill-training program.

On a broader theoretical level, these findings suggest that stereotype threat can contribute to under-performance in the long term by catalyzing defensive avoidance processes. Stereotype threat experiences threaten self-integrity, and people may defend their self-integrity by avoiding
future situations that could arouse stereotype threat. This may manifest as academic disengagement or disidentification (Nussbaum & Steele, 2007; Steele, 1997). We suggest that this defensive process could also affect employment and non-academic challenge-seeking. However, affirmations of self-integrity reduce the self-defense motive (Sherman & Cohen, 2006) and can thus mitigate the long-term effects of stereotype threat on achievement.

Our findings also have an important applied implication: They suggest that values-affirmations and other means of boosting self-integrity can allow people with disabilities to derive greater benefit from rehabilitation programs. This is consistent with correlational research linking self-worth with positive coping strategies among people with disabilities (Dodds et al., 1991, 1994; Smedema, Catalano, & Ebener, 2008). Our work extends this literature by experimentally bolstering self-integrity through intervention. A brief, timely social-psychological intervention can substantively improve adjustment outcomes for people with disabilities, just as it can for others experiencing chronic identity threat (Cohen et al., 2009; Sherman & Hartson, 2011; Sherman et al. 2013). Other types of social-psychological interventions may also be beneficial for this population, such as those that encourage people with disabilities to reconstrue their social identity in a positive way, affiliate with other members of their disability ingroup, or participate in social action on behalf of their disability ingroup (Crocker & Major, 1989; Nario-Redmond, Noel, & Fern, 2012). Of course, these social psychological interventions act as catalysts, not panaceas, and thus, they must be accompanied by material and human resources for opportunity and growth, of the sort provided by the rehabilitation center featured in Study 2.

In this work, we conceptualize stereotype threat as a broad construct, encompassing concerns about being judged negatively because of disability (e.g., patronized or held to low expectations) as well as concerns about acting stereotypically (“making blind people look bad”).
We acknowledge that people with disabilities likely face distinct types of stereotype threat, just as other stigmatized groups do (Shapiro, 2011; Shapiro & Neuberg, 2007), and that individuals may differ in which type of threat they experience. For example, people who are more identified with their disability may worry more about confirming disability stereotypes, whereas those who are less identified may be more concerned about how they themselves are viewed by others, independent of their ingroup (Shapiro, 2011).

A limitation of the present research is that we did not directly manipulate stereotype threat, so some uncertainty still remains about the causal relations between threat, self-integrity, and outcomes. One alternative explanation is that higher self-integrity causes people to perceive less stereotype threat in the environment, which in turn promotes positive outcomes. Our model is derived from past self-affirmation research, which has generally shown that affirmations of self-integrity weaken the link between threat and outcomes rather than reducing absolute levels of perceived threat (Cohen & Sherman, 2014; Cohen et al., 2009; Cook et al., 2012; Sherman et al., 2013). Nonetheless, future experimental research is needed to clarify these causal relations. Furthermore, since stereotype threat was not manipulated in Study 2, values-affirmation could have worked through another mechanism besides mitigating the impact of stereotype threat. For example, the values-affirmation could have reduced training-related stress (Creswell et al., 2005; Sherman et al., 2009). However, we hope that these limitations are somewhat offset by our investigation of a heterogeneous sample of disabled individuals, which is a difficult-to-reach and under-studied population in social psychology, and by the test of a theory-driven intervention in a randomized field experiment using meaningful real-world outcomes.

These findings underscore the vital role of the social environment in affecting outcomes for people with disabilities (Smart, 2003). In environments characterized by stigmatization,
stereotyping, and discrimination, people with disabilities may find themselves stumbling to reach their potential. However, in environments characterized by inclusion and acceptance, where people with disabilities can affirm an image of themselves as a whole, adequate person rather than an individual defined by his or her disability, they can persevere in the face of challenges. Our results suggest that some of the limitations posed by a physical disability are social-psychological rather than physical in their source. Though many impairments cannot be medically eradicated, they can be rendered less threatening—and thus less limiting—through wisely crafted, timely social-psychological interventions.
Chapter 4

Solace in Solidarity:
Ingroup Affiliation Benefits Coping with Stigma

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Abstract

People often affiliate with others who share their circumstances. Such affiliation can offer a social buffer against stigmatization and other negative experiences. In this research, we examined whether affiliating with others who share one’s physical disability benefits well-being and achievement. In Study 1, blind adults who had a greater proportion of blind friends (relative to non-blind friends) reported being less lonely and more satisfied with themselves and their lives. Having more blind friends was also associated with more professional achievement: a higher likelihood of employment, higher earnings, and a lower likelihood of poverty. We suggest these effects occur partly because friendships centered around a devalued social identity aid coping with discrimination or stereotyping involving that identity. Consistent with this, blind participants were more likely to persist on a challenging, stereotype-relevant math task if they had reflected on their friendship with another blind person before that task than if they had reflected either on their friendship with someone who was not blind or on a non-social topic (Study 2). In Study 3 we replicated this effect and found that reflecting on an ingroup friendship improved performance on a stereotype-relevant verbal task. The results suggest that affiliation with others who share one’s minority group membership can help one to overcome psychological impediments to motivation, such as those arising from stigmatization.
“At some points in our lives we may feel the need to immerse ourselves in groups of people who we perceive to be most like ourselves.”


The perils of stigmatization are well-documented. Members of socially devalued groups face systematic discrimination, which creates disparities in education, employment, housing and other resources (for an overview, see Sidanius & Pratto, 1999). These disparities are compounded by the psychological consequences of stigmatization. Stigma-related stress can place people at risk for physical and mental health problems (Inzlicht, Tullett, & Gutsell, 2011; Pascoe & Smart Richman, 2009). Stereotype threat, the fear of being judged according to negative stereotypes about one’s group, exacerbates disparities in educational achievement (Aronson & McGlone, 2009).

One way people can cope with stigma is by affiliating with others who share their marginalized group identity. Indeed, people have a natural tendency to affiliate with others who share their circumstances (Schachter, 1959). In this paper, we propose that such ingroup affiliation can boost well-being for members of stigmatized groups. We further propose that friendships with ingroup members can act as coping resources that, when made mentally salient, facilitate a proactive “challenge” response to threatening achievement situations.

