

The role of attainability in upward social comparison

DISSERTATION

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Abstract

Over the decades since Leon Festinger (1954) first introduced social comparison theory, much of the research on the topic has focused on the notion that people engage in social comparison in part as a means to enhance the self. Early evidence on this topic suggested that downward comparisons (i.e., comparisons to individuals who are worse-off than oneself) would enhance the self and lead people to feel better about themselves. Given this finding, many researchers assumed that upward comparisons (i.e., comparisons to individuals who are better-off than oneself) would result in the opposite effect. However, that strict dichotomy has since faded, and researchers have attempted to explore the conditions under which upward comparisons can serve quite another function.

Lockwood and Kunda (1997) proposed that upward social comparison can enhance the self when one believes that he or she could attain comparable success to that better-off target. In two studies, those authors found that more attainable targets led to greater feelings of inspiration and boosted rather than damaged self-views. Despite the considerable popularity of this research (cited over 550 times), significant questions remain about target attainability and how it influences upward social comparisons.

Seven studies reported here were designed to explore the role of perceived attainability of the target's success in upward social comparison. Specifically, the present

work was intended to link perceived attainability to broader theoretical perspectives about how upward social comparisons enhance the self. Also, the studies examined the extent to which certain situational factors and chronic individual differences predict judgments of attainability and whether the effects of those judgments reach beyond specific self-evaluations to more global, though temporary, feelings about the self.

Across all seven studies, participants were asked to read an article about an exceptional student who had recently received a notable scholarship. Next, participants completed a number of questionnaire items, including trait ratings of the student and of themselves, as well as measurements of perceived attainability of the student's success, perceived similarity to the student, and state self-esteem. Results indicated that perceived similarity drives the effects of perceived attainability, such that more attainable targets facilitate viewing oneself as similar to the target, which leads people to assimilate towards the target in their self-views and then feel better about themselves post-comparison. Both similarity to and subjective identification with the target, however, appear to have more direct effects on self-views and state self-esteem that do not require the influence of perceived attainability. Furthermore, numerous personality variables (e.g., optimism, self-efficacy, self-esteem, promotion focus, approach goals) predict whether people view a target's success as attainable. Overall, the research speaks to the possible preeminence of perceived attainability in upward social comparison and highlights the influence that attainability judgments have on people's affective lives.

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Chapter 1: Introduction

In a classic scene from the movie *Caddyshack* (1980), Judge Elihu Smails, in an effort to size-up his golfing competition at Bushwood Country Club, asks another member, Ty Webb, what he shot that day. Ty replies that he does not keep score, which prompts Judge Smails to ask Ty how he measures himself with other golfers. Ty simply responds, “By height.” Despite being a humorous interaction, this ironic exchange also illustrates a basic facet of the human experience: people constantly compare themselves with one another, usually in sensible ways. Leon Festinger (1954) proposed his social comparison theory to explain this natural tendency. According to social comparison theory, people often lack objective standards on which to evaluate their opinions and abilities. Since people seek accurate opinions and assessments of their abilities, they must then resort to other sources of information, such as comparisons to other people, to learn about themselves. For example, as a member of a country club, and not a professional golfer, Smails judges his golfing ability through comparing his score to that of the eccentric Ty Webb. Absent any other information, Judge Smails might view himself as a good golfer if his score bests Ty’s or as a bad golfer if his score pales in comparison. So, in this manner, others act as the benchmark by which people come to define themselves.

Festinger (1954) further specified a set of hypotheses regarding the complexities of the comparison process. Although some of these tenets did not draw great interest, others motivated a heroic amount of research on social comparison processes, leading one observer and contributor to the literature to say that social comparison appears to be “everyone’s second favorite theory,” presumably just after their own (Arrowood, 1978). Much of the research on social comparison assumes that people should be less likely to engage in comparison with those who have divergent opinions or abilities from their own. Stated another way, social comparison should occur primarily with others known to be similar in relevant ways. Festinger also stressed crucial differences between the social comparison of abilities and that of opinions: abilities can be difficult or impossible to change in response to social comparison information, and people exhibit a unidirectional drive upward in regard to abilities but not with regard to opinions. Since Festinger devoted few words to his discussion of the unidirectional drive upward, some debate exists as to whether he meant to imply that people strive to be better than others, or that they strive to actually improve upon their abilities (see Taylor & Lobel, 1989).

Self-Evaluation Motives

Self-Assessment

Apart from the mention of the unidirectional drive upward, Festinger generally viewed social comparison as serving the need for *self-assessment*. As described earlier, people need to have accurate and stable appraisals of themselves, and social comparison information can help achieve that in the absence of objective standards. Other lines of research similarly demonstrate, and make a case for, the importance of accuracy in self-

views (e.g., Swann, 1983; Trope, 1975). According to these perspectives, accurate self-knowledge serves a vital purpose, helping people to match their activities to their skill level, providing a foundation upon which to grow and change, and allowing people to anticipate and control future performance (Wayment & Taylor, 1995).

Self-Enhancement

After Festinger introduced his landmark theory, research on social comparison moved towards other motives that might drive people to measure themselves against others. Self-evaluation often involves the quest for information that reflects a positive sense of self (e.g., Taylor & Brown, 1988; Tesser, 1988). As with self-assessment, social comparison processes can serve this motivation towards *self-enhancement*. Early research from Hakmiller (1966) and Thornton and Arrowood (1966) suggested that people may purposefully engage in social comparison as a means to enhance the self. Hakmiller (1966) confronted some subjects with threatening personality feedback and observed that threatened individuals more often chose to make downward comparisons, comparisons to those who are worse-off than the self. In the context of that study, people who received threatening feedback compared themselves with people who received even more negative feedback. Thus, people can strategically use social comparison to feel better about themselves and maintain positive self-views, especially in response to threat.

Self-Improvement

Another line of research has proposed that people use social comparisons in order to acquire information that can be applied to the objective of *self-improvement* (e.g., Wood 1989; Taylor & Lobel, 1989). According to this perspective, upward social

comparisons, comparisons to those who are better-off than the self, serve that unidirectional drive upward in abilities by providing concrete information about how one could improve or the hope and inspiration that motivates someone to improve. For example, an athlete might compare himself to a superior contemporary with the aim of learning what training techniques could make him bigger, stronger, or faster. So, when seeking to improve, people might risk comparing with a target who outclasses them.

Direction of Comparison

Alongside this focus on the self-evaluation motives underlying social comparison, researchers developed a fascination with the selection of comparison targets. Specifically, much of the social comparison research examined the effects of downward and upward comparisons and the conditions under which people would engage in one type or the other. Wills (1981) proposed that people tend to make downward comparisons when pursuing self-enhancement, and thus, individuals who experience some threat to the self will be more likely to make downward than upward comparisons, and doing so can result in a boost to subjective well-being. Meanwhile, as discussed previously, for the purposes of self-assessment and self-improvement, upward comparisons should predominate. And so, evidence lined up to support this dichotomy, with downward comparisons appearing to boost self-esteem and positive affect and upward comparisons appearing to be a useful source of information for self-assessment (but at the cost of producing negative affect post-comparison) (Buunk, Collins, Taylor, Van Yperen, & Dakof, 1990).

Despite the parsimonious feel of this perspective on downward and upward comparisons, researchers have questioned over the last two decades whether comparison

direction alone should dictate the consequences for self-evaluations post-comparison (e.g., Brewer & Weber, 1994; Buunk et al., 1990; Tesser, 1988; Collins, 1996; Major, Testa, & Bylsma, 1991; Taylor & Lobel, 1989). For example, exposure to a downward comparison target might reveal that one holds a relatively advantaged status compared to others, but it might also suggest that one's status could decline. Alternatively, exposure to an upward comparison target might reveal that one holds a relatively disadvantaged status compared to others, but it might also suggest that one's status could improve. In fact, given the freedom to do so, people tend to compare with others of slightly higher ability than themselves (e.g., Gruder 1977; Wood, 1989; Wheeler et al., 1969), which would be an odd state of affairs if upward comparisons were consistently self-deflating. Therefore, upward comparisons might have great potential for the purposes of self-enhancement.

Upward Comparisons and Self-Enhancement

An accumulated body of evidence suggests that upward comparisons can serve the desire for positive self-evaluations either indirectly through self-improvement or directly through enhancing the self (see Collins, 1996). In light of that evidence, several theoretical perspectives have been advanced to account for how and under what conditions upward comparisons can enhance the self. For instance, Major et al. (1991) proposed that two factors determine the consequences of social comparisons: the esteem-relevance of the comparison and the degree of perceived control the comparer feels over his or her status on the comparison dimension. So, in the case of upward social comparisons, similarity to the target and high self-relevance of the comparison

dimension, combined with viewing status on the dimension as both generally and personally changeable, will ultimately generate positive effects for the self.

Perceived Control

Despite the obvious importance of esteem-relevance, the component of perceived control over status on the comparison dimension most critically informs the present work and thus warrants further discussion. According to Major et al., several considerations contribute to these feelings of perceived control. For instance, certain comparison dimensions (e.g., health) might often be viewed as relatively changeable; however, other comparison dimensions (e.g., attractiveness) might often be viewed as relatively stable. Other comparison dimensions (e.g., wages) might be viewed as relatively unchangeable due to the influence of external agents. And on a personal level, one might feel more or less capable of engaging in the behaviors necessary to evoke change in his or her status on the comparison dimension. For example, even if someone views health as a changeable dimension, that individual might not feel able to exercise regularly, and so a comparison to a healthier target could turn sour. Given this framework, Major et al. note that individual differences in variables such as self-esteem, depression, optimism, and locus of control should affect feelings of perceived control over one's status and thus self-evaluative responses to upward social comparisons.

Upward Assimilation Theory

Along with the discussion of the conditions under which upward social comparisons enhance the self, other researchers have additionally sought to explain the process through which such comparisons enhance the self. Collins (2000) introduced her

upward assimilation theory to challenge the notion that social comparisons involve contrasting one's abilities with those of the comparison target. Rather, she suggests that comparisons might also involve a search for and perception of similarity to the comparison target. According to Collins, expectations of similarity to the target on the comparison dimension drive the evaluative implications of the comparison process. In the case of high expected similarity to the target, people view themselves as *among the better ones* and assimilate to the characteristics of the upward comparison target. However, in the case of moderate expected similarity, people view themselves as unlike the comparison target and contrast their self-evaluations from that target. For upward assimilation theory, unlike other theories, the change in self-evaluations occurs not through some consideration of future standing on the comparison dimension or perceived control over that dimension but instead through a more basic perceptual bias.

Even though expected similarity plays the central role in this model, Collins (2000) somewhat struggles to pin down its origin precisely. Beyond actual similarity to the target on the comparison dimension, Collins also proposes that similarity on other related dimensions could promote expectations of similarity. So, being of the same race or gender as the target, or sharing interests or training, could affect expected similarity on the comparison dimension. Collins even suggests that merely engaging in an upward social comparison might establish some degree of similarity to the target. In one study used to support the model (Brown, Novick, Lord, & Richards, 1992), having the same birthday as the comparison target sufficed to produce an upward assimilation effect in self-ratings of physical attractiveness as compared to those who did not share a birthday

with the target. Brewer and Weber (1994) similarly found that a sense of shared distinctiveness with the comparison target led to boosts in self-evaluations.

Understanding exactly when and why people expect similarity to upward comparison targets should be critical to this theory because the road to assimilation versus contrast depends on the narrow, and perhaps ambiguous, difference between *high* and *moderate* expected similarity. Unfortunately, upward assimilation theory has received almost no direct testing, and the distinction between high and moderate expected similarity remained unaddressed even in that work. Collins reports unpublished data (Collins & Di Paula, 1996) showing that expected similarity to a high scoring individual on a test correlated positively with interest in comparing with that person ($p = .05$) and the comparer's belief that learning the top score would lead him or her to "feel good about" his or her own score ($p = .03$). Despite its weaknesses, upward assimilation theory provides a plausible explanation for how upward social comparisons enhance the self.

Selective Accessibility Model

As with upward assimilation theory, Mussweiler and Strack (2000) view similarity to the comparison target as the crucial factor that determines whether people experience assimilation to or contrast from the target. However, their selective accessibility model of social comparison further focuses on the process through which similarity has its effects. According to this model, a social comparison involves testing the hypothesis that one is similar (or dissimilar) to the target on the comparison dimension and using the evidence made accessible during that hypothesis testing to inform self-evaluations. For example, when comparing his academic ability to a high-

achieving classmate, a student might start with the hypothesis that he has a similar level of ability to the target. After setting up that hypothesis, the student would generate evidence consistent with it (e.g., a good exam grade), and doing so would make that information more accessible and more likely to be used if that same student then evaluated his own academic ability. Ultimately, comparing with that upward target would lead to boosted self-evaluations on the relevant comparison dimension.

Since the outcome of the hypothesis testing determines the effects for self-evaluations, the initial hypothesis that the comparer generates is critical to understanding whether assimilation or contrast will occur. So, if that student instead tested the hypothesis that he was dissimilar to the upward target, he would have generated evidence consistent with it (e.g., a poor exam grade), perhaps resulting in lower self-evaluations. Mussweiler and Strack (2000) propose that the chosen hypothesis depends on an initial assessment of similarity to the target on the critical dimension and related attributes. Mussweiler (2003) later describes this process as a quick holistic assessment of the target in which the individual considers a small range of the most salient characteristics (e.g., category membership) to judge the level of similarity to the target. Mussweiler further suggests that other known moderators of the self-evaluative consequences of social comparison (e.g., psychological closeness to the target) should contribute to whether people opt to test for similarity or dissimilarity.

So, in sum, several theoretical perspectives have been advanced in efforts to understand and explain how and when upward social comparison can serve the motive of self-enhancement and produce boosted self-evaluations. Both upward assimilation theory

(Collins, 2000) and the selective accessibility model (Mussweiler & Strack, 2000) contend that perceived similarity to the upward target determines whether assimilation or contrast effects prevail; however, the selective accessibility model posits a different, and more specific, mechanism. Furthermore, neither theory explicitly integrates other factors that might affect self-evaluations. One such factor related to the self-evaluative consequences of upward social comparisons, the perceived attainability of the comparison target's success, receives relatively little attention from these theorists.