Ingroup Affiliation as a Conduit for Well-Being

The need for affiliation is one of the most universally recognized social drives (Baumeister & Leary, 1995). There is ample evidence showing that social support buffers people against the impact of stress (Cohen, 1988, 2004; Cohen & Wills, 1985;Thoit, 1986). However, people tend to preferentially seek support from others who share their circumstances. In his
classic experiments, Schachter (1959) found that women awaiting electric shocks preferred to wait with others who were in the same situation than with women who were not part of the experiment. The vast array of support groups, minority advocacy groups, and Internet-based communities underscores the ubiquity of people’s inclination to form groups centered around challenging circumstances.

There is evidence that the tendency to affiliate with similar others aids coping with challenging circumstances. Across several stigmatized minorities, group identification is associated with higher self-esteem, self-reported quality of life, and other indices of well-being. For example, people who claim their race, sexual orientation, or disability as a positive, central component of identity report higher personal and collective self-esteem (Fernandez, Branscombe, Gomez, & Morales, 2012; Jones et al., 2011; Luhtanen, 2003; Mossakowski, 2003). This finding may seem surprising, given that such identities are often socially devalued. However, identifying with a socially devalued ingroup allows members to derive greater social support from its members (Haslam, O’Brien, Jetten, Vormedal, & Penna, 2005). In other words, group identification is beneficial because it is associated with ingroup affiliation, which allows stigmatized group members to support one another and buffer each other’s self-esteem against the effects of social devaluation. Other research has shown that participating in support groups directly benefits well-being (Crabtree et al., 2010; Spiegel, Bloom, Kraemer, & Gottheil, 1989). For example, metastatic breast cancer patients survived for 18 months longer, on average, if they received an intervention consisting of weekly support group meetings with other breast cancer patients, compared with a control group (Spiegel et al., 1989).

Ingroup social support likely benefits well-being through several mechanisms. First, ingroup members can offer instrumental support or information about how to cope with a
challenging circumstance (e.g., suggestions of doctors or self-help strategies for dealing with health conditions.) Second, stigmatized group members can protect their self-esteem by comparing themselves with others who share the stigma (Crocker & Major, 1989; Singer, Rosenberg, & Turner, 1981). Third, the ingroup can aid its members in generating positive appraisals for a stigmatized identity (e.g. reclaiming disparaging group labels in positive terms, such as “queer power”, and invalidating negative stereotypes about the group; Ball & Nario-Redmond, in press). Although people may engage in these reappraisals individually, group solidarity strengthens the legitimacy of these new identity construals. Fourth, the ingroup can serve as a vehicle for collective action, empowering its members to challenge the marginalization they experience (Jackson, Sullivan, Harnish, & Hodge, 1996; Nario-Redmond, Noel, & Fern, 2012). Finally, ingroup support can buffer self-esteem from the impact of discrimination by encouraging people to attribute these events to prejudice against their group rather than individual weakness (Ball & Nario-Redmond, in press; Major, Quinton, & McCoy, 2002). For example, a blind person who is rejected for a job may find, after discussing the situation with other blind people, that this experience is not unique to him or her and, thus, not diagnostic of his or her worth.

For these reasons, we hypothesized that ingroup affiliation would be associated with higher well-being among stigmatized group members—blind people, in particular. We expected that ingroup affiliation’s effects would appear even when controlling for group identification; that is, among blind people perceiving blindness as an equally strong part of their self-image, those with a stronger network of blind friends would experience higher well-being. Such a finding would suggest that identification is beneficial to the extent that it promotes affiliation with the ingroup and formation of ingroup friendships (Crabtree et al., 2010). We further
expected that having salient ingroup friendships could boost achievement under identity threat, as we describe below.

**Ingroup Affiliation and Achievement**

Beyond threatening well-being, stigma can hinder achievement. Several minority groups are stereotyped as lacking ability in specific domains, including racial minorities in academics (e.g., African Americans, Latinos), women (in quantitative fields), whites in athletics, and disabled people in employment and parenting (Nario-Redmond, 2010; Spencer, Steele, & Quinn, 1999; Steele & Aronson, 1995; Stone, Perry, & Darley, 1997). In situations arousing stereotype threat—the fear of confirming such stereotypes—people can experience impairments in learning (Taylor & Walton, 2011) and standardized test performance (see Aronson & McGlone, 2009, for a review). Stereotype threat thus contributes to academic underperformance among negatively stereotyped group members (Walton & Spencer, 2009).

Importantly, people’s coping strategies influence how they approach stereotype-relevant achievement situations. People can cope with a threatening situation either by avoiding it (a flight response) or by confronting it (a fight or challenge response; Blascovich & Tomaka, 1996; Cohen & Garcia, 2005). In the case of achievement, people may cope with stereotype threat by opting out of threatening situations (e.g., advanced math classes), by self-handicapping in order to attribute poor performance to a factor other than the stereotype (e.g., not practicing before an athletic competition), or by downplaying the importance of stereotype-relevant domains (Davies, Spencer, Quinn, & Gerhardstein, 2002; Steele, 1997; Stone, 2002). Alternatively, they can treat the threatening situation as a challenge to be confronted, redoubling effort with the goal of actively disproving the stereotype or demonstrating their personal worth in spite of it (Cohen & Garcia, 2005; Miller & Myers, 1998; Steele, 2010). Models of stress and coping suggest that
people choose to flee or fight depending upon their perceived resources to successfully combat the stressor. If people perceive that they have sufficient coping resources to contend with a stereotype-relevant situation, they are more inclined to appraise that situation as a challenge rather than as a threat, and to approach rather than avoid it (Blascovich & Tomaka, 1996; O’Brien & Crandall, 2003). For example, people may be more inclined to perceive stereotype-relevant situations as challenges if they perceive that they have control over important outcomes or if they are dispositionally optimistic (Major & O’Brien, 2005). Such a challenge response often leads to improved performance in achievement situations, particularly in situations where greater effort translates into better performance (Alter, Aronson, Darley, Rodriguez, & Ruble, 2010; Jamieson, Mendes, Blackstock, & Schmader, 2010).

We hypothesized that ingroup friendships, too, can act as a psychological resource that facilitates a challenge response to threatening situations. After reflecting upon their friendships with other group members, people may perceive that they have “allies” against the identity threat and be more motivated to confront it with continued effort and persistence. Consistent with this, after being exposed to stereotype threat, black students highly identified with their racial group were more willing to take a stereotype-relevant test than were less identified black students (Cohen & Garcia, 2005). Thus, we expected that having a stronger network of ingroup friends would be associated with greater achievement in the real world, and that reflecting on an ingroup friendship before a challenging test would increase persistence on that test. Such reflection could remind people of the importance of ingroup friends to their lives and the availability of their friends as a coping resource, much as values-affirmation exercises help remind people of their commitments to cherished values (Cohen & Sherman, 2014).

The Present Research
We investigated the consequences of ingroup affiliation among blind people, a minority group that has been historically stigmatized (Omvig, 2002). Blind people face significant socioeconomic disparities despite the fact that most jobs are physically accessible to them (National Federation of the Blind, 2013; Omvig, 2002), suggesting that these disparities are partly social-psychological in nature. Blind people may be less assertive in seeking employment, particularly in fields where their group is negatively stereotyped, in order to avoid the threatening gaze of stereotypic judgment (Silverman & Cohen, under review). We hypothesized that having more ingroup (blind) friends would buffer well-being against the impact of stigma, resulting in higher self-esteem, higher satisfaction with life overall, and lower loneliness. We also hypothesized that having more blind friends would be associated with positive employment outcomes (higher employment and earnings). Although having sighted friends could help facilitate networking with sighted employers, we expected that the psychological benefits of having blind friends, as described earlier, could buffer achievement motivation against the impact of stigma, resulting in more work achievement and higher well-being. We further expected that after thinking about an ingroup (blind) friend, blind participants would be more willing to persist on a challenging, stereotype-relevant task. We did not expect reflecting on an outgroup friend to have this effect.

We tested these hypotheses in three studies. In Study 1, we examined the associations between the proportion of blind (vs. sighted) friends and the well-being and achievement outcomes detailed above in a heterogeneous sample of blind adults. In Studies 2 and 3, we tested whether merely making a connection with a blind friend mentally salient could influence achievement. We manipulated the salience of friendships that participants already had with other blind people, and then presented them with challenging academic tasks. We predicted that
participants who reflected on ingroup friendships would be more likely to persist on the tasks and would show better performance than those who reflected on friendships with outgroup members or non-social topics.

**Study 1: Ingroup Affiliation and Life Outcomes**

**Method**

Five hundred and sixty-four legally blind adults living throughout the United States completed an online survey in exchange for a raffle ticket. Of these, 136 were eliminated because they failed to complete one or more of the critical measures, resulting in a final sample of 428. The final sample consisted of 170 men, 245 women, and 18 individuals of unspecified gender. Most (86%) were European-American. Participant age ranged from 18-90 years (M = 44.36, SD = 14.83). Sixty-six percent of the participants had become blind at birth or before the age of 2, 12% became blind during childhood (between ages 2 and 18), and the remaining 22% became blind in adulthood (after the age of 18). Participants were recruited from online discussion groups sponsored by the two major blindness advocacy organizations in the United States, the American Council of the Blind (ACB) and the National Federation of the Blind (NFB), as well as from registries of legally blind adults who had volunteered to participate in research studies.

**Measures**

**Affiliation.** We asked participants what proportion of their close friends are blind. Participants selected one of six response options: none, a few, some, many, most, or all [of my close friends are blind.] These response options were coded as a six-point scale where 1 = none, 2 = a few, 3 = some, 4 = many, 5 = most, and 6 = all blind friends. This measure implicitly
controlled for the participant’s total number of friends, specifically testing the effect of having a higher proportion of friends from the ingroup.

Well-Being. Participants completed the Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985) and the UCLA Loneliness Scale (Russell, 1996). The Satisfaction with Life scale consists of five statements assessing global satisfaction with one’s life as a whole (e.g., “So far I have gotten the important things I want in life”). Participants responded to these statements using separate scales ranging from 1 (strongly disagree) to 7 (strongly agree; alpha = .90). The loneliness scale consists of ten items assessing experiences of loneliness or isolation during the last month (e.g., “How often have you felt you had nobody to talk to?”) Participants responded to these items by indicating how frequently they had had the experience during the last month (1 = never, 5 = very often; alpha = .93). Finally, participants completed two items assessing personal self-esteem: “I have high self-esteem” and “Overall, I am satisfied with myself” on identical seven-point scales (r = .81).

Employment and Earnings. We asked participants to report their current employment status by selecting one of the following options: employed full-time, employed part-time, employed on a temporary basis, student, both a student and employed, stay-at-home parent, retired, or unemployed. Participants were considered gainfully employed if they reported working full-time, in line with other rehabilitation studies (e.g., Bell & Mino, 2013).

Participants also reported their approximate earnings during the last year by choosing one of the following options: less than $10,000, $10,000-$20,000, $20,000-$40,000, $40,000-$60,000, $60,000-$80,000, $80,000-$100,000, or more than $100,000. We also dichotomized income levels into either poverty ($20,000 or less) or non-poverty (more than $20,000)
Identification. We were interested in distinguishing ingroup affiliation (having more blind friends) with ingroup identification (perceiving blindness as a more central aspect of self). To distinguish affiliation from identification with the ingroup, we included three items measuring identification: “My blindness is an important part of who I am”, “In general, I believe my blindness is an important part of my identity”, and “Being blind is an important part of my self-image” (alpha = .86). These items were adapted from the Multidimensional Inventory of Black Identity (MIBI; Sellers, 1997).

Outgroup Belonging. Though we did not have a measure of outgroup affiliation in this study, we assessed perceived belonging in the outgroup (sighted) world with three items: “I feel like an outsider in the sighted world” (reverse-scored); “I feel like I belong in the sighted world” and “I know what to do to succeed in the sighted world”). These items were adapted from the social fit measure used by Walton & Cohen (2007, 2011; alpha = .65).