Attainability of Social Comparison Targets

Attainability and Self-Evaluations

As they explored the inspirational effects of superstar role models, Lockwood and Kunda (1997) introduced the construct of attainability to the discussion of social comparison, proposing that upward social comparisons might enhance the self when people believe that they could achieve comparable success to that of the target. Although the authors did not specifically define the construct of attainability, they did leave behind some snippets to indicate the origins of their perspective. Attainability certainly reflects the influence of Major et al.'s (1991) discussion of perceived control over comparison discrepancies. So, the attainability of a target's success should depend on the malleability of the comparison dimension and one's ability to execute the behaviors necessary to change on the dimension. However, Lockwood and Kunda (1997) extend this idea to a consideration of whether one could improve *enough* to approach the target's level.

Markus and Nurius's (1986) work on possible future selves also appears to have influenced the concept of attainability. An upward target's success might thus be viewed

as attainable if one maintains a future self who meets or exceeds the target's level. So, when people encounter successful others, they might not merely think about who they are right now; they might also think about who and what they could be in the future.

Lockwood and Kunda further propose that the perceived attainability of a role model's success will lead to one of two paths: (a) an attainable superstar will illustrate what one can hope to achieve and make one feel more competent and capable of reaching that level, or (b) an unattainable superstar will highlight one's own failures and shortcomings and make one feel disheartened and inferior. Role models can then make one's successful future selves appear more concrete and tangible, facilitating self-enhancement.

Across two studies, Lockwood and Kunda (1997) examined the self-evaluative implications of comparisons with superstar role models. For one study, the authors used the age of the participants relative to the role model to manipulate perceived attainability. Students from first- and fourth-year classes were exposed to an article describing an exceptional fourth-year student. Ostensibly, the achievements of the exceptional student should have seemed attainable to first-year students who had their college careers ahead of them, whereas those achievements should have seemed unattainable to fourth-year students who no longer had the opportunity to improve upon their records. After the comparison, participants completed trait ratings of themselves and the target. Results showed that first-year students who compared with the superstar student rated themselves significantly more positively than first-year controls who rated themselves before exposure to the comparison target. On the other hand, fourth-year students who compared

with the relatively unattainable superstar student rated themselves less positively than control participants, though this difference did not reach statistical significance.

In another study, the authors relied on individual differences among participants to create differences in the perceived attainability of the upward comparison target's success. Specifically, the authors believed that individuals with an incremental theory of intelligence (Dweck & Leggett, 1988), and thus a belief that their academic ability could change, would view the superstar's success as more attainable. However, those individuals with an entity theory of intelligence, and thus a belief that their academic ability could not change much, were expected to view the superstar's success as less attainable. As in the previous study, participants who were more likely to view the upward comparison target as attainable (incremental theorists) had significantly more positive self-evaluations as compared to those who were less likely to view the target as attainable (entity theorists). So, these studies suggest that the perceived attainability of an upward social comparison target matters greatly for whether those comparisons might result in more self-enhancing or self-deflating reactions.

Attainability and Motivation

Since Lockwood and Kunda (1997) first published their work on perceived attainability in upward social comparison, few researchers have continued to explore the construct. Johnson (2003) exposed college-aged participants to either an exceptional high school student (whose age made him an unattainable target) or an exceptional college senior (whose age made him a more attainable target). As in previous research, reading about the unattainable target led to less positive self-views; however, on a subsequent

task, those who had read about the unattainable target performed better than those who had read about the attainable target. And in another set of studies (Johnson, 2005), exposure to an unattainable target increased the accessibility of actual-ideal discrepancies and produced a regulatory focus orientation based on promoting positive outcomes rather than preventing negative ones. Furthermore, that promotion focus led individuals who compared with unattainable targets to adopt riskier performance strategies.

In further work on along these lines, Van de Ven, Zeelenberg, and Pieters (2011) explored how the perceived attainability of a comparison target would affect emotional responses to that target and subsequent performance motivation. Specifically, these researchers were interested in whether more attainable targets would provoke more admiration or benign envy. According to Van de Ven, Zeelenberg, and Pieters (2009), benign envy differs from malicious envy in that benign envy triggers action tendencies directed towards self-improvement whereas malicious envy triggers action tendencies directed towards degrading the other person. Van de Ven et al. (2011) primed participants with an entity or incremental theory of personality and then exposed them to an article about an exceptional student. When primed with an incremental theory, and thus in a position to view the target as more attainable, participants felt more benign envy and planned to study more in the upcoming semester. However, when primed with an entity theory, and thus in a position to view the target as less attainable, participants felt more admiration and less motivation to study. Overall, these two lines of research further support the importance of perceived attainability in upward social comparison. At the

same time, none of this work links attainability to the similarity-focused theories that have dominated the recent literature on how upward comparison can enhance the self.

Attainability and Similarity

So far to date, the research on attainability has neglected to deeply examine the relationship between the perceived attainability of a comparison target and the perceived similarity to that target. As part of the procedure in their two studies, Lockwood and Kunda (1997) asked participants to rate how relevant the superstar was to them for the purposes of comparison and to provide written explanations for their response to that question. Although the researchers primarily coded these open-ended responses for indicators of inspiration, they also coded them for mentions of similarity to the target. And, in both studies, participants who were expected to view the target as attainable were significantly more likely to make mention of their similarity to the target.

Since this measure was not a primary focus of the research, the authors do not spend much time discussing the implications of this finding. However, they do suggest that participants engaged in motivated reflection, with first-year students and incremental theorists exaggerating similarity to justify mapping themselves onto the exceptional student and fourth-year students and entity theorists downplaying similarity to justify treating the exceptional student as irrelevant. From this point of view, the attainability of the target happened to influence reported similarity, though the authors do not presuppose that these effects on similarity have anything to do with the results for self-evaluations.

Mussweiler and Strack's (2000) selective accessibility model does not include perceived attainability; however, the authors of that model do hypothesize a relationship

between perceived attainability and perceived similarity. Mussweiler (2001) proposes that individuals might assimilate to attainable upward targets and contrast from unattainable upward targets because attainable targets facilitate testing for similarity whereas unattainable targets facilitate testing for dissimilarity. Specifically, Mussweiler (2003) said that “attainability of the standard’s status may often lead to assimilation because judges are more likely to assume similarity if the standard’s level of performance is attainable. If the standard is not attainable, however, assuming similarity is unrealistic, so that judges may be more likely to test for dissimilarity,” (p. 486). Since testing for similarity or dissimilarity depends on the initial holistic judgment of similarity, perhaps attainability exercises its effect at that early stage. Or, in other words, the perceived attainability of a target’s success affects the perceived similarity to the target, which in turn determines whether people assimilate to or contrast from upward comparison targets.

Despite the fact that they do not specifically measure or manipulate either similarity or perceived attainability, Stout, Dasgupta, Hunsinger, and McManus (2011) briefly provide a perspective that links those two concepts in social comparisons. Across three studies designed to test stereotype inoculation effects for women in science, technology, engineering, and mathematics (STEM), Stout et al. unwittingly created a social comparison paradigm not unlike some used in earlier research. For instance, in one study, female undergraduate engineering majors read detailed biographies of either male or female engineers. Participants then rated their level of subjective identification with the engineers and their own engineering self-efficacy, as well as their intention to pursue a career in engineering. Results showed that greater identification with the engineers led

to greater intentions to pursue a career in engineering, and participants' engineering self-efficacy mediated that link, and identification with the target predicted self-efficacy.

Describing this link, the authors suggest that subjective identification "may make the path from one's current self to a future self in science and engineering more attainable" (p. 260). Such a perspective might imply that subjective identification with a target (a construct not so distinct from similarity) increases perceived attainability of the target's success and thus self-evaluations, at least to the extent that one's successful future self somewhat resembles the upward target. Or, in other words, if someone identifies with an upward comparison target, he or she might then begin to view that target's success as within reach. An individual might think that if someone just like himself can achieve that success, maybe he can as well. So, feelings of identification with a target (or similarity to a target) might drive perceptions of that target's attainability.

Remaining Questions

Although various lines of research support the importance of perceived attainability for upward social comparisons, they raise nearly as many questions as they answer. Starting with Lockwood and Kunda (1997), no one has explicitly defined the construct of attainability, nor has anyone explained how people make that judgment or mentioned factors that might influence whether people view a given target's success as attainable or unattainable. In fact, only Major et al. (1991), in their discussion of perceived control, provide insight into factors that might affect perceived attainability. Also, the extent to which chronic individual differences or situational factors influence these judgments remains unclear, as does the direction of the relationship between

judgments of perceived attainability and similarity to the target. And without using some means to measure perceived attainability of the target's success, one could wonder whether perceived attainability, as opposed to some other factor, caused the changes in self-evaluations or motivation in the existing research. Finally, these studies explored a rather limited set of dependent variables. Considering the importance of self-evaluations and performance motivation, it might be interesting to know whether attainability has further-reaching effects for how people feel about themselves post-comparison. So, the present research will attempt to address many of these lingering questions about perceived attainability and find a place for it in existing theoretical perspectives.

Overview of Current Studies

Seven studies were designed to further explore the role of perceived attainability of the target's success in upward social comparisons. Altogether, the present research contributed to the existing literature in several areas. Attempts were made for the first time to measure perceived attainability, providing the opportunity to confirm whether previously used manipulations of the construct in fact affected whether people viewed upward targets as attainable or unattainable. Also, the present work elaborated further on both the antecedents and consequences of viewing a target's success as attainable. Along these lines, the studies examined the extent to which certain chronic individual differences predict attainability judgments and whether the effects of those judgments reach beyond specific self-evaluations to more global feelings about the self.

Finally, the present work was intended to link perceived attainability to broader theoretical perspectives about how upward social comparisons enhance the self. Collins

(2000) proposes that high similarity leads to assimilation in self-views, making no mention of how perceived attainability might contribute to that process; however, Mussweiler (2003) suspects that judgments of perceived attainability could affect judgments of perceived similarity and thus whether people assimilate to or contrast from upward targets. Stout et al. (2011), on the other hand, assert that subjective identification with a target might affect judgments of perceived attainability. Since these varied perspectives have received almost no direct empirical testing, the present studies were designed to clarify whether perceived similarity or subjective identification would mediate the effects of perceived attainability on self-evaluations or vice versa.

Across all seven studies, participants were asked to read an article about an exceptional student who had recently received a notable scholarship. Afterwards, participants completed a number of questionnaire items, including trait ratings of the student and themselves, as well as measurements of perceived attainability of the student's success, perceived similarity to the student, and state self-esteem. Study 1 used a manipulation similar to that of Lockwood and Kunda (1997), in this case varying the age of the upward comparison target in an effort to make that target's success more or less attainable. In Studies 2a and 2b, details of the scholarship the exceptional student won were varied to make it more or less selective, and thus, more or less attainable. For Study 3, participants were induced to have either an incremental or entity theory of personality, making personal change more or less possible so as to make the exceptional student seem attainable or unattainable. Studies 4a and 4b involved manipulations of subjective identification with the target to test whether subjective identification fosters

perceptions of attainability. And, in Study 5, participants completed a battery of individual difference measures prior to reading about the exceptional student in an effort to explore whether certain personality characteristics would affect the tendency to perceive the success of upward social comparison targets as more or less attainable.

Since previous research has found that attainability of an upward comparison target can affect self-views (Lockwood & Kunda, 1997), it was predicted for all studies that participants who compared with an attainable target (either manipulated or measured) would report more positive trait ratings for themselves relative to those who compared with an unattainable target. Further, it was predicted that the effects of attainability would reach beyond self-views to state self-esteem, with individuals reporting higher self-esteem after comparison with an attainable target and lower self-esteem after comparison with an unattainable target. Specifically, it was predicted that changes in self-views would mediate the effects of attainability on state self-esteem.

Based on Mussweiler (2003), it was predicted for Studies 1-3 that comparing with an attainable target, relative to an unattainable target, would lead to increased perceived similarity of the target, which in turn would produce more positive self-views and then higher state self-esteem. So, the relationship between attainability and self-esteem would be mediated by perceived similarity (and consequent changes in self-views). Based on Stout et al. (2011), it was predicted for Studies 4a and 4b that subjectively identifying with an upward target would lead to increased perceived attainability of the target, which in turn would produce more positive self-views and then higher self-esteem. So, the relationship between subjective identification and self-esteem would be mediated by

perceived attainability and then self-views. Finally, for Study 5, it was predicted that the perceived attainability of an upward target's success would correlate significantly with individual differences identified by Major et al. (1991) in their discussion of perceived control (i.e., optimism, self-esteem, locus of control), as well as other related characteristics (i.e., approach goals, promotion focus, and self-efficacy).

Chapter 2: Study 1

During a study supposedly concerning the effects of journalistic styles on social perception, participants were asked to read an article from a university newspaper about an exceptional student who recently won a significant scholarship. Some participants read a version of the article in which the student was described as a fourth-year student (and thus more attainable) while others read a version of the article in which the student was described as a first-year student (and thus less attainable). As a control, a third group of participants read an article about an irrelevant target. Similar to Lockwood and Kunda (1997), the achievements of a fourth-year student should be perceived as more attainable than those of a first-year student because participants have time to reach the level of the fourth-year student, whereas the exceptional first-year student has already eclipsed the participants at the same point in their own lives. After reading the article, participants were asked to rate the exceptional student and then themselves on a set of positive traits, indicate the perceived attainability of the student's success and the perceived similarity of themselves to the student, and complete a measure of state self-esteem.

As a replication of Lockwood and Kunda (1997), it was predicted that reading about an attainable target, as compared to reading about an unattainable target, would lead to more positive self-views. Further, it was predicted that the effects of that

attainability manipulation would be reflected in the measurement of perceived attainability, such that those participants who read about the fourth-year student would perceive the target's success as more attainable than those who read about the first-year student. Since Mussweiler (2001) proposed that attainable targets facilitate testing for similarity, it was predicted that those who read about the fourth-year student would report higher similarity to the target than those who read about the first-year student.