Procedures
Participants completed a questionnaire either via the Internet or, in approximately 4% of cases, by telephone dictation. Participants first completed the subjective well-being measures. They then completed a series of items assessing their beliefs about blindness, which included the ingroup affiliation measure. Finally, participants completed demographic measures, including the employment and income measures. The demographic questionnaire also assessed several potential control variables: gender, age, ethnicity, presence of additional disabilities besides vision loss, age of blindness onset (congenital vs. acquired), degree of vision loss (using a five-point scale ranging from total blindness to still able to read print letters), and parental education level as an indicator of childhood socioeconomic status. Participants reported the educational level attained by both their father and mother using a five-point scale ranging from 1 (some high
school) to 5 (post-graduate study) and the education scores for father and mother were averaged into a parental education index \((r = .56)\). After completing all questionnaire items, participants were thanked and debriefed.

**Results**

**Analytic Overview**

Table 1 lists the zero-order correlation between ingroup affiliation, life satisfaction, loneliness, self-esteem, employment (coded as 1 for gainfully employed and 0 for all other employment categories), and income level. Correlations between affiliation and all outcome measures were significant \((p’s < .033)\).

<table>
<thead>
<tr>
<th></th>
<th>Affiliation</th>
<th>Sat</th>
<th>Loneliness</th>
<th>Esteem</th>
<th>Employment</th>
<th>Income</th>
<th>Poverty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affiliation</td>
<td>0.154</td>
<td>-0.119</td>
<td>0.102</td>
<td>0.166</td>
<td>0.124</td>
<td>-.158</td>
<td></td>
</tr>
<tr>
<td>Sat</td>
<td>0.154</td>
<td>-0.492</td>
<td>0.597</td>
<td>0.284</td>
<td>0.279</td>
<td>-.259</td>
<td></td>
</tr>
<tr>
<td>Loneliness</td>
<td>-0.119</td>
<td>-0.492</td>
<td>-0.515</td>
<td>-0.238</td>
<td>-0.221</td>
<td>.226</td>
<td></td>
</tr>
<tr>
<td>Esteem</td>
<td>0.102</td>
<td>0.597</td>
<td>-0.515</td>
<td>0.165</td>
<td>0.228</td>
<td>-.223</td>
<td></td>
</tr>
<tr>
<td>Employment</td>
<td>0.166</td>
<td>0.284</td>
<td>-0.238</td>
<td>0.165</td>
<td>0.559</td>
<td>-.565</td>
<td></td>
</tr>
<tr>
<td>Income</td>
<td>0.124</td>
<td>0.279</td>
<td>-0.221</td>
<td>0.228</td>
<td>0.559</td>
<td>-.808</td>
<td></td>
</tr>
<tr>
<td>Poverty</td>
<td>-.158</td>
<td>-.259</td>
<td>.226</td>
<td>-.223</td>
<td>-.565</td>
<td>.8081</td>
<td></td>
</tr>
</tbody>
</table>

We first conducted a series of multiple regressions to assess the partial correlation between affiliation and each well-being measure. Then we conducted logistic regression analyses to determine whether ingroup affiliation was associated with greater odds of employment or lower odds of poverty. In all regression analyses, we controlled for gender, age, parental
education, presence or absence of additional disabilities, age of onset (congenital vs. acquired), and degree of blindness.

**Well-Being Measures**

Controlling for demographic factors, having more blind friends was associated with higher life satisfaction, \( F(1, 420) = 6.71, p = .010, r^2 = .016 \); lower loneliness, \( F(1, 420) = 6.41, p = .012, r^2 = .015 \); and higher self-esteem, \( F(1, 420) = 4.45, p = .035, r^2 = .010 \).

Work Achievement. Among the 420 participants aged 18-65 years, those with a higher proportion of blind friends were more likely to hold full-time employment, \( \Delta \chi^2 (412) = 4.93, p = .026, or = 1.215 \). Participants with more blind friends were also less likely to be poor, \( \Delta \chi^2 (420) = 11.62, p < .01, or = .72 \).

**Identification and Belonging Controls**

Ingroup affiliation was moderately correlated with group identification, \( r = .24, p < .01 \), but orthogonal to outgroup belonging, \( r = .02, p = .699 \). To test the unique effect of ingroup affiliation controlling for identification and general belonging, we also ran all regression analyses, first with ingroup identification included as a covariate, and then with outgroup belonging included as a covariate. Proportion of blind friends remained a significant predictor of all outcomes, with one exception: After controlling for identification, the association between proportion of blind friends and self-esteem was only marginally significant, \( F(1, 411) = 3.69, p = .055 \). This suggests that having friends from the ingroup predicts positive outcomes, both for well-being and for work achievement, over and above the benefits of ingroup identification and belonging in the majority group.

**Discussion**
Having friends who share one’s disability is associated with positive outcomes. Blind adults reporting a higher proportion of blind friends reported higher well-being and self-esteem and were less lonely. These associations remained even when controlling for group identification and perceived acceptance in the majority group, suggesting that affiliating with the ingroup may be uniquely beneficial for well-being. Reduced loneliness, in particular, could benefit physical health as well as subjective well-being (Cacioppo & Patrick, 2008). Notably, ingroup affiliation was also associated with higher work achievement—participants with more blind friends were more likely to be gainfully employed and reported higher earnings. However, our measure of affiliation confounds informational and psychological support gained from ingroup members. It is possible that blind friends can help a blind person find well-paying employment by offering information, such as advice about the best kind of assistive technology to use on the job. Alternatively, blind friends could offer psychological support that helps facilitate more assertiveness in work and other achievement situations.

In Studies 2 and 3, we sought to untangle informational and psychological support by experimentally manipulating the salience of ingroup friendships. If psychological support from ingroup friends promotes achievement, then making such support mentally salient should be sufficient to promote better achievement. On the other hand, if informational support from the ingroup is necessary, then reflecting on an ingroup friendship, without communicating directly with an ingroup friend, should not be beneficial.