According to both upward assimilation theory (2000) and the selective accessibility model (Mussweiler & Strack, 2000), that increase in perceived similarity should lead to assimilation to the target; thus, perceived similarity should mediate the effects of attainability on self-views. And, because more positive self-views were predicted to increase self-esteem, it was predicted that the effects of attainability on self-esteem would be mediated by perceived similarity and self-views (see Figure 1 for a graphical representation of this proposed mediational pathway). Finally, all of the predicted relationships involving attainability were expected to occur for both the experimental manipulation of attainability and the measure of perceived attainability.

Method

Participants

Participants were 61 Ohio State University undergraduate students (30 female), who completed the study in exchange for course credit. Participants were randomly assigned to condition and tested in groups of one to six individuals. Seven additional participants were excluded from analyses for not reading the article, as was evidenced from participants spending less than 30 seconds reading the entire article.

Materials & Procedure

Attainability Manipulation. As part of a study on the effects of journalistic styles on social perception, participants were told that they would be reading and evaluating several newspaper articles from the Ohio State student newspaper (or the Florida State student newspaper in the case of the control condition). Participants were informed that the complete text of each article had been entered into a computer program and that they would be asked to respond to a set of questions about each article and their reactions to reading it. In order to facilitate the process of social comparison with the exceptional student, participants were asked to focus on the person who was the subject of the article.

Each version of the article that participants read described the achievements of an exceptional student. Actual articles from student newspapers largely informed the text of the articles used in this study. However, the text was edited to remove any indications of the student's gender, and the student was given an androgynous name (Jordan). In the experimental conditions, the exceptional student had recently been announced as a winner of the Churchill Scholarship, an honor given to 50 students who display exceptional academic talent, outstanding personal qualities, and contributions to the community. Some participants read a version that described the student as a fourth-year student and the award as one for graduating seniors, and others read a version which described the student as a first-year student and the award as one for college freshmen.

So as to keep the target relevant to all participants, the articles in the experimental conditions did not indicate whether any particular background was required to win the scholarship, and they did not specify the student's major or intended career. In the control

condition, the student won an award presented to the most gifted performing arts student at Florida State University. Every version of the article went on to describe the student's involvement in student government and community service, crafting an image of a well-rounded individual. Finally, the article featured quotes from the student attributing his or her success to hard work, dedication, and the many opportunities available at the student's university. See Appendix A and Appendix B for the full text of these articles.

Trait Ratings. After reading the article, participants completed a set of items beginning with ratings of the student and themselves on a list of five positive traits related to academic success. Specifically, participants rated how bright, skillful, dedicated, successful, and talented the student was, and then they rated themselves on the same attributes. Participants responded using a five-point Likert scale (1 = *not at all*, 2 = *a little bit*, 3 = *somewhat*, 4 = *very much*, 5 = *extremely*). Responses on each group of items were summed to create the target ratings and self-ratings scores. See Appendix C for these items and the other questionnaire items created for use in this paradigm.

Perceived Attainability and Similarity. Participants responded to three items to indicate their perceptions of the attainability of the student's success. The items included the following: "How likely are you to reach the same success as Jordan?" "How much do you feel like you could achieve what Jordan has achieved?" and "How much do you feel like Jordan's success is attainable for you?" Responses were summed to create an index of perceived attainability. Participants also indicated their perception of their similarity to the target. Participants responded to these items using a five-point Likert scale.

State Self-Esteem. After responding to those items, participants were asked to complete a set of questionnaire items about themselves to see whether personality may have affected their perceptions of the article. At that time, participants responded to 14 items drawn from the Current Thoughts Scale (Heatherton & Polivy, 1991). Since the six items that loaded most on the *appearance self-esteem* subscale of this measure were mostly unrelated to the topic at hand, only the items that loaded most on the *performance self-esteem* and *social self-esteem* subscales were included in this study. For example, the performance self-esteem subscale includes items such as, “I feel confident about my abilities,” and “I feel as smart as others,” whereas the social self-esteem subscale includes items such as, “I feel displeased with myself,” and “I feel inferior to others at this moment.” See Appendix D for the full list of items used from this scale. For this set of items, participants were asked to indicate how true each statement was for them at that moment on a five-point Likert scale (1 = *not at all*, 2 = *a little bit*, 3 = *somewhat*, 4 = *very much*, 5 = *extremely/a lot*). Items indicating lower self-esteem were reverse-scored, and responses across all 14 items were summed to create an index of state self-esteem.

Results

Perceived Attainability and Similarity

The three items related to the perceived attainability of the target’s success were summed to create an index of perceived attainability ($M = 8.77$, $SD = 2.95$, $\alpha = .90$). An analysis of variance showed no difference between conditions on perceived attainability, $F(2, 58) = 0.94$, $p = .40$, indicating either a failure of the manipulation to affect perceived attainability of the target’s success or a failure of the measure to detect differences in

perceived attainability. Another analysis of variance showed no differences between groups on the measure of perceived similarity ($M = 2.95$, $SD = .86$), $F(2, 58) = 1.32$, $p = .28$. At the same time, a correlational analysis revealed a significant positive relationship between the measure of perceived attainability and the measure of perceived similarity ($r = .44$, $p < .01$). Participants who viewed the target's success as more attainable tended also to view themselves as more similar to the target.

Trait Ratings

Both the trait ratings of the target ($M = 22.05$, $SD = 2.98$, $\alpha = .89$) and the ratings of the self ($M = 17.39$, $SD = 3.21$, $\alpha = .86$) were summed to create separate indices. Self-ratings did not differ significantly between conditions; however, a one-way analysis of variance revealed differences between groups in ratings of the target, $F(2, 58) = 5.58$, $p < .01$. Post-hoc Tukey pairwise comparisons showed that participants in the control condition rated the target significantly lower ($M = 20.18$) than those in the attainable target condition ($M = 22.50$) and those in the unattainable target condition ($M = 23.05$). Ratings of the target did not differ significantly between the critical conditions ($p = .79$).

Since the experimental manipulation did not generate the predicted differences in self-ratings, correlational analyses were also conducted using the continuous measure of perceived attainability. Self-ratings ($r = .61$, $p < .01$) and ratings of the target ($r = -.38$, $p < .01$) correlated significantly with the continuous measure of perceived attainability. Perceived similarity correlated significantly with self-ratings as well ($r = .59$, $p < .01$), but it did not correlate significantly with ratings of the target ($r = -.08$, $p = .56$). Although the manipulation failed to affect self-views, people who rated the target as more

attainable, and those who viewed the target as more similar to themselves, tended to rate themselves more positively. Finally, to help tease apart the unique effects of perceived attainability and perceived similarity on self-views, partial correlations were calculated. Perceived attainability ($pr = .48, p < .01$) and perceived similarity ($pr = .45, p < .01$) correlated significantly with self-ratings when controlling for the other variable.

One of the core predictions for this study was that perceived similarity to the target would mediate the effects of attainability on self-views, and so analyses were conducted to measure that indirect effect. A bias corrected bootstrap confidence interval was calculated for the indirect effect of the attainability condition on self-ratings using 2000 bootstrap samples (see Preacher and Hayes, 2008). The confidence interval for the indirect effect included zero ($b = 0.15, 95\% \text{ CI } [-0.30, 0.72]$), indicating that perceived similarity did not mediate the relationship between the attainability condition and self-views. An identical analysis was conducted replacing the attainability condition with the three-item measure of perceived attainability. Using that measure, the confidence interval for the indirect effect did not include zero ($b = 0.19, 95\% \text{ CI } [0.06, 0.39]$), indicating that perceived similarity mediated the relationship between the three-item measure of perceived attainability and self-views.

State Self-Esteem

After reverse-scoring the negative items, the state self-esteem items were summed to create an index of state self-esteem ($M = 50.56, SD = 8.77, \alpha = .87$). An analysis of variance showed that, contrary to predictions, state self-esteem did not differ significantly between conditions, $F(2, 58) = 0.75, p = .48$. Further correlational analyses revealed

significant positive relationships between perceived attainability and self-esteem ($r = .42$, $p < .01$) and perceived similarity and self-esteem ($r = .40$, $p < .01$). Significant relationships between these variables and self-esteem remained even after controlling for the effects of the other variable ($pr = .29$, $p < .05$ for attainability and $pr = .27$, $p < .05$ for similarity). Participants who rated the target as more attainable, and those who viewed themselves as more similar to the target, tended to report higher levels of self-esteem. Additionally, self-ratings significantly predicted state self-esteem ($r = .52$, $p < .01$).

Another prediction for the present study was that the effects of attainability on self-esteem would be mediated by perceived similarity and self-views. Therefore, a bootstrap confidence interval was calculated for three indirect effects of the attainability condition on self-esteem, with perceived similarity as the mediator, self-ratings as the mediator, and the path through perceived similarity and then self-ratings as the mediator. Confidence intervals for all three indirect effects included zero, indicating no significant mediation. As with self-views, the analyses were repeated using the three-item measure of perceived attainability in place of the condition variable. In this analysis, the confidence intervals for the indirect effects through perceived similarity and then self-ratings ($b = 0.19$, 95% CI [0.05, 0.52]), as well as self-ratings alone ($b = 0.45$, 95% CI [0.08, 1.16]), did not contain zero, suggesting that those paths significantly mediated the relationship between perceived attainability and state self-esteem.

Because the data do not permit causal conclusions about the relationship between perceived attainability and perceived similarity to the target, another bootstrapping analysis was conducted to test whether perceived attainability and self-views mediated

the relationship between perceived similarity and state self-esteem. Similar to the previous analysis, the confidence intervals for the indirect effects through perceived attainability and then self-ratings ($b = 0.68$, 95% CI [0.13, 1.85]), as well as self-ratings alone ($b = 1.46$, 95% CI [0.35, 3.07]), did not contain zero, suggesting that those paths significantly mediated the relationship between perceived similarity and state self-esteem.

Discussion

Previous research has shown that the attainability of an upward comparison target's success affects how people view themselves after engaging in social comparison, with attainable targets fostering more positive self-views than unattainable targets. Study 1 expanded on this work by measuring the extent to which participants viewed the target's success as attainable, testing perceived similarity to the comparison target as a mediator of the relationship between target attainability and self-views, and examining whether the effects of the attainability of the target's success would reach beyond specific self-views to more global feelings about the self.

Nearly all the present analyses indicated that the manipulation of target attainability used in this study did not affect perceptions of target attainability or any other variables of interest. Although the present manipulation was derived from the one that Lockwood and Kunda (1997) used successfully to create differences in self-views and inspiration, the slight differences between that manipulation and the one used in the present study might explain the failure of this manipulation to affect perceived attainability. Lockwood and Kunda restricted their participant pool to students in either their first or fourth year. Whereas fourth-year students in that study might have compared

themselves to an exceptional graduating senior and felt as though his or her success was unattainable, comparing with an exceptional first-year student might not have generated the same feeling of that target being unattainable, as participants might still have judged whether they might reach that level of success by the end of their college careers.

Since the participants in the present study were predominantly incoming freshmen (43 of 61), they might have had a different psychological experience when comparing with an exceptional first-year student than the fourth-year students did in Lockwood and Kunda's study. Specifically, those fourth-year students were encountering a real time horizon, the end of their undergraduate education, while the students in this study were facing a more arbitrary end point based on the scholarship that the exceptional student won. So, participants in this study might have considered whether they could attain that success in their few remaining years in college, not restricting themselves completely to the one year it took the target to achieve that scholarship.

Another important difference between the two studies was that Lockwood and Kunda also restricted their participant pool to students enrolled in an accounting program and presented participants with an article about an exceptional accounting student. Such a restriction allowed the researchers to control, and perhaps maximize, how relevant the social comparison target would be to the participants. Perhaps people evaluate the attainability of a target's success differently depending on whether they view that target as generally relevant (as a comparison other) to them or not. Thus, the expected differences between groups might have washed away if not all the participants viewed the target as relevant. Also, with the impoverished information in the article, participants

might have had more of an opportunity to construe the target's success as broadly attainable in one way or another, leading to fewer differences between conditions.

Despite the weakness of the manipulation, the correlational data using the measure of perceived attainability, and the subsequent mediational analyses, provide a wealth of information about how attainability might affect the outcomes of upward social comparisons. Certainly, these data are limited in that the causal direction of many significant relationships cannot be determined; however, they do support Lockwood and Kunda's (1997) notion that the attainability of a comparison target's success is associated with how an individual views himself or herself post-comparison. At the same time, these data suggest that increased perceptions of similarity are not merely motivated reactions. In fact, the data begin to support Mussweiler's (2001) belief that perceived attainability would be related to judgments of similarity to the target, which in turn would predict assimilation to the target. And, for the first time, these results show that assimilation to the target, perhaps triggered through increased perceived attainability of the target or increased perceived similarity to the target, relates to higher momentary feelings of self-esteem. Overall, the results reflect a potential path through which judgments about the attainability of a comparison target can ultimately come to affect one's self-esteem.

At the same time, the relationship between perceived attainability and perceived similarity, the two critical variables in this study, remains somewhat muddled. Perceived attainability and perceived similarity correlate modestly, and they both predicted more positive self-views and state self-esteem. Each variable also appears to mediate the relationship between its counterpart and self-views and self-esteem. And even when

controlling for the effect of the other, each variable accounts for unique variance in the relevant dependent variables. Contrary to Mussweiler's (2001) speculation, the relationship between perceived attainability and perceived similarity might be more bidirectional. Perhaps viewing oneself as similar to an upward comparison target ultimately facilitates viewing that target's success as more attainable.

Another possibility is that participants with high self-esteem simply tended to perceive the target's success as attainable, perceive themselves as similar to the target, and rate themselves more positively on the list of traits. Without a more successful induction of attainability, or even similarity, the present study alone cannot discern the precise causal chain that connects perceived attainability and similarity to self-views and self-esteem. So, Studies 2a and 2b were designed to test a novel manipulation of the attainability of the target's success with the hope of clarifying the relationship between perceptions of attainability and similarity and providing further support for the proposed mediational pathway from attainability to state self-esteem, while also controlling for chronic self-esteem at the beginning of the study.

Chapter 3: Study 2a

During a study supposedly concerning the impact of journalistic styles on social perception, participants were asked to read an article from a university newspaper about an exceptional student who recently won a significant scholarship. Some participants read a version of the article in which the scholarship was more selective and stringent in the qualifications required to win it (and was thus less attainable), while others read a version of the article in which the scholarship was less selective and had less stringent requirements (and was thus more attainable). After reading the article, participants were asked to rate the exceptional student and then themselves on a set of positive traits, indicate the perceived attainability of the student's success and the perceived similarity of themselves to the student, and complete a measure of state self-esteem. In Study 2a, participants completed a one-item measure of self-esteem prior to reading the article in an effort to determine whether self-esteem drives perceptions of target attainability, perceptions of similarity to the target, self-views, and self-esteem post-comparison.

As a conceptual replication of Lockwood and Kunda (1997), it was predicted that reading about an attainable target, as compared to reading about an unattainable target, would lead to boosted self-views. Further, it was predicted that the effects of that attainability manipulation would be reflected in the measurement of perceived

attainability, such that those participants who read about the student who won the less selective scholarship would perceive the target's success as more attainable than those participants who read about the student who won the more selective scholarship.

Again, it was predicted that attainable targets would facilitate testing for similarity, and thus, those who read about the student who won the less selective scholarship were expected to report higher similarity to the target than those who read about the more selective scholarship. As in Study 1, it was predicted that the increase in perceived similarity would lead to assimilation to the target and a boost in self-views; thus, perceived similarity should mediate the effects of the attainability condition on self-ratings. And, because more positive self-views were again expected to increase self-esteem, it was predicted that the effects of attainability on self-esteem would be mediated by the path through perceived similarity to the target and self-views. Finally, it was predicted that the significant relationships between target attainability and the relevant dependent variables would emerge even when controlling for the influence of self-esteem measured at the beginning of the study.

Method

Participants

Participants were 39 Ohio State University undergraduate students (21 female), who completed the study in exchange for course credit. Participants were randomly assigned to condition and tested in groups of one to six individuals. Five additional participants were excluded from analyses for not reading through the article, as was evidenced from participants spending less than 30 seconds reading the entire article.

Materials & Procedure

Self-Esteem. Prior to reading the article about the exceptional student, participants were asked to provide some basic demographic and personality information. Among the demographic items (e.g., sex, age, year in school) and some distracter items about the preference for and enjoyment of reading the newspaper, participants completed a one-item measure of explicit self-esteem in which they indicated on a five-point Likert scale their level of agreement with the statement, “I have high self-esteem” (Robins, Hendin, & Trzesniewski, 2001). Previous research has shown that the one-item measure of self-esteem can provide a practical alternative to scale measures of self-esteem, which proved ideal in this circumstance when a longer measure could have biased later responding.

Attainability Manipulation. Participants were told that they would be reading and evaluating newspaper articles from the Ohio State student newspaper. Participants then read an article that described the achievements of an exceptional student. Except for a few changes to the details about the scholarship, the text of this article matched that used in the previous study, and the text was again edited to remove any indications of the student’s gender. For Study 2a, the manipulation of attainability depended on the selectivity of the scholarship and the qualifications required to win the scholarship. Specifically, in one condition, participants read that the Churchill Scholarship is awarded to just 10 graduating seniors every year who display exceptional academic talent (defined as maintaining a GPA above 3.9); however, in the other condition, participants were told that the scholarship is awarded to 100 graduating seniors every year who display exceptional academic talent (defined as maintaining a GPA above 3.0). All other details

about the student and the scholarship were identical to Study 1. See Appendix E for the sections of the article text that were modified for this manipulation.

The current manipulation of target attainability has not appeared in the prior literature. However, as with that used by Lockwood and Kunda (1997), the current induction borrows from Major et al. (1991) and their discussion of perceived control in social comparison. Participants might view the comparison dimension (academic ability) as alterable, but in the condition with the high GPA requirement, they might not feel personally capable of executing the behaviors necessary to achieve that GPA, or they might not have enough remaining course opportunities to raise their GPA to that level. Such a high fixed standard of achievement and severely limited number of awarded scholarships might also make the comparison dimension seem more “under the control of external agents,” (Major et al., 1991, p. 245) and thus relatively unalterable.

Trait Ratings. After reading the article, participants completed a set of items beginning with ratings of the target student and themselves on a list of five positive traits related to academic success. For Study 2a, the items asking participants to rate how successful the target is and how successful they are themselves were replaced with items asking for ratings of how ambitious the target is and how ambitious they are themselves. Since being successful is less a trait and more an assessment of actual outcomes, this item appeared to be a better fit for the task. All others items remained the same. As in the previous study, responses on each group of items were summed to create the target and self-view scores.

Perceived Attainability and Similarity. Participants responded to the same three items as in the previous study to indicate their perceptions of the attainability of the student's success. Responses were summed to create an index of perceived attainability. Participants were again asked to indicate their perceptions of their similarity to the target.

State Self-Esteem. After responding to those items, participants were asked to complete a set of questionnaire items about themselves to see whether personality may have affected their perceptions of the article. At that time, participants responded to the same 14 items from the Current Thoughts Scale (Heatherton & Polivy, 1991) that were used in the previous study. After reverse-scoring the negatively-worded items, responses across all of those items were summed to create an index of state self-esteem.

Results

Perceived Attainability and Similarity

The three items related to the perceived attainability of the target's success were summed to create an index of perceived attainability ($M = 8.15$, $SD = 2.73$, $\alpha = .90$). As predicted, an analysis of variance showed a marginally significant difference between experimental conditions on the measure of perceived attainability, $F(1, 37) = 2.95$, $p < .10$, indicating that those participants who read about the student who won the more selective scholarship rated the student's success as less attainable ($M = 7.48$) than those who read about the student who won the less selective scholarship ($M = 8.94$). Another analysis of variance showed no differences between groups on the measure of perceived similarity ($M = 3.10$, $SD = .88$), $F(1, 37) = 0.17$, $p = .68$. Also, a correlational analysis revealed a significant positive relationship between the three-item measure of perceived

attainability and the one-item measure of perceived similarity ($r = .49, p < .01$). So, participants who viewed the target's success as more attainable tended to also view themselves as more similar to the target. Another set of correlational analyses showed that the one-item measure of self-esteem ($M = 3.77, SD = .74$) did not significantly predict perceived attainability ($r = -.02$) or perceived similarity ($r = .00$).

Trait Ratings

Both the trait ratings of the target ($M = 22.79, SD = 2.02, \alpha = .80$) and the ratings of the self ($M = 18.59, SD = 2.84, \alpha = .81$) were summed to create separate indices. Self-ratings did not differ significantly between conditions; however, a one-way analysis of variance revealed differences between groups in ratings of the target, $F(1, 37) = 6.87, p < .01$. Participants who read about the student who won the more selective scholarship rated that student significantly better ($M = 23.52$) than those who read about the student who won the less selective scholarship ($M = 21.94$). So, the induction of attainability affected how participants viewed the target (even though no actual information about the student differed between conditions), but it did not affect participants' self-views.

Since the experimental manipulation did not generate the predicted differences in self-ratings, correlational analyses were also conducted using the continuous measure of perceived attainability. Self-ratings ($r = .44, p < .01$) and ratings of the target ($r = -.34, p < .05$) correlated significantly with the continuous measure of perceived attainability. Perceived similarity correlated significantly with self-ratings as well ($r = .63, p < .01$), but it did not correlate significantly with ratings of the target ($r = .00$). Controlling for chronic self-esteem did not affect any of those relationships. So, although the

manipulation again failed to affect self-views, people who rated the target's success as more attainable, and those who viewed the target as more similar to themselves, tended to rate themselves more positively. Finally, to help tease apart the unique effects of perceived attainability and perceived similarity on self-views, partial correlations were calculated. Perceived similarity correlated significantly with self-ratings when controlling for perceived attainability ($pr = .52, p < .01$), but perceived attainability no longer correlated significantly with self-ratings ($pr = .20, p = .22$).

One of the core predictions for this study was that perceived similarity to the target would mediate the effects of attainability on self-views, and so analyses were conducted to measure that indirect effect. A bias corrected bootstrap confidence interval was calculated for the indirect effect of the attainability condition on self-ratings using 2000 bootstrap samples. The confidence interval for the indirect effect included zero ($b = 0.24$, 95% CI [-0.68, 1.58]), indicating that perceived similarity did not mediate the relationship between the attainability condition and self-views. An identical analysis was conducted replacing the attainability condition with perceived attainability. Using that measure, the confidence interval for the indirect effect did not include zero ($b = 0.27$, 95% CI [0.09, 0.61]), indicating perceived similarity mediated the relationship between perceived attainability and self-views. And, that indirect effect remained significant when controlling for chronic self-esteem ($b = 0.27$, 95% CI [0.10, 0.57]).

Another analysis examined whether chronic self-esteem moderated this mediation effect. At low levels of chronic self-esteem (defined as one standard deviation below the mean), the bootstrap confidence interval for the indirect effect of perceived attainability

on self-ratings included zero ($b = 0.23$, 95% CI [-0.03, 0.69]). However, at mean levels of chronic self-esteem and at high levels of chronic self-esteem (defined as one standard deviation above the mean), the bootstrap confidence interval for the indirect effect did not include zero ($b = 0.28$, 95% CI [0.10, 0.57] for mean levels and $b = 0.27$, 95% CI [0.02, 0.61] for high levels). So, similarity did not mediate the relationship between perceived attainability and self-views among individuals low in chronic self-esteem (though the difference in the effect between different levels of self-esteem remains rather small).

State Self-Esteem

After reverse-scoring the negative items, the state self-esteem items were summed to create an index of self-esteem ($M = 53.10$, $SD = 9.29$, $\alpha = .91$). An analysis of variance showed that, contrary to predictions, state self-esteem did not differ significantly between conditions, $F(1, 37) = 0.24$, $p = .63$. Further correlational analyses revealed that neither perceived attainability of the target's success ($r = .12$) nor perceived similarity ($r = .21$) significantly predicted state self-esteem in this study. Self-ratings did, however, still correlate significantly with state self-esteem in this study ($r = .61$, $p < .01$), and the one-item measure of chronic self-esteem that participants completed at the beginning of the study correlated significantly with state self-esteem as well ($r = .37$, $p < .05$).

Another prediction for the present study was that the effects of attainability on self-esteem would be mediated by perceived similarity and self-views. Therefore, a bootstrap confidence interval was calculated for three indirect effects of attainability condition on self-esteem, with perceived similarity as the mediator, self-ratings as the mediator, and the path through perceived similarity and then self-ratings as the mediator.

The confidence intervals for all three indirect effects included zero, indicating no significant mediation of the effect of attainability on self-esteem. As with self-views, the analyses were repeated using the three-item measure of perceived attainability in the place of the condition variable. In this instance, the confidence interval for the indirect effect through perceived similarity and then self-ratings did not contain zero ($b = 0.72$, 95% CI [0.26, 1.71]), suggesting that this path significantly mediated the relationship between perceived attainability and state self-esteem. Also, that significant indirect effect remained when controlling for the one-item measure of self-esteem completed at the beginning of the study ($b = 0.59$, 95% CI [0.20, 1.57]).

Since the data again do not permit causal conclusions about the relationship between perceived attainability and perceived similarity, another bootstrapping analysis was conducted to test whether perceived attainability and self-views mediated the relationship between perceived similarity and state self-esteem. The confidence interval for the indirect effect through perceived attainability and then self-ratings included zero ($b = 0.76$, 95% CI [-0.48, 2.65]), indicating that the path through perceived attainability and self-ratings did not mediate the relationship between perceived similarity and state self-esteem. The confidence interval for the indirect effect through self-ratings alone did not contain zero ($b = 4.60$, 95% CI [1.95, 8.65]), indicating that self-ratings significantly mediated the relationship between perceived similarity and state self-esteem. As with all the other analyses, controlling for chronic self-esteem did not affect these results.

Discussion

Study 2a employed a novel manipulation of the attainability of an upward comparison target's success with the intent of clarifying the causal direction of many of the significant relationships found in Study 1 and providing further support for perceived similarity as the mechanism that drives the effects of target attainability on self-views and self-esteem. Results showed that the new manipulation did generate differences in perceptions of target attainability; however, those differences were only marginally significant, and the manipulation alone could not create group differences in self-views or self-esteem. And, if perceiving the target's success as more attainable facilitates perceiving the target as more similar to the self, one might have expected the manipulation to affect perceived similarity, but it did not do so in this study. So, although the new manipulation of attainability shows some promise for use in this paradigm, the data suggest that it may not have been sufficiently strong to have the predicted effects.

Mediational analyses, however, again revealed a path through which perceived attainability might affect self-esteem. Specifically, perceiving the target's success as more attainable appears to increase the tendency to perceive oneself as similar to the target, which then leads to an assimilation effect reflected in more positive self-views and higher state self-esteem (and chronic self-esteem does not appear to moderate this effect to any great degree). As opposed to Study 1, self-views alone did not significantly mediate the relationship between perceived attainability and state self-esteem; rather, perceived attainability could only exert its effects through perceived similarity. And, in another difference from the results of the previous study, perceived attainability did not

mediate the effects of perceived similarity on self-views or self-esteem. Perceived similarity did not require perceived attainability to have its effects, instead showing a more direct assimilative effect on self-views and self-esteem. So, these data continue to support the prevailing theories of how upward social comparison produces assimilation in self-views while also beginning to highlight target attainability as a factor that affects the crucial judgment of similarity to the social comparison target.

Another purpose of the current study was to address the possibility that self-esteem alone was driving many of the significant relationships found in the previous study. Specifically, it could have been that higher self-esteem made people more likely to view the exceptional student as attainable and similar to themselves, evaluate themselves more positively, and report higher momentary feelings of self-esteem. However, the results of Study 2a suggest that self-esteem does not dominate the effects of these variables. Chronic self-esteem did not correlate significantly with perceived attainability or perceived similarity, and it did not mediate the effects that those variables had on self-views and state self-esteem after comparison. Unsurprisingly, chronic self-esteem predicted self-views and state self-esteem, but it did not appear to have a role in the critical relationship between perceived attainability and the main dependent variables.