We predicted that after thinking about an ingroup friend, blind people would approach a subsequent stereotype-relevant task as a challenge rather than as a threat. To test this, we presented blind participants with Internet-based academic tasks that they could choose to avoid completing (and forfeit a raffle ticket) or, alternatively, attempt to complete and thus earn the
prize. We predicted that participants would be more likely to attempt the tasks if they had just reflected on an ingroup friendship than if they had just reflected on an outgroup friendship or a non-social topic. We also explored participants’ performance on the tasks as a function of the topic they reflected on. We predicted that when the task was easy enough for meaningful performance differences to appear, performance would be higher among those who reflected on an ingroup friendship.

Study 2: Ingroup-Friendship Reflection and Math Test Persistence

Method

One hundred forty-one legally blind adults (63% female; 88% European American) participated in exchange for a raffle ticket. Participant age ranged from 18-77 years ($M = 42.18, SD = 15.08$). Participants were drawn from the same online pools as in Study 1, and completed the experiment entirely online.

Participants were told that they would be completing two unrelated studies, the first about their experiences with blindness and the second about problem-solving. In the first part of the study, participants were randomly assigned to one of three essay-writing conditions: ingroup-friendship, outgroup-friendship, or technology focus. In the ingroup-friendship condition, participants were asked to write a brief essay about “a friend who is legally blind.” Participants were asked to provide their friend’s first and last initial and to write a few sentences or more about their friendship with this person, including “how you met your friend, what kinds of activities you and your friend enjoy together, and how your friend has helped you during difficult times.” Participants in the outgroup-friendship condition received identical instructions, except that they were instructed to write about “a friend who is sighted”. Participants in the technology focus condition were instructed to write a brief essay about “the assistive technology that you
use, such as screen magnification software, speech software and Braille displays”. All conditions thus made equally salient participants’ disability status, while varying the key experimental construct of friendship focus.

After the essay manipulation, participants were presented with a set of 14 problems from the most difficult section of the SAT (Sherman et al., 2009; Silverman, Logel, & Cohen, 2013) and were asked to complete as many problems as possible. Participants were told that if they completed the math problem set, they could enter a raffle drawing for a cash prize. The problems were pretested on a sample of 57 participants from the same online pool, who rated their difficulty (1 = extremely difficult, 7 = extremely easy). Pretest participants also rated how stereotype-relevant the test was by estimating how well or poorly they thought blind people would be expected to perform on the test compared with sighted people (1 = expected to perform much worse, 4 = expected to perform equally well, 7 = expected to perform much better). Pretest participants rated the test as difficult ($M = 2.82, SD = 1.40; t (56) = 6.36, p < .01$ from the scale midpoint) and as a task on which blind people would be stereotyped as performing poorly ($M = 2.57, SD = 1.28; t (56) = 8.43, p < .01$ from the scale midpoint).

**Results and Discussion**

Our primary dependent variable was whether or not participants attempted to complete any of the math problems. Across conditions, 69% of participants attempted at least one math problem, with the remaining 31% dropping out of the study when the math test began. However, persistence was higher in the ingroup-friendship condition (85%) than in the outgroup-friendship condition (61%) or the technology condition (62%). Using logistic regression, we regressed persistence on two orthogonal contrasts, the first testing the difference between the ingroup-friendship condition (+2) and the other two conditions (-1 each) and the second contrast testing
the difference between the outgroup-friendship (+1) and technology (-1) conditions. The first contrast was significant, $\Delta \chi^2 (141) = 7.55, p = .006$, or $r = 1.53$, while the second contrast was not, $\Delta \chi^2 = .01, p = .89$.

Performance did not vary by condition (18% correct, 17% correct, and 19% correct in the ingroup-friendship, outgroup-friendship, and technology conditions, respectively; F’s < 1). Performance across conditions did not differ from chance (20%), suggesting that the test was too difficult for meaningful performance differences to appear.

Thus, reflecting on a friendship with another blind person increased the likelihood that blind people would confront rather than avoid a challenging, stereotype-relevant task. This suggests that ingroup affiliation can motivate a challenge response to potentially identity-threatening situations. Reflecting on an outgroup friendship did not benefit persistence, suggesting that affiliation with the ingroup, not mere social support, facilitates this challenge response. This is consistent with Cohen & Garcia (2005) who found that high racial identification was associated with more willingness to take an identity-threatening test.

Performance differences did not appear in this study, likely because the math test was so difficult that the majority of participants guessed when responding to the problems. However, if reflecting on ingroup friends boosts persistence, we would expect this increased persistence to translate into better performance on moderately difficult tasks. This hypothesis was tested in Study 3.

### Study 3: Verbal Test Persistence

#### Method

One hundred three blind adults (60% female; 81% European American) participated in exchange for a raffle ticket. Participant age ranged from 18-69 years ($M = 42.04$, $SD = 15.60$).
Participants were recruited from the same online pools as in Studies 1 and 2. Of these, four were excluded from analysis because they were assigned to the ingroup-friendship condition and reported that they had no blind friends, leaving a final sample of 99.

The cover story was identical to that used in Study 2. Participants were randomly assigned to either the ingroup-friendship or the technology essay conditions. After completing their essays, they were randomized to complete either the math test used in Study 2 or a verbal problem set derived from the same test (Sherman et al., 2009). Thus, the manipulations of essay and problem set were fully crossed. In pretesting, the verbal problem set was rated as moderately difficult, $M = 3.49$, $SD = 1.44$; $t (56) = 2.67$, $p = .01$ from the scale midpoint, but easier than the math test, $t (56) = 2.49$, $p = .016$. The verbal test was also rated as one on which blind people were stereotyped to perform worse than sighted people, $M = 3.28$, $SD = 1.28$, $t (56) = 4.25$, $p < .01$ from the scale midpoint, although less stereotype-relevant than the math test, $t (56) = 4.01$, $p < .01$.