So, in short, Study 2a introduced another manipulation of target attainability while continuing to explore how the attainability of an upward comparison target's success affects specific self-views and global feelings of self-worth after engaging in social comparison. Although the manipulation did create differences between experimental groups in their perceptions of attainability, as in the previous study, it did

not have the strength to affect self-views or self-esteem. At the same time, the correlational evidence and mediational analyses using the continuous measure of perceived attainability continued to provide insights into perceived attainability. Since the manipulation used in this study was moderately successful, Study 2b was designed to confirm its effectiveness and replicate the main findings of Study 2a.

Chapter 4: Study 2b

During a study on the effects of journalistic styles on social perception, participants were asked to read an article supposedly from a university newspaper about an exceptional student who recently won a significant scholarship. As in Study 2a, some participants read a version of the article in which the scholarship was more selective and stringent in the qualifications required to win it (and thus less attainable), while others read a version of the article in which the scholarship was less selective and had less stringent requirements (and thus was to seem more attainable). After reading the article, participants were asked to rate the exceptional student and then themselves on a set of positive traits, indicate the perceived attainability of the student's success and similarity of themselves to the student, and complete a measure of state self-esteem.

As in the previous study, it was predicted that reading about an attainable target, as compared to reading about an unattainable target, would lead to more positive self-views and higher self-esteem. Further, it was predicted that the effects of that attainability manipulation would be reflected in the measurement of perceived attainability, such that those participants who read about the student who won the less selective scholarship would perceive the target's success as more attainable than those participants who read about the student who won the more selective scholarship. Again, it was predicted that

attainable targets would facilitate testing for similarity, and thus, those who read about the attainable target were expected to report higher similarity to the target than those who read about the unattainable target. Higher perceived similarity was predicted to lead to assimilation to the target in self-views; for that reason, perceived similarity should mediate the effects of the attainability condition on self-ratings. And, because more positive self-views were again expected to increase self-esteem, it was predicted that the effects of attainability on self-esteem would be mediated by the path through perceived similarity to the target and then self-views.

Method

Participants

Participants were 49 Ohio State University undergraduate students (28 female), who completed the study in exchange for course credit. Participants were randomly assigned to condition and tested in groups of one to six individuals. Five additional participants were excluded from analyses for not reading through the article, as was evidenced from participants spending less than 30 seconds reading the entire article.

Materials & Procedure

Attainability Manipulation. All aspects of the attainability manipulation remained the same from Study 2a. Participants again read about the achievements of an exceptional student. Some participants read that the student received a scholarship that is awarded to just 10 graduating seniors every year who display exceptional academic talent (defined as maintaining a GPA above 3.9), while others participants were told that the scholarship is

awarded to 100 graduating seniors every year who display exceptional academic talent (defined as maintaining a GPA above 3.0). All other details matched those in Study 1.

Trait Ratings. After reading the article, participants completed a set of items beginning with ratings of the target student and themselves on a list of five positive traits related to academic success (all items remained the same as in Study 2a). Again, responses on each group of items were summed to create separate indices.

Perceived Attainability and Similarity. Participants responded to the same three items as in the previous studies to indicate their perceptions of the attainability of the student's success. Responses were summed to create an index of perceived attainability. Participants were also asked to indicate their perception of their similarity to the target.

State Self-Esteem. After responding to those items, participants were asked to complete a set of questionnaire items about themselves to see whether personality may have affected their perceptions of the article. At that time, participants responded to the same 14 items from the Current Thoughts Scale (Heatherton & Polivy, 1991) used in the previous studies. After reverse-scoring the negatively-worded items, responses across all of those items were summed to create an index of state self-esteem.

Results

Perceived Attainability and Similarity

The three items related to the perceived attainability of the target's success were summed to create an index of perceived attainability ($M = 8.59$, $SD = 2.90$, $\alpha = .91$). As predicted, an analysis of variance showed a significant difference between experimental conditions on the measure of perceived attainability, $F(1, 47) = 5.74$, $p < .05$, indicating

that those who read about the student who won the more selective scholarship rated the student's success as less attainable ($M = 7.63$) than those who read about the student who won the less selective scholarship ($M = 9.52$). Another analysis of variance showed a marginally significant difference on the measure of perceived similarity ($M = 2.96$, $SD = .82$), $F(1, 47) = 3.24$, $p < .10$. Also, a correlational analysis revealed a significant positive relationship between the measure of perceived attainability and measure of perceived similarity ($r = .62$, $p < .01$). So, participants who viewed the target's success as more attainable tended to also view themselves as more similar to the target.

Trait Ratings

Both the trait ratings of the target ($M = 22.06$, $SD = 2.48$, $\alpha = .83$) and the ratings of the self ($M = 17.61$, $SD = 3.29$, $\alpha = .87$) were summed to create separate indices. As predicted, self-ratings were marginally different between conditions, $F(1, 47) = 3.39$, $p < .10$, and another analysis of variance revealed marginal differences between groups in ratings of the target, $F(1, 47) = 3.37$, $p < .10$. Participants who read about the student who won the more selective scholarship rated that student more positively ($M = 22.71$) and rated themselves less positively ($M = 16.75$) than those who read about the student who won the less selective scholarship ($M = 21.94$ for the target ratings and $M = 18.44$ for the self-ratings). So, in Study 2b, the induction of attainability affected how participants viewed the target and how they viewed themselves on these specific self-views.

Correlational analyses were also conducted using the continuous measure of perceived attainability. Self-ratings ($r = .55$, $p < .01$), but not ratings of the target ($r = -.06$), correlated significantly with the continuous measure of perceived attainability.

Perceived similarity showed a similar pattern in that it correlated significantly with self-ratings ($r = .69, p < .01$) and not ratings of the target ($r = .10$). Again, people who rated the target's success as more attainable, and those who viewed the target as more similar to themselves, tended to rate themselves more positively. Finally, to help tease apart the unique effects of perceived attainability and perceived similarity on self-views, partial correlations were calculated controlling for the other variable. Perceived similarity correlated significantly with self-ratings when controlling for perceived attainability ($pr = .54, p < .01$), but perceived attainability no longer correlated significantly with self-ratings after controlling for perceived similarity ($pr = .21, p = .15$).

Since one of the core predictions for this study was that perceived similarity to the target would mediate the effects of attainability on self-views, analyses were conducted to measure that indirect effect. A bias corrected bootstrap confidence interval was calculated for the indirect effect of the attainability condition on self-ratings using 2000 bootstrap samples. In this instance, the confidence interval for the indirect effect did not include zero ($b = 1.11, 95\% \text{ CI } [0.09, 2.67]$), indicating that perceived similarity significantly mediated the relationship between the attainability condition and self-views. An identical analysis was conducted replacing the attainability condition with the three-item measure of perceived attainability. Using that measure, the confidence interval for the indirect effect again did not include zero ($b = 0.40, 95\% \text{ CI } [0.15, 0.73]$), indicating that perceived similarity mediated the relationship between the three-item measure of perceived attainability and specific self-views.

State Self-Esteem

After reverse-scoring the negative items, the state self-esteem items were summed to create an index of self-esteem ($M = 52.02$, $SD = 9.44$, $\alpha = .90$). An analysis of variance showed that, contrary to predictions, state self-esteem did not differ significantly between conditions, $F(1, 47) = 0.74$, $p = .39$. Further correlational analyses revealed that both perceived attainability of the target's success ($r = .37$, $p < .01$) and perceived similarity ($r = .52$, $p < .01$) significantly predicted state self-esteem in this study. Self-ratings also correlated significantly with state self-esteem in this study ($r = .62$, $p < .01$).

Another prediction for the present study was that the effects of attainability on self-esteem would be mediated by perceived similarity and self-views. Therefore, a bootstrap confidence interval was calculated for three indirect effects of attainability condition on self-esteem, with perceived similarity as the mediator, self-ratings as the mediator, and the path through perceived similarity and then self-ratings as the mediator. Only the confidence interval for the indirect effect through perceived similarity and then self-ratings did not include zero ($b = 1.64$, 95% CI [0.24, 4.34]), indicating that this pathway significantly mediated the effect of attainability condition on self-esteem. As with self-views, the analyses were repeated using the three-item measure of perceived attainability in the place of the condition variable. Again, the confidence interval for the indirect effect through perceived similarity and then self-ratings did not contain zero ($b = 0.59$, 95% CI [0.21, 1.18]), suggesting that this path significantly mediated the relationship between perceived attainability and state self-esteem.

Another bootstrapping analysis was conducted to test whether perceived attainability and self-views mediated the relationship between perceived similarity and state self-esteem. The confidence interval for the indirect effect through perceived attainability and then self-ratings included zero ($b = 0.71$, 95% CI $[-0.05, 1.80]$), indicating that the path through perceived attainability and self-ratings did not mediate the relationship between perceived similarity and state self-esteem. However, the confidence interval for the indirect effect through self-ratings alone did not contain zero ($b = 3.38$, 95% CI $[1.65, 6.05]$), indicating that self-ratings significantly mediated the relationship between perceived similarity and state self-esteem.

Discussion

Study 2b provided a second test of the new manipulation of target attainability and another opportunity to test the hypothesis that perceived similarity to the target accounts for the effects of target attainability on self-views and self-esteem. Again, and even more strongly in this study, group differences on the continuous measure of perceived attainability suggested that the manipulation worked to great effect. Also, as predicted, participants who compared with a student who won an extremely selective scholarship rated themselves less positively than those who compared with a student who won a modestly selective scholarship. Furthermore, perceived similarity to the target mediated that relationship. Again, the data support the notion that comparing with a more attainable upward comparison target affects how people view themselves, and it does so because it affects judgments they make about how similar they are to the target.

As in Study 2a, the manipulation of attainability did not have the strength to create significant differences between groups in state self-esteem; however, mediational analyses using the attainability condition, and using the continuous measure of perceived attainability, showed that the pathway through perceived similarity and then self-views again explained the relationship between attainability and self-esteem. And, just like in Study 2a, attainability did not affect self-esteem through self-views alone. Evidence from Study 2a and 2b showed that perceived similarity appears crucial to the effects of attainability. On the other hand, these two studies both found that perceived similarity had its effects on self-esteem through self-views alone, supporting existing theories of upward social comparison that view similarity as the driving force behind assimilation. Certainly, the present studies have not been definitive as to the causal direction in the relationship between perceived attainability and perceived similarity. But, given these results, perceptions of attainability appear to precede perceptions of similarity, at least in their effects on self-views and self-esteem.

Despite its relative effectiveness in the last two studies, one could object to the fact that the two conditions featured different stimulus information about the achievements of the target. Lockwood and Kunda (1997) were able to manipulate the attainability of the target's success while having participants in each group read the exact same information about the exceptional student. An ideal manipulation of target attainability would hold views of the target constant. In the previous two studies, participants who compared with the less attainable target also rated that target more positively than those who compared with the more attainable target. Lockwood and

Kunda (1997) found the opposite pattern in their work, a result they attributed to a defensive reaction on the part of those who compared with the unattainable target. Study 3 was designed to test another manipulation of attainability within the existing paradigm that would allow for participants in the two conditions to read identical information about the exceptional student and the scholarship but still vary in how they perceive the target.

Specifically, Study 3 involved a manipulation of lay theories of personality. Lockwood and Kunda (1997) proposed that those with malleable theories of academic ability should view the achievements of upward comparison targets as more attainable. And, in one study, they found that those individuals with more malleable theories evaluated themselves more positively after comparison with an exceptional target than those who held more fixed theories. Although those authors relied on individual difference measures of chronic lay theories, the next study employed an experimental manipulation of these theories in order to vary whether participants viewed the achievements of an upward social comparison target as more or less attainable.

Chapter 5: Study 3

During a study on the effects of journalistic styles on social perception, participants were asked to read two articles. Participants first read an article from a supposed psychological research publication. Some read an article which suggested that personality does not change over time, and others read an article which suggested that personality can change over time. Presumably, if people view internal characteristics as more malleable, then they should perceive a greater range of outcomes as attainable compared to those who view internal characteristics as fixed. After answering several questions about this article, participants read an article from a university newspaper about an exceptional student who recently won a significant scholarship. All participants received identical information about the student and the scholarship. Finally, participants were asked to rate the exceptional student and then themselves on a set of positive traits, indicate the perceived attainability of the student's success and the perceived similarity of themselves to the student, and complete a measure of state self-esteem.

As in the previous studies, it was predicted that participants who engaged in social comparison with a target whose success appeared more attainable would report more positive self-views than participants who compared with a less attainable target. And, it was predicted that participants in the attainable target condition would report higher state

self-esteem after comparison than those in the unattainable target condition. Further, it was predicted that the effects of that attainability manipulation would be reflected in the measurement of perceived attainability, such that those participants who first read that personality could change over time would perceive the target's success as more attainable than those participants who first read that personality could not change.

Again, it was predicted that attainable targets would facilitate testing for similarity, and thus, those who read that personality could change were expected to report higher similarity to the target than those who read that personality could not change. Similar to the previous studies, it was predicted that the increase in perceived similarity would lead to assimilation to the target and more positive self-views; thus, perceived similarity should mediate the effects of the attainability condition on self-ratings. And, because more positive self-views were again expected to increase state self-esteem, it was predicted that the effects of attainability on self-esteem would be mediated by the path through perceived similarity to the target and self-views.

Method

Participants

Participants were 40 Ohio State University undergraduate students (27 female), who completed the study in exchange for course credit. Participants were randomly assigned to condition and tested in groups of one to six individuals. Six additional participants were excluded from analyses for not reading through the article, as was evidenced from participants spending less than 30 seconds reading the entire article.

Materials & Procedure

Attainability Manipulation. Participants were first randomly assigned to read one of two articles from a supposed psychological research publication named *Psychology Now*. Much of the text and design for these articles matched materials used by Plaks, Stroessner, Dweck, and Sherman (2001). In fact, these articles were designed as a means to induce either an incremental mindset (a belief that abilities can change and improve over time) or an entity mindset (a belief that abilities tend not to change or improve over time) (Dweck, 2006). The incremental version, entitled “You Can Become a New Person,” presented research showing that effort and experience can result in changes to basic characteristics such as intelligence. The entity version, entitled “Can You Really Become a New Person?” presented research showing that effort and experience cannot change personality. See Appendix F and Appendix G for the full text of these articles. As a manipulation check, participants were asked to indicate how stable they think people's abilities, traits, and characteristics are over time (1 = *not at all*, 7 = *extremely*).

After the first article, participants were asked to read an article from the Ohio State student newspaper. Contrary to the other studies, the article was presented exactly as it would appear on the website for the student newspaper (with the exception that all banner ads were removed to avoid distraction). Participants were informed that they would be asked to respond to a set of questions about the article after reading it. And, in order to facilitate the process of social comparison with the exceptional student, participants were asked to focus on the person who was the subject of the first article. Based on the design of this study, all participants read the same article. For this version,

100 students received the scholarship, and no specific GPA requirements were listed. Otherwise, the content of the article remained the same as that in the previous studies.

Trait Ratings. After reading the article, participants completed a set of items beginning with ratings of the target student and themselves on a list of five positive traits related to academic success (all items remained the same as those used in Studies 2a and 2b). Again, responses on each group of items were summed to create separate indices of target ratings and self-ratings. For Study 3, the scale was shifted from a five-point to a seven-point Likert scale (1 = *not at all*, 4 = *somewhat*, 7 = *extremely/a lot*) in order to provide for greater variability in how people responded to the scale.

Perceived Attainability and Similarity. Participants responded to the same three items as in the previous studies to indicate their perceptions of the attainability of the student's success. Responses were summed to create an index of perceived attainability. Participants were also asked to indicate their perceptions of the similarity between the target and themselves. The scale for these items changed to a seven-point Likert scale.

State Self-Esteem. After responding to those items, participants were asked to complete a set of questionnaire items about themselves to see whether personality may have affected their perceptions of the article. At that time, participants responded to the same 14 items from the Current Thoughts Scale (Heatherton & Polivy, 1991) used in the previous studies. After reverse-scoring the negatively-worded items, responses across all items were summed to create an index of state self-esteem. As with the other scales, these items also were shifted from the five-point Likert scale to the seven-point Likert scale.

Results

Manipulation Check

An analysis of variance revealed that participants who first read an article about how personality cannot change over time viewed personality as significantly more stable ($M = 4.80$) than those participants who read an article about how personality can change ($M = 3.85$), $F(1, 38) = 8.63$, $p < .01$. At the same time, correlational analyses found that this measure did not have a significant relationship with any other variables in this study.

Perceived Attainability and Similarity

The three items related to the perceived attainability of the target's success were summed to create an index of perceived attainability ($M = 13.28$, $SD = 4.53$, $\alpha = .92$). Against prediction, an analysis of variance showed no difference between experimental conditions on the measure of perceived attainability, $F(1, 38) = 0.96$, $p = .76$. Another analysis of variance showed no differences between groups on the measure of perceived similarity ($M = 3.78$, $SD = 1.19$), $F(1, 38) = 0.02$, $p = .90$. However, a correlational analysis revealed a marginally significant positive relationship between perceived attainability and perceived similarity ($r = .28$, $p < .10$). So, those who viewed the target's success as more attainable tended to also view themselves as more similar to the target.

Trait Ratings

Both the trait ratings of the target ($M = 31.05$, $SD = 3.12$, $\alpha = .80$) and the ratings of the self ($M = 25.00$, $SD = 3.99$, $\alpha = .76$) were summed to create separate indices. Neither self-ratings nor ratings of the target differed significantly between conditions. Since the experimental manipulation did not generate the predicted differences in self-

ratings, correlational analyses were also conducted using the continuous measure of perceived attainability. Self-ratings ($r = .43, p < .01$) but not ratings of the target ($r = -.26, p = .11$) correlated significantly with the continuous measure of perceived attainability. Perceived similarity correlated significantly with self-ratings as well ($r = .62, p < .01$), but it did not correlate significantly with ratings of the target ($r = .09$). So, although this manipulation failed to affect self-views, people who rated the target's success as more attainable, and those who viewed the target as more similar to themselves, tended to rate themselves more positively. Also, perceived similarity correlated significantly with self-ratings when controlling for perceived attainability ($pr = .58, p < .01$), as did perceived attainability correlate with self-ratings after controlling for perceived similarity ($pr = .34, p < .05$). Thus, these variables appeared to exert unique effects on self-ratings.

One of the core predictions for this study was that perceived similarity to the target would mediate the effects of attainability on self-views, and so analyses were conducted to measure that indirect effect. A bias corrected bootstrap confidence interval was calculated for the indirect effect of the attainability condition on self-ratings using 2000 bootstrap samples. The confidence interval for the indirect effect included zero ($b = -0.10, 95\% \text{ CI } [-1.50, 1.81]$), indicating that perceived similarity did not mediate the relationship between the attainability condition and self-views. An identical analysis was conducted replacing the attainability condition with the measure of perceived attainability. The confidence interval for the indirect effect did not include zero ($b = 0.14, 95\% \text{ CI } [0.03, 0.38]$), indicating that perceived similarity mediated the relationship between the three-item measure of perceived attainability and self-views.

State Self-Esteem

After reverse-scoring the negative items, the state self-esteem items were summed to create an index of self-esteem ($M = 76.05$, $SD = 7.81$, $\alpha = .85$). An analysis of variance showed that state self-esteem differed marginally between conditions, $F(1, 38) = 2.89$, $p < .10$, with those in the attainable target condition reporting lower self-esteem ($M = 74.00$) than those in the unattainable target condition ($M = 78.10$). Further analyses revealed that perceived attainability of the target's success correlated significantly with state self-esteem ($r = .39$, $p < .05$), while perceived similarity did not ($r = .18$). Self-ratings also correlated significantly with state self-esteem in this study ($r = .49$, $p < .01$).

Another prediction for the present study was that the effects of attainability on self-esteem would be mediated by perceived similarity and self-views. Therefore, a bootstrap confidence interval was calculated for three indirect effects of attainability condition on self-esteem, with perceived similarity as the mediator, self-ratings as the mediator, and the path through perceived similarity and then self-ratings as the mediator. The confidence intervals for all three indirect effects included zero, indicating no significant mediation. As with self-views, the analyses were repeated using the measure of perceived attainability in the place of the condition variable. In this instance, the confidence interval for the indirect effect through perceived similarity and then self-ratings did not contain zero ($b = 0.14$, 95% CI [0.02, 0.48]), suggesting that this path significantly mediated the relationship between perceived attainability and state self-esteem. Also, the confidence interval for the indirect effect through just self-ratings did not contain zero ($b = 0.25$, 95% CI [0.03, 0.68]), suggesting another significant pathway.

Since the data again do not permit causal conclusions about the relationship between perceived attainability and perceived similarity, another bootstrapping analysis was conducted to test whether perceived attainability and self-views mediated the relationship between perceived similarity and state self-esteem. The confidence interval for the indirect effect through perceived attainability and then self-ratings did not include zero ($b = 0.27$, 95% CI [0.03, 0.94]), indicating that this path mediated the relationship between perceived similarity and state self-esteem. Also, the confidence interval for the indirect effect through self-ratings alone did not contain zero ($b = 1.86$, 95% CI [0.46, 4.02]), indicating that self-ratings significantly mediated the relationship between perceived similarity and state self-esteem. Thus, similarity affected self-esteem both through perceived attainability and more directly through self-views.

Discussion

Study 3 was designed to test a manipulation of target attainability that would allow for views of the target to remain consistent across conditions and to continue exploring the pathway through which target attainability comes to affect self-views and self-esteem after upward social comparison. Despite the fact that other studies have shown that lay theories about the malleability of intelligence affect responses to upward comparison targets, in this study, manipulating lay theories of personality did not have any of the predicted effects. Between group differences only emerged on the measure of state self-esteem (with those who were induced to believe that personality characteristics are relatively fixed reporting higher state self-esteem), and those differences ran counter to any commonsense prediction about the effects of lay theories on state self-esteem.

Several issues might have limited the success of the present manipulation. An important aspect of this manipulation was that it discussed the stability of personality in general as opposed to focusing more specifically on academic ability or intelligence. The choice to manipulate lay theories about personality stemmed from the idea that high intelligence alone might not have seemed sufficient to achieve what the exceptional student achieved. People might need to feel as though they could change in any number of ways to maximize their commitment to and success in academics. However, focusing more broadly on personality might have left participants in the attainable condition feeling as though they could not change enough in their intelligence to make the achievements of the exceptional student feel reachable. Another, simpler problem with the paradigm could be that participants were required to read a series of articles, with the manipulation article being especially dense with information. Participants might have lacked the motivation and endurance to pay close attention to both articles.

Another possibility is that lay theories about the malleability of intelligence do not actually affect perceptions of target attainability. As mentioned earlier, Lockwood and Kunda (1997) found that individuals with more incremental mindsets rated themselves higher on positive traits after upward social comparison. At the same time, one cannot conclude from that study alone that lay theories caused more positive self-views or even affected attainability at all. Individuals who believe that intelligence might be more malleable could conceivably have some other trait or belief that actually accounts for responses to social comparisons, and that third variable may or may not even affect

perceptions of attainability. So, there might not be sufficient evidence to expect that a manipulation of lay theories would affect perceptions of attainability.

As in earlier studies, the relatively ineffective manipulation belied more interesting correlational results. Again, perceived attainability of the target's success related to self-views and self-esteem, and the pathway through perceived similarity to the target and then self-views mediated the effects of perceived attainability on self-esteem. However, the data in Study 3 rather closely mimicked those in Study 1 in that perceived attainability appeared to mediate the effects of perceived similarity as well. So, when the manipulation does not affect attainability, the relationship between perceived similarity and perceived attainability appears much more unclear; but, when the manipulation does affect attainability, the data reflect a more clear causal chain from target attainability through perceived similarity and self-views to state self-esteem.

So far, these four studies have tested a hypothesis consistent with the selective accessibility model: perceiving an upward comparison target as attainable leads one to think about his or her similarity to the target, which results in assimilation to the target in self-views and higher state self-esteem. Although the data have mostly supported this perspective, Stout et al. (2011) suggested a different role for attainability in upward social comparison. Across their studies, exposure to a successful role model increased domain-specific self-efficacy to the extent that participants identified with those role models. Stout et al. did not measure or manipulate attainability, though they did stake the claim that subjective identification would make the path from one's current self to a future self seem more attainable. And, if the future self seems more attainable, so too might a

comparison target seem more within reach. Since viewing an upward target as more attainable has been shown to produce more positive self-views, if subjective identification has that predicted effect, then perceived attainability of a target's success might mediate the effects of identification on self-views and state self-esteem.

Chapter 6: Study 4a

During a study on the effects of journalistic styles on social perception, participants were asked to read an article supposedly from a university newspaper about an exceptional student who recently won a significant scholarship. Some participants read a version of the article in which the gender and university affiliation of the exceptional student in the article matched themselves (allowing for more subjective identification with the student), while others read a version of the article in which those features did not match themselves (inhibiting subjective identification with the student). After reading the article, participants were asked to rate the exceptional student and then themselves on a set of positive traits, indicate the perceived attainability of the student's success and the perceived similarity of themselves to the student, and complete a measure of state self-esteem. Additional measures were also included in the paradigm in order to assess the extent to which the participant subjectively identified with the exceptional student.

For Study 4a, it was predicted that participants who read about a student of the same gender who attended their own university would report higher levels of subjective identification with that student than those who read about a student of the opposite gender who attended a different university. Based on the theoretical discussion of Stout et al. (2011), this manipulation of subjective identification was expected to produce differences

between conditions in the perceived attainability of the target's success, with those who read about the matched student viewing the target as more attainable than those who read about the mismatched student. Since the manipulation was predicted to affect perceptions of attainability, following the findings of Lockwood and Kunda (1997), those differences were expected to emerge as well in self-views. Thus, perceived attainability of the target's success was predicted to mediate the relationship between identification and self-ratings. And, because more positive self-views were again expected to increase state self-esteem, it was predicted that the effects of subjective identification on self-esteem would be mediated by the path through perceived attainability and self-views (see Figure 2 for a graphical representation of this mediational pathway).

Method

Participants

Participants were 40 Ohio State University undergraduate students (28 female), who completed the study in exchange for course credit. Participants were randomly assigned to condition and tested in groups of one to six individuals. Five additional participants were excluded from the analyses for not reading through the article, as was evidenced from participants spending less than 30 seconds reading the entire article.

Materials & Procedure

Subjective Identification Manipulation. Participants were randomly assigned to read a fictitious article about an exceptional student who recently won a significant scholarship. For Study 4a, that article came from either the Ohio State University student newspaper (*The Lantern*) or the University of California, Los Angeles student newspaper

(*The Daily Bruin*). As in Study 3, the article was presented exactly as it would appear on the website for each of the two student newspapers (with the exception that all banner ads were removed to avoid distraction). Participants were informed that they would be asked to respond to a set of questions about the article after reading it. And, in order to facilitate the process of social comparison with the exceptional student, participants were asked to focus on the person who was the subject of the first article. Borrowing from the design in Stout et al. (2011), that article also featured a photo of the exceptional student, which allowed for the exceptional student's gender to be varied along with his or her university affiliation. Photos for the two target students were roughly equivalent on age, race, and attractiveness. So, some participants read a version of the article that matched themselves in both domains, while others read a version of the article that did not match in either domain. All content of the article remained the same as that used in the previous study.

Trait Ratings. After reading the article, participants completed a set of items beginning with ratings of the target student and themselves on a list of five positive traits related to academic success (all items remained the same as those used after Study 1). Again, responses on each group of items were summed to create separate indices of target ratings and self-ratings, and the scale was returned to the previous five-point Likert scale.

Perceived Attainability and Similarity. Participants responded to the same three items as in the previous studies to indicate their perceptions of the attainability of the student's success. Responses were summed to create an index of perceived attainability. Participants were also asked to indicate their perception of their similarity to the target. As with the trait ratings, the scale for these items returned to a five-point Likert scale.