**Results and Discussion**

**Persistence**

Across conditions, 78% of participants completed at least one problem on the test to which they were assigned. However, completion was higher among those who reflected on blind friends (87%) than among those who reflected on assistive technology (70%). A logistic regression analysis revealed a main effect of the essay manipulation on completion rates, $\Delta \chi^2 (99) = 4.35$, $p = .037$, $or = 1.97$. Not surprisingly, there was also a main effect of test type, $\Delta \chi^2 (99) = 4.82$, $p = .028$, $or = 2.04$, indicating that participants were more likely to attempt the verbal test (88%) than the math test (69%). There was no interaction between essay and test type, $\Delta \chi^2 (99) = 1.21$, $p = .21$. Figure 1 presents the four cell means.
**Performance**

For the performance measure, we excluded two participants in the technology condition whose performance scores were extreme outliers falling >3.5 studentized residuals above the predicted mean.

Reflecting on blind friends improved participants’ test performance (see Figure 2). A 2 (essay) x 2 (test type) analysis of variance on the number of problems answered correctly revealed a main effect of the essay manipulation, $F(1, 95) = 6.05$, $p = .016$, $d = .51$. Participants who reflected on blind friends answered more problems correctly ($M = 3.02$, $SD = 2.89$) than did those who wrote about technology ($M = 2.15$, $SD = 2.83$). There was also a main effect of test type, $F(1.95) = 11.42$, $p = .001$, $d = .70$, indicating that participants answered more verbal problems correctly ($M = 3.20$, $SD = 3.22$) than math problems ($M = 1.62$, $SD = 2.14$).
Although the interaction between essay and test type was not significant, $F(1,95) = 1.56$, $p = .21$, planned contrasts showed that reflecting on blind friends improved performance on the verbal test, $t(93) = 2.62, p = .010, d = .54$, but not on the math test, $t(93) = .85$. Participants answered more verbal problems correctly in the blind-friends condition ($M = 4.07, SD = 3.31$) than in the technology condition ($M = 2.29, SD = 2.06$). Participants in the blind-friends condition also performed slightly better than chance on the verbal test (chance = 2.8 correct); $t(27) = 2.03, p = .0520$, but participants in the technology condition did not, $t(20) = -1.13, p = .270$. As in Study 2, participants performed no better than chance on the math test regardless of the essay they wrote beforehand ($M = 1.84, SD = 1.72$ in the blind-friends condition vs. $M = 1.26, SD = 1.71$ in the technology condition; chance = 2.2 problems correct).

*Figure 2: Test performance as a function of essay and test type*

Thus, as in Study 2, reflecting on an ingroup friend increased persistence on a subsequent difficult, stereotype-relevant task. When the task was challenging, but still within participants'
abilities, thinking about ingroup friendship improved their performance. Notably, none of the essays participants wrote in Studies 2 or 3 concerned their blind friend’s math or verbal abilities, so they were not bringing domain-relevant role models to mind. Instead, thinking about one’s social connection with another ingroup member seems to buffer motivation against stereotype threat.

**General Discussion**

People are naturally drawn to affiliate with others who share their circumstances. We suggest that such affiliation is adaptive, increasing people’s ability and motivation to cope effectively with challenging situations. In Study 1, blind people with a higher proportion of blind friends were better off on several well-being indices, were more likely to hold gainful employment, and earned higher incomes. These effects appeared even when controlling for psychological identification with blindness or perceived social connection with the majority group (sighted people). In Studies 2 and 3, participants who thought about their friendship with an ingroup member (another blind person) were more likely to persist on stereotype-relevant academic tasks than those who reflected on their friendship with an outgroup member or a non-social topic. Thus, they were more willing to risk the threatening possibility of performing poorly on the tasks.

We suggest that ingroup affiliation offers psychological benefits as well as informational ones. Ingroup members undoubtedly offer instrumental support. In the case of blindness, for example, other blind people could offer advice about social services, assistive technology, and other assistance with finding and accessing employment. But our work is also consistent with earlier intuitions that ingroup social support serves as a strong mechanism linking ingroup identification with positive well-being outcomes (e.g., Crabtree et al., 2010; Haslam et al., 2005).
Ingroups can empower their members to reappraise a devalued identity in positive terms, to collectively fight injustice against the group, and to attribute negative events to prejudice against the group (see Ball & Nario-Redmond, in press, for a review).

Furthermore, our studies suggest that merely thinking about an ingroup friend can facilitate a “challenge” response to achievement situations. Participants were reminded of past instances in which their ingroup friends offered them psychological safety and protection against negative perceptions of their group. Making such friendships salient likely helped participants feel less worried about the possibility of failing at the tasks, as they were reminded that even if they were judged stereotypically by the majority outgroup, their ingroup friends would not judge them according to stereotypic standards. Ingroup-friendship salience could have also helped participants perceive that their ingroup is “capable of taking care of itself”, a mindset that reduces stereotype threat (e.g., McIntyre, Paulson, & Lord, 2003). Finally, ingroup-friendship salience could have motivated participants to persist on the tasks in order to disprove the stereotypes linking their blindness to poor performance, in the hope of negating such stereotypes and making things better for their ingroup in the future.

These studies offer preliminary evidence that ingroup affiliation is adaptive. However, this research could be extended by examining which of these mechanisms operate in real friendships between people sharing a common stigma, and how such friendships evolve over time. It is likely that multiple mechanisms operate, and that initial support from an ingroup friend promotes initial challenge-seeking behavior that promotes positive coping, which further promotes challenge-seeking, in a cycle of adaptive potential (Cohen & Sherman, 2014).

There are probably also important boundary conditions limiting ingroup affiliation’s benefits. Outgroup affiliation has benefits, too, such as reducing anxiety in intergroup
interactions (Page-Gould, Mendoza-Denton, & Tropp, 2008). Affiliating exclusively with the ingroup could prevent people from developing the confidence to manage intergroup interactions, and for small minority groups such as blind people, interaction with the outgroup in some form is usually inevitable. It may be optimal to have equally strong connections with both the ingroup and the outgroup, rather than choosing to focus one’s social relationships within one group or the other. Further, ingroup friendship’s benefits may depend on the ingroup friend’s appraisal of the stigmatized identity; for example, affiliating with blind people who endorse negative stereotypes about blindness could be counterproductive or threatening.