Subjective Identification. Participants responded to three additional items to indicate their identification with the target. Since Stout et al. (2011) did not describe all the items they used to measure subjective identification, only the items that the authors gave as actual examples were used in this study. Specifically, participants were asked to indicate how much they related to the target, how much they identified with the target, and how much they felt like the target (1 = *not at all*, 2 = *a little bit*, 3 = *somewhat*, 4 = *very much*, 5 = *a lot*). Responses from these three items were summed to create an index.

State Self-Esteem. After responding to those items, participants were asked to complete a set of questionnaire items about themselves to see whether personality may have affected their perceptions of the article. At that time, participants responded to the 14 items from the Current Thoughts Scale (Heatherton & Polivy, 1991) used in the previous studies. After reverse-scoring the negatively-worded items, responses across all of those items were summed to create an index of state self-esteem.

Results

Subjective Identification

Three items related to subjective identification with the target were summed to create an index of subjective identification ($M = 9.18$, $SD = 2.31$, $\alpha = .88$). An analysis of variance revealed that participants who read about a student of their own gender and who attended their own university ($M = 9.55$) did not subjectively identify with the target significantly more than participants who read about a student of the opposite gender who attended a different university ($M = 8.80$), $F(1, 38) = 1.06$, $p = .31$. However, further correlational analyses revealed that the continuous measure of subjective identification

significantly predicted perceived attainability ($r = .59, p < .01$) as well as self-views ($r = .62, p < .01$). Thus, participants who subjectively identified more with the target tended to view themselves more positively and perceive the target's success as more attainable (regardless of the manipulation). Subjective identification with the target did not significantly predict participants' state self-esteem post-comparison ($r = .09, p = .57$).

Perceived Attainability and Similarity

Again, the three items related to the perceived attainability of the target's success were summed to create an index of perceived attainability ($M = 8.30, SD = 2.64, \alpha = .92$). An analysis of variance showed no difference between conditions on the measure of perceived attainability, $F(1, 38) = 0.51, p = .48$. Another analysis of variance showed no differences between groups on the measure of perceived similarity ($M = 3.00, SD = 0.72$), $F(1, 38) = 0.78, p = .38$. Additionally, a correlational analysis again revealed a significant positive relationship between perceived attainability and perceived similarity ($r = .47, p < .01$). So, participants who viewed the target's success as more attainable tended to also view themselves as more similar to the target.

Trait Ratings

Both the trait ratings of the target ($M = 23.10, SD = 2.38, \alpha = .85$) and the ratings of the self ($M = 18.83, SD = 2.68, \alpha = .84$) were summed to create separate indices. Neither self-ratings nor ratings of the target differed significantly between conditions. Correlational analyses were also conducted using the continuous measure of perceived attainability. Self-ratings ($r = .35, p < .05$) but not ratings of the target ($r = -.25, p = .13$) correlated significantly with the continuous measure of perceived attainability. Perceived

similarity correlated significantly with self-ratings as well ($r = .52, p < .01$), but it did not correlate significantly with ratings of the target ($r = .17$). People who rated the target's success as more attainable, and those who viewed the target as more similar to themselves, tended to rate themselves more positively. Also, perceived similarity correlated significantly with self-ratings when controlling for perceived attainability ($pr = .43, p < .01$), however; perceived attainability no longer correlated significantly with self-ratings after controlling for the effects of perceived similarity ($pr = .14, p = .40$).

One of the core predictions for this study was that perceived attainability to the target would mediate the effects of subjective identification on self-views, and so analyses were conducted to measure that indirect effect. A bias corrected bootstrap confidence interval was calculated for the indirect effect of the identification condition on self-ratings using 2000 bootstrap samples. The confidence interval for the indirect effect included zero ($b = -0.21, 95\% \text{ CI } [-1.05, 0.25]$), indicating that perceived attainability did not mediate the relationship between the identification condition and self-views. An identical analysis was conducted replacing the identification condition with the measure of subjective identification. The confidence interval for the indirect effect included zero again ($b = -0.02, 95\% \text{ CI } [-0.32, 0.21]$), indicating that perceived attainability did not mediate the relationship between the measure of identification and self-views. However, returning to the same analysis conducted in earlier studies, perceived similarity again mediated the effects of perceived attainability on self-ratings, as the confidence interval for the indirect effect did not include zero ($b = 0.22, 95\% \text{ CI } [0.02, 0.53]$).

State Self-Esteem

After reverse-scoring the negative items, the state self-esteem items were summed to create an index of state self-esteem ($M = 53.28$, $SD = 9.40$, $\alpha = .90$). An analysis of variance showed that state self-esteem did not differ significantly between conditions, $F(1, 38) = 0.15$, $p = .70$. Further correlational analyses revealed that of the main variables in the study, only self-ratings significantly predicted state self-esteem ($r = .47$, $p < .01$). The relationships with perceived attainability ($r = .19$), perceived similarity ($r = -.01$), and subjective identification ($r = .09$) did not reach statistical significance.

Another prediction for the present study was that the effects of subjective identification on self-esteem would be mediated by perceived attainability and self-views. Therefore, a bootstrap confidence interval was calculated for three indirect effects of identification condition on state self-esteem, with perceived attainability as the mediator, self-ratings as the mediator, and the path through perceived attainability and then self-ratings as the mediator. The confidence intervals for all three indirect effects included zero, indicating no significant mediation of the effect of subjective identification on state self-esteem. As with self-views, the analyses were repeated using the three-item measure of subjective identification in the place of the condition variable. In this analysis, only the confidence interval for the indirect effect through self-ratings did not contain zero ($b = 1.77$, 95% CI [0.96, 3.00]), suggesting that self-views alone mediated the effects of subjective identification on state self-esteem.

Since the data do not permit causal conclusions about the relationship between perceived attainability and the measure of subjective identification, another bootstrapping

analysis was conducted to test whether subjective identification and self-views mediated the relationship between perceived attainability and state self-esteem. Only the confidence interval for the indirect effect through subjective identification and then self-ratings did not include zero ($b = 0.91$, 95% CI [0.39, 1.96]), indicating that the path through subjective identification and self-ratings mediated the relationship between perceived attainability and self-esteem. An identical indirect effect emerged when using perceived similarity in the place of identification ($b = 0.49$, 95% CI [0.10, 1.19]).

Discussion

Stout et al. (2011) proposed that subjectively identifying with same-sex experts yields benefits for women in science and math fields because such identification makes their future selves in those domains seem more attainable, resulting in increased self-efficacy and intentions to pursue careers in those domains. As viewed through the lens of the present work, those authors might suggest that subjective identification with an upward comparison target would lead people to perceive that target's success as more attainable and thus view themselves more positively. Study 4a was designed to empirically test whether perceived attainability of a target's success would mediate the effects of subjective identification on self-views and state self-esteem.

Despite the expectation that gender and university affiliation would strongly affect whether participants would be able to relate to the exceptional student in the article, significant differences did not emerge between the two experimental conditions. Perhaps the academic achievements of the exceptional student were so extreme or so central to the topic of the article as to preclude participants' focusing on more peripheral

elements such as the student's university or gender. Also, participants may have viewed Ohio State University and University of California, Los Angeles as relatively similar, in that both schools are rather large public universities, thus allowing for them to subjectively identify even with students from another university.

Another difference between the manipulation that Stout et al. (2001) used and the present study is that those researchers exposed participants to a variety of targets with different racial and academic backgrounds; however, the current paradigm allowed for only one comparison target. So, in that earlier work, identification with one of several targets may have been sufficient to produce effects, whereas having only one target in the present work limited the likelihood of participants being able to identify with an upward target. Finally, subjective identification with the target might require a sense of shared distinctiveness between oneself and the target. Brewer (1991) noted that group members will identify with ingroups to the extent that ingroup characteristics are distinct from those of relevant outgroups. As it pertains to identifying with an upward target in one's ingroup, gender and university affiliation might not be sufficiently distinct attributes.

Since the induction of subjective identification did not create significant differences between groups, the continuous measure of identification provides the next best opportunity to examine the core hypotheses of the study. Overall, the data do not support Stout et al.'s (2011) notion that perceived attainability accounts for the effects of subjective identification on self-views or self-esteem. Rather, the patterns of data in this study mimic those in Studies 2a and 2b, with subjective identification acting much like perceived similarity and having a more direct effect on how people view and feel about

themselves. However, as in all of the previous studies, perceived attainability indirectly affected self-views and state self-esteem through another variable (perceived similarity in the earlier studies and subjective identification in Study 4a).

Obviously, these mediational analyses cannot substitute for causal evidence born from successful experimental manipulations; but, the data across these studies continue to indicate that attainability judgments precede subjective identification and perceptions of similarity, at least in affecting self-views and self-esteem. Or, in other words, perceived attainability of the target's success affects how people view themselves because it affects the similarity they perceive between themselves and the target. Subjective identification and similarity, however, lead more directly to assimilation in self-views, which is consistent with existing perspectives such as upward assimilation theory (Collins, 1996) and the selective accessibility model (Mussweiler & Strack, 2000).

Although Study 4a did not show the relationship between subjective identification that Stout et al. (2011) predicted, the ineffectiveness of the manipulation limits the ability to conclude whether subjective identification with the target makes the target's success feel more attainable. For this reason, Study 4b included a less subtle induction of subjective identification designed to maximize the shared distinctiveness between the participant and the target, with the goal of again testing whether perceived attainability would mediate the effects of subjective identification on self-views and self-esteem.

Chapter 7: Study 4b

During a study on the effects of journalistic styles on social perception, participants were asked to read an article supposedly from a university newspaper about an exceptional student who recently won a significant scholarship. Prior to reading this article, participants completed an assessment of their social and academic interests, which supposedly informed the article that they were selected to read. Some participants were told that the article was selected for them because the student described in the article matched them very closely on their social and academic interests (intending to increase subjective identification with the student). Other participants were told that the article was selected for them because the student described in the article did not match closely on their social and academic interests (intending to suppress subjective identification with the student). After reading the article, participants rated the exceptional student and then themselves on a set of positive traits, indicated the perceived attainability of the student's success and the perceived similarity of themselves to the student, and completed a measure of state self-esteem. All other procedures remained the same as in Study 4a.

For Study 4b, it was predicted that participants who were told that they matched the student on social and academic interests would report higher levels of subjective identification with that student than those who were told that they were not a strong

match with the student. Based on the theoretical discussion of Stout et al. (2011), this manipulation of subjective identification was expected to produce differences between conditions in the perceived attainability of the target's success, with those who read about the strong-match student viewing the target as more attainable than those who read about the weak-match student. Since the manipulation was predicted to affect perceptions of attainability, those differences were expected to create differences in self-views. Thus, perceived attainability of the target's success was predicted to mediate the relationship between subjective identification and self-views. And, because more positive self-views were again expected to increase state self-esteem, it was predicted that the effects of subjective identification on self-esteem would be mediated by the path through perceived attainability and self-views.

Method

Participants

Participants were 41 Ohio State University undergraduate students (26 female), who completed the study in exchange for course credit. Participants were randomly assigned to condition and tested in groups of one to six individuals. Six additional participants were excluded from the analyses for not reading through the article, as was evidenced from participants spending less than 30 seconds reading the entire article.

Materials & Procedure

Subjective Identification Manipulation. Participants were asked to read a fictitious article about an exceptional student who recently won a significant scholarship. Prior to reading that article, participants were asked to indicate their level of interest in a set of

social and recreational activities (i.e., cultural activities, religious and spiritual activities, community service, outdoor activities, entertainment, Greek life, and university organizations) as well as their interest in a set of academic fields (i.e., natural sciences, social sciences, humanities, formal sciences, applied sciences, professions, health sciences, and creative arts). After completing these items, participants were told that the experimenter had examined university newspapers from across the country to find articles profiling individual students who attended those universities and used school directories and Facebook pages to collect information about those students. So, the personal information participants provided would be used to match them with specific articles to read. Participants were told that they would read one article about a student who scored as a strong match to themselves and one who scored as a weak match.

At this point, some participants were told that their first article was about a student who was a strong match to themselves, having the same academic major or intended major and similar social interests. So as to further reinforce this strong match, participants were presented with a report showing a 92% match on academic interests and an 88% match on social interests. Other participants were told their first article was about a student who was a weak match to themselves, having different academic majors and social interests. So as to further reinforce this weak match, participants were presented with a report showing a 24% match on academic interests and a 20% match on social interests. Additionally, in the strong-match condition, the exceptional student attended Ohio State University and was gender-matched with the participant, and in the weak-match condition, the exceptional student attended Oberlin College and was gender-

mismatched with the participant. All content of the article matched that in Study 4a.

Trait Ratings. After reading the article, participants completed a set of items beginning with ratings of the target student and themselves on a list of five positive traits related to academic success (all items remained the same as those used in the previous study and were again rated on a five-point Likert scale). Again, responses on each group of items were summed to create separate indices of target ratings and self-ratings.

Perceived Attainability and Similarity. Participants responded to the same three items as in the previous studies to indicate their perceptions of the attainability of the student's success. Responses were summed to create an index of perceived attainability. Participants were also asked to indicate their perception of their similarity to the target.

Subjective Identification. As in the previous study, participants responded to three additional items to indicate their level of subjective identification with the comparison target. Specifically, participants were asked to indicate how much they related to the target, how much they identified with the target, and how much they felt like the target (1 = *not at all*, 2 = *a little bit*, 3 = *somewhat*, 4 = *very much*, 5 = *a lot*). Responses from these three items were summed to create the index of subjective identification.

State Self-Esteem. After responding to those items, participants were asked to complete a set of questionnaire items about themselves to see whether personality may have affected their perceptions of the article. At that time, participants responded to the 14 items from the Current Thoughts Scale (Heatherton & Polivy, 1991) used in the previous studies. After reverse-scoring the negatively-worded items, responses across all of those items were summed to create an index of state self-esteem.