In sum, this research suggests that people’s preference to affiliate with similar others is functionally adaptive. Even when one has a devalued social identity, affiliating with others who share that identity can be psychologically beneficial. Interventions that help people build or strengthen these affiliations could have far-reaching positive effects, not only for people’s health and well-being, but for their productivity as well.
Chapter 5: Summary and Conclusions

In three empirical projects, I examined the social-psychological processes contributing to under-employment among blind people, along with potential solutions. Each research program tests theoretically derived hypotheses to explain how this socioeconomic achievement gap is maintained and, likewise, how it can be narrowed through intervention. Each program also extends important theories that explain social behavior more broadly. Yet they also leave many intriguing questions that lend themselves to future research. I will propose some future research avenues and will conclude with a discussion of the generalizability of this work to other minority groups.

Experience Simulations and Attitudes toward the Disabled

In Chapter 2 of this thesis, I examined how brief experiences with blindness could exacerbate public attitudes linking blindness with incompetency. I found that a brief, challenging blindness simulation reduced capability judgments, relative to simulating a different impairment (Experiment 1), no impairment at all (Experiments 1 and 2), or merely observing another person simulate blindness (Experiment 2). These perceptions were mediated by blindness simulators’ belief that they would be less capable themselves if blind, and blindness simulators predicted that they would adapt more slowly to sight loss (Experiment 2).

These findings call into question the widespread use of disability simulations as tools to improve disability attitudes (Flower, Burns, & Bottsford-Miller, 2007). They show that a certain kind of embodied disability simulation, characterized by challenge and failure, can harm rather than help relations between disabled and nondisabled people. More generally, people’s attitudes toward the disabled are partly influenced by their beliefs about how disability would impact them personally, which in turn depend on their experiences. Judgments of incompetency may stem
from people’s common tendency to underestimate how thoroughly they would adapt to changes in life circumstance (Ubel, Loewenstein, & Jepson, 2005). For example, an employer may underestimate a blind applicant’s ability to care for young children based on his own faltering attempts to care for his children in the dark, neglecting the fluency that a permanently blind person may have developed over time in performing such tasks.

This research suggests that simulations may still be beneficial if they give simulators a positive experience of success and mastery with a disability (e.g. Robinson & Rosher, 2001). Such interventions could promote both empathy and respect toward blind people by helping simulators understand what capabilities they would still possess if they became blind. Alternatively, interventions could highlight the differences between temporary and permanent blindness, encouraging simulators to rely less on self-referencing and adjust their judgments more to account for self-other differences (Van Boven et al., 2013). Testing such interventions is a useful area for future research.

A lingering question concerns the generalizability of the effects to other outgroups. The current studies provide evidence that people’s judgments of the blind are influenced by self-referencing processes. Similarly, people may judge other outgroups that they could conceivably join themselves, such as the poor, elderly or obese, by predicting how they would feel and behave as a member of those groups. However, it is less clear whether self-referencing influences judgments of more essentialized groups, like ethnic outgroups, as it may be difficult for perceivers to imagine being a member of another ethnic group or to draw upon relevant personal experience. Beliefs about these groups may still depend largely on cultural stereotypes or generalizing from exemplars (e.g. judging African Americans based on encounters with an African American roommate).
Stereotype Threat as a Contributor to Under-Employment

In Chapter 3, I examined how awareness of blindness-related stigma contributes to under-employment among blind people. Participants who were highly worried about being negatively stereotyped due to disability were more likely to experience unemployment and reported traveling alone in public, using public transportation and attending social events less frequently. They also reported lower subjective well-being and more stress. Path analyses suggested that these associations were primarily indirect; stereotype threat was associated with lower self-integrity, which in turn predicted negative life outcomes (Study 1). When self-integrity was experimentally manipulated through a values-affirmation, blind students’ learning and progress improved in a potentially stereotype-relevant training situation (Study 2).

Stereotype threat has been implicated as a contributor to other achievement gaps, such as those experienced by African American and Latino students and women in quantitative fields (Aronson & McGlone, 2009). Taken together, the present studies suggest that stereotypes can also contribute to under-employment among blind people, by motivating them to be less assertive in stereotype-relevant situations (e.g. employment and travel in public) in order to protect their sense of adaptive adequacy. This pattern can foster a recursive cycle if discrimination initially limits opportunity, prompting worries about being stereotyped, which limits opportunity further. For example, a blind job applicant could stop applying for certain types of jobs after experiencing initial discrimination, and as a result, remain unemployed. Stereotype threat could also motivate people to forgo beneficial services, which could ironically render them less independent and competent (Dodds et al., 1991).

However, reflecting on important values can interrupt this negative cycle, derailing its consequences and allowing for more adaptive responses to disability. When people affirm
sources of meaning in their lives, the issue of protecting self-integrity becomes “settled” (Sherman et al., 2013) and psychological resources are freed to pursue other goals. In Study 2, blind students who self-affirmed in this way were more open to the challenges of skill training and made more progress in their program. They moved into, quite literally, a “cycle of adaptive potential” (Cohen & Sherman, 2014) as they became better equipped to adapt to the challenges of their impairment. Appropriately timed self-affirmations can thus help make disabilities less disabling.

This research broadly suggests that self-integrity threat plays a key role in the downward spiral between stereotype threat and under-performance. Future studies should examine whether these patterns hold when stereotype threat is experimentally manipulated; that is, whether situational stereotype threat leads to depressed self-integrity and whether this self-integrity threat mediates poor performance or task disengagement. It would also be useful to investigate whether classic stereotype threat manipulations produce under-performance among people with disabilities. As I discussed in Chapter 4, blind participants perceived that blind people are stereotyped as performing poorly on academic tasks. Perceptions of these stereotypes could undermine blind people’s academic performance as well as their employment outcomes.

**Blind Friends as a Coping Resource**

In Chapter 4, I tested the hypothesis that having blind friends can be protective against the consequences of stereotyping and discrimination. In Study 1, blind adults reporting that a greater proportion of their friends are also blind showed a pattern of more positive life outcomes, including enhanced well-being and self-esteem, increased employment and higher earnings, and were less likely to experience loneliness or poverty. Studies 2 and 3 demonstrated that manipulating the salience of blind friends could increase achievement motivation. After writing
an essay about their connection with a blind friend, participants were more willing to persist on math and verbal tasks compared with those who wrote about a connection with a sighted friend (Study 2) or a non-social topic (Studies 2 and 3). Enhanced persistence on the verbal task improved performance (Study 3).

Blind friends are likely protective for many reasons. People naturally affiliate with others who share their circumstances, in part, to gain information about how others are reacting to those circumstances (Schachter, 1959). Blind friends likely share a great deal of informational support with one another, exchanging practical strategies for access and coping with discrimination.

However, the present research suggests that blind friends also offer each other emotional support and psychological buffering against stigma-related threats. Consistent with this, merely thinking about a blind friend—without exchanging any information with that person—was sufficient to increase persistence. Reflecting on a connection with a blind friend seemed to prompt a challenge response, similar to that shown by highly racially identified individuals, who expressed more willingness to take a stereotype-relevant test after being threatened (Cohen & Garcia, 2005). People are more likely to appraise potential threats as challenges they can confront if they perceive that they have the psychological resources to confront them successfully (Major & O’Brien, 2005). Blind friends may help nullify the potential negative psychological consequences of performing poorly on a stereotype-relevant task, as people likely trust that their blind friends will view them positively regardless of the sighted majority’s attitudes. Thinking of a blind friend could also give people both the motivation and the perceived capacity to change negative stereotypes about their group. Reflecting on a blind friend could have motivated participants to try hard on the test in order to disprove the negative stereotype and make things better for other group members, including their friends (Cohen & Garcia, 2005).
In addition, thinking of themselves as part of a highly connected alliance, participants may have seen themselves as more able to refute the stereotype through collective action (Nario-Redmond, Knowle, & Fern, 2013).

Future studies would be useful to disentangle the mechanisms through which ingroup friends benefit well-being and promote challenge-seeking. For people who have recently become blind, building new friendships with other blind people could be especially beneficial, with initial benefits propagating themselves over time.

**Generalizability of the Findings to other Minority Groups**

In decades past, social psychologists studied visible disability as a test case to investigate how stigmatized individuals are treated (Fein & Asch, 1988; Goffman, 1963). The present research, too, uses disability as a test case to examine how intergroup attitudes can be altered (Chapter 2), how stereotype threat promotes defensive coping by undermining self-integrity (Chapter 3), and how ingroup friendships protect social identity (Chapter 4). Do the processes identified in the present research generalize to other minority groups besides the blind or others with physical disabilities?

The present research suggests a great deal of similarity between the disabled and other minority groups in their experience of stigma. Like other minority groups, blind people reported everyday experiences of stereotype threat that predicted negative outcomes, and their achievement benefited from self-affirmation. Also, like other minority groups, blind people benefited from receiving social support from their ingroup, and activating these ingroup connections promoted a challenge response to threatening achievement situations.

However, blind people are distinct from other minority groups in two important ways. First, unlike race or gender, blindness is often acquired relatively late in the lifespan (National
People who develop a disability later in life are more likely to have already internalized and endorsed negative stereotypes about people with that disability, who constituted their outgroup (Wright, 1983). By contrast, people with congenital stigmas (such as racial minorities, or the congenitally disabled) have had life experiences which enable them to refute the stereotype, and have developed defenses against it (Shapiro, 2011; Wright, 1983). Thus, people with acquired disabilities could be more susceptible to “self-as-source” stereotype threat—the fear that negative stereotypes are actually true and confirmable in their own eyes (Shapiro, 2011). Compared with racial minorities, people with recently acquired blindness could be more apt to interpret employment discrimination as evidence of their incompetence, and consequently withdraw from employment in order to protect their self-integrity.

Second, although race is a characteristic nearly always shared with family members, blindness is frequently not. In fact, the relatively low incidence of blindness means that one may be the only blind person in one’s extended family, school, or workplace. Token status—being the only member of one’s group in a situation—is a cue that can increase perceptions of threat and make stereotypes more salient (Roberson, Deitch, Brief, & Block, 2003). Whereas racial minorities can often turn to their families for ingroup support (Steele, 2010), blind people often cannot do this, and in fact, could even perceive their family members as a source of stereotype threat. Ingroup friendships may thus constitute a rare oasis of identity safety for blind people and others with uncommon disabilities.

The above analysis suggests that blind people could be at even higher risk for stigma-related problems than other stigmatized groups. On the positive side, however, attitudes toward the blind and disabled may be more malleable than those toward more essentialized groups, because they are amenable to self-referencing. If a blind person’s relatives have the opportunity
to master basic blindness adaptations themselves, their attitudes could be vastly improved, causing the blind person to perceive less threat in the environment.

Conclusion

Blind people of working age are less than half as likely to hold jobs as their counterparts without disabilities, earn significantly less money, and an alarming proportion of them are absent from the work force altogether. In this thesis, I argue that this socioeconomic achievement gap arises, in part, from common perceptions of blind people as dependent and incompetent. Such attitudes support overt discrimination, but they also undermine achievement indirectly by threatening the blind person’s sense of being an adaptive agent. To defend one’s sense of adaptive adequacy, the blind person could withdraw from job-seeking or be less willing to travel alone in public, sacrificing independence and opportunity in the name of self-protection. However, thinking about sources of positive identity, or affirming social connections with other blind people, can have meaningful positive consequences for achievement, equipping the blind person to overcome the tide of public doubt.

Disability is not a fixed aspect of the person. Instead, a disability constitutes a powerful person-situation interaction (Ross & Nisbett, 1991). Impairments based in the person can affect that person’s functioning, but the impact and meaning of impairments varies dramatically according to the situation (Smart, 2003). For example, if a corporate building is outfitted with a simple wheelchair ramp, a wheelchair user who was formerly barred from entry could enter the building and become the company’s CEO. Similarly, public attitudes could determine whether a blind person becomes a company CEO or fails to submit an application for the job. The data presented here suggest that simple interventions, like values-affirmations, can fortify blind people against the tides of negative public perceptions, helping to make their visual impairment
less of a disability. The disability phenomenon gives social psychologists insight into the
powerful dynamics by which people and situations influence one another.
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