Results

Subjective Identification

Three items related to subjective identification with the target were summed to create an index of subjective identification ($M = 8.85$, $SD = 2.16$, $\alpha = .89$). An analysis of variance revealed that participants who read about the strong-match ($M = 9.47$) were marginally more likely to subjectively identify with that student than participants who read about the weak-match ($M = 8.32$), $F(1, 39) = 3.06$, $p < .10$. Further correlational analyses revealed that the continuous measure of subjective identification marginally predicted perceived attainability of the target's success ($r = .29$, $p < .10$) and significantly predicted self-views ($r = .65$, $p < .01$). Thus, participants who subjectively identified more with the target tended to view themselves more positively and perceived the target's success as more attainable. Subjective identification with the target also significantly predicted state self-esteem post-comparison ($r = .34$, $p < .05$).

Perceived Attainability and Similarity

Again, the three items related to the perceived attainability of the target's success were summed to create an index of perceived attainability ($M = 9.34$, $SD = 3.03$, $\alpha = .89$). An analysis of variance showed no difference between conditions on the measure of perceived attainability, $F(1, 39) = 0.96$, $p = .33$. Another analysis of variance showed no differences between groups on the measure of perceived similarity ($M = 2.83$, $SD = 0.70$), $F(1, 39) = 2.14$, $p = .15$. Additionally, a correlational analysis revealed a significant positive relationship between perceived attainability and perceived similarity ($r = .33$, $p <$

.05). So, participants who viewed the target's success as more attainable tended to also view themselves as more similar to the target.

Trait Ratings

Both the trait ratings of the target ($M = 22.44$, $SD = 2.16$, $\alpha = .79$) and the ratings of the self ($M = 18.95$, $SD = 3.24$, $\alpha = .81$) were summed to create separate indices. Neither self-ratings nor ratings of the target differed significantly between conditions. Correlational analyses were also conducted using the continuous measure of perceived attainability. Self-ratings ($r = .57$, $p < .01$) but not ratings of the target ($r = -.06$) correlated significantly with the continuous measure of perceived attainability. Perceived similarity correlated significantly with self-ratings as well ($r = .62$, $p < .01$), but it did not correlate significantly with ratings of the target ($r = .12$). People who rated the target's success as more attainable, and those who viewed the target as more similar to themselves, tended to rate themselves more positively. Also, perceived similarity correlated significantly with self-ratings when controlling for perceived attainability ($pr = .56$, $p < .01$), and perceived attainability correlated significantly with self-ratings after controlling for perceived similarity ($pr = .49$, $p < .01$). So, perceived attainability and similarity each appeared to account for unique variance in self-views.

One of the core predictions for this study was that perceived attainability to the target would mediate the effects of subjective identification on self-views, and so analyses were conducted to measure that indirect effect. A bias corrected bootstrap confidence interval was calculated for the indirect effect of the identification condition on self-ratings using 2000 bootstrap samples. The confidence interval for the indirect effect

included zero ($b = 0.58$, 95% CI [-0.51, 2.09]), indicating that perceived attainability did not mediate the relationship between the identification condition and self-views. An identical analysis was conducted replacing the identification condition with the measure of subjective identification. The confidence interval for the indirect effect included zero again ($b = 0.18$, 95% CI [-0.04, 0.48]), indicating that perceived attainability did not mediate the relationship between the measure of identification and self-views. However, another analysis showed that perceived similarity once more mediated the effects of perceived attainability on self-ratings ($b = 0.17$, 95% CI [0.02, 0.40]).

State Self-Esteem

After reverse-scoring the negative items, the state self-esteem items were summed to create an index of state self-esteem ($M = 50.93$, $SD = 11.48$, $\alpha = .92$). An analysis of variance showed that state self-esteem did not differ significantly between experimental conditions, $F(1, 39) = 0.74$, $p = .40$. Further correlational analyses revealed that the measure of subjective identification ($r = .34$, $p < .05$), perceived attainability of the target's success ($r = .47$, $p < .01$), perceived similarity to the target ($r = .33$, $p < .05$), and self-ratings ($r = .64$, $p < .01$) significantly correlated with state self-esteem in this study.

Another prediction for the present study was that the effects of subjective identification on self-esteem would be mediated by perceived attainability and self-views. Therefore, a bootstrap confidence interval was calculated for three indirect effects of identification condition on state self-esteem, with perceived attainability as the mediator, self-ratings as the mediator, and the path through perceived attainability and then self-ratings as the mediator. The confidence intervals for all three indirect effects included

zero, indicating no significant mediation of the effect of subjective identification on state self-esteem. As with self-views, the analyses were repeated using the three-item measure of subjective identification in the place of the condition variable. In this analysis, only the confidence interval for the indirect effect through self-ratings did not contain zero ($b = 1.77$, 95% CI [0.51, 3.34]), suggesting that self-views alone mediated the effects of subjective identification on state self-esteem.

Since the data do not permit causal conclusions about the relationship between perceived attainability and the measure of subjective identification, another bootstrapping analysis was conducted to test whether subjective identification and self-views mediated the relationship between perceived attainability and state self-esteem. Only the confidence interval for the indirect effect through self-ratings did not include zero ($b = 0.99$, 95% CI [0.22, 2.20]), indicating that the path through self-ratings mediated the relationship between perceived attainability and self-esteem. When using perceived similarity in place of subjective identification, the indirect effect through perceived similarity and self-ratings ($b = 0.38$, 95% CI [0.07, 1.13]) and the indirect effect through self-ratings alone ($b = 0.95$, 95% CI [0.27, 2.25]) were significant. Thus, perceived attainability exerted effects through similarity and more directly through self-ratings.

Discussion

Study 4b was designed to again test whether perceived attainability of a target's success would mediate the effects of subjective identification on self-views and state self-esteem. Even with a considerably stronger manipulation of subjective identification, few differences emerged between the experimental conditions. And although the

manipulation did generate slight differences in subjective identification, those differences did not extend to attainability judgments. Again, none of the mediational analyses showed indirect effects of subjective identification through perceived attainability. Correlational evidence instead suggested that subjective identification with the target triggered assimilation in self-views much the same way as perceived similarity did in the earlier studies. Since the manipulations used in the last two studies were rather ineffective, it is impossible to conclude that subjective identification does not make the target's success seem more attainable; however, the data from these studies give no reason to believe that subjective identification operates in that manner.

Across the first six studies, the evidence supports Mussweiler's (2001) belief that the attainability of a target's success affects whether people perceive more or less similarity when comparing with better-off targets, facilitating assimilation to more attainable targets and contrast from less attainable ones. All six studies uncovered the same pathway from perceived attainability through perceived similarity and self-views to self-esteem. Also, the data have shown that through their effects on similarity and then self-views, attainability judgments contribute to momentary feelings of self-worth. At the same time, these studies have yet to explore what leads some individuals to view a given target's success as attainable and others to view that same outcome as unattainable. Or, these studies have examined how attainability functions, but they have not addressed the factors that influence perceived attainability. Study 5 was thus designed to uncover the extent to which chronic individual differences affect attainability judgments.

Chapter 8: Study 5

During a study on the effects of journalistic styles on social perception, participants were asked to read an article supposedly from a university newspaper about an exceptional student who recently won a significant scholarship. For this study, all participants read the same information about the student and the scholarship (which had the features of the more selective scholarship used in Studies 2a and 2b). Prior to reading this article, participants completed a series of individual difference measures addressing numerous constructs that could be related to attainability judgments: optimism, self-esteem, self-doubt, self-efficacy, lay theories of intelligence, maximization, locus of control, regulatory focus, and approach and avoidance achievement goals. After reading the article, participants rated the exceptional student and themselves on a set of positive traits, indicated the perceived attainability of the student's success and the perceived similarity of themselves to the student, and completed a measure of state self-esteem.

For Study 5, it was predicted that these individual differences would correlate with the extent to which participants viewed the target's success as attainable. Major et al. (1991) noted several individual difference factors that they believed would determine responses to upward comparisons (e.g., self-esteem, optimism, and locus of control). Self-doubt and self-efficacy also fit this view as variables that should affect whether

people feel perceived control over comparison discrepancies, in that both relate to the ability to execute the necessary behaviors to improve on the comparison dimension. Lockwood and Kunda (1997) used lay theories as a proxy for a manipulation of target attainability, suggesting that they should also be relevant to perceived attainability. And since reaching for the success of an upward target requires approaching more positive outcomes, whether individuals are more oriented towards approach or avoidance and maximization should matter for whether they view a target as attainable. Specifically then, positive relationships were predicted between perceived attainability and optimism, self-esteem, self-efficacy, maximization, malleable theories of intelligence, internal locus of control, promotion focus, and approach goals. Negative relationships were predicted between perceived attainability and self-doubt, avoidance goals, and prevention focus.

Method

Participants

Participants were 119 Ohio State University undergraduate students (61 female), who completed the study in exchange for course credit. Eleven additional participants were excluded from the analyses for not reading through the article, as was evidenced from participants spending less than 30 seconds reading the entire article.

Materials & Procedure

Optimism. Participants completed the 10-item Life Orientation Test – Revised (Scheier, Carver, & Bridges, 1994) to assess individual differences in generalized optimism vs. pessimism. Previous work has shown that optimism as measured with the scale can be distinguished from other constructs such as self-esteem, trait anxiety, and

neuroticism. Sample items include, “In uncertain times, I usually expect the best,” “I’m always optimistic about my future,” “I hardly ever expect things to go my way,” and “I expect more good things to happen to me than bad.” All scale items are included in Appendix H. Participants responded to these items using a five-point Likert scale (1 = *strongly disagree*, 2 = *disagree*, 3 = *neither*, 4 = *agree*, 5 = *strongly agree*), and negatively worded items were reverse-scored prior to summing responses. Also, four of the ten items on the scale were distracters and were not included in the analyses.

Self-Esteem. Participants completed the 10-item Rosenberg Self-Esteem Scale (Rosenberg, 1965) to assess individual differences in global self-worth. Surveys of the literature have found this scale to be the most commonly used measure of self-esteem (Blascovich & Tomaka, 1991). Sample items include, “I feel that I have a number of good qualities,” “I take a positive attitude towards myself,” “On the whole, I am satisfied with myself,” “I am able to do things as well as most other people,” “I feel I do not have much to be proud of,” and “I certainly feel useless at times.” All scale items are included in Appendix I. Participants responded to these items using a four-point Likert scale (1 = *strongly disagree*, 2 = *disagree*, 3 = *agree*, 4 = *strongly agree*), and negatively worded items were reverse-scored prior to summing responses into an index of self-esteem.

Self-Doubt. Participants completed eight items drawn from the subjective overachievement scale (Oleson, Poehlmann, Yost, Lynch, & Arkin, 2000) to assess their chronic feelings of self-doubt. People who score higher on this scale tend to be more uncertain about their ability level, perhaps having a wider confidence interval around point estimates of their own ability. Sample items include, “I often feel unsure of my

abilities,” “I wonder if I have the ability to succeed at important activities,” “I wish I felt more certain of my strengths and weaknesses,” and “As I begin an important activity, I feel confident in my ability.” All scale items are included in Appendix J. Participants responded to these items using a six-point Likert scale (1 = *strongly disagree*, 2 = *disagree*, 3 = *slightly disagree*, 4 = *slightly agree*, 5 = *agree*, 6 = *strongly agree*), and negatively worded items were reverse-scored prior to summing responses.

Locus of Control. Participants completed twelve items drawn from the Levenson IPC Scale (Levenson, 1973) to assess the degree to which they feel control over their own life and their outcomes, as opposed to feeling that powerful others or random events determine their outcomes. Four items were selected from each subscale (internality, powerful others, and chance). Sample items include, “I can pretty much determine what will happen in my life,” “When I get what I want, it is usually because I’m lucky,” “Getting what I want requires pleasing those people above me,” and “My life is determined by my own actions.” All scale items are included in Appendix K. Participants responded to these items using a six-point Likert scale (1 = *strongly disagree*, 2 = *disagree*, 3 = *slightly disagree*, 4 = *slightly agree*, 5 = *agree*, 6 = *strongly agree*), and negatively worded items were reverse-scored prior to summing responses.

Approach and Avoidance. Participants completed the 12-item Achievement Goal Questionnaire–Revised (AGQ-R) (Elliot & Murayama, 2008) to assess four types of achievement goals: mastery-approach (focused on attaining intrapersonal competence), performance-approach (focused on attaining normative competence), mastery-avoidance (focused on avoiding intrapersonal incompetence), and performance-avoidance (focused

on avoiding normative incompetence). Sample items include, “My goal is to learn as much as possible,” “I am striving to do well compared to other students,” “My aim is to avoid learning less than I possibly could,” and “I am striving to avoid performing worse than others.” All scale items are included in Appendix L. Participants responded to these items using a five-point Likert scale (1 = *strongly disagree*, 2 = *disagree*, 3 = *neither*, 4 = *agree*, 5 = *strongly agree*), and responses were summed for the four types of goals.

Maximization. Participants completed six items drawn from the Maximization Scale (Schwartz, Ward, Monterosso, Lyubomirsky, White, & Lehman, 2002) to assess individual differences in the tendency and desire to maximize one’s outcome in choice situations. People who score higher on the scale (maximizers) aspire to be the best, and studies have shown that they are more likely to report engaging in social comparison and more affected by social comparison. People who score lower on the scale (satisficers) seek the first outcome that crosses some threshold of acceptability. For this study, a six-item short form of the original scale was used (Nenkov, Morrin, Ward, Schwartz, and Hulland, 2008). Sample items include, “I have the highest standards for myself,” “I often find it difficult to shop for a gift for a friend,” “I never settle for second best,” and “Renting videos is really difficult. I’m always struggling to pick the best one.” All scale items are included in Appendix M. Participants responded to these items using a five-point Likert scale (1 = *strongly disagree*, 2 = *disagree*, 3 = *neither*, 4 = *agree*, 5 = *strongly agree*), and responses were summed to create an index of maximization.

Lay Theories. Participants completed eight items (Dweck, 2006) to assess participants’ implicit theories about the malleability of intelligence. People who score

higher on these items believe that intelligence can change over time, and those who score lower on these items believe that intelligence is relatively fixed and cannot change over time. Sample items include, “You can always substantially change how intelligent you are,” “Your intelligence is something about you that you can’t change very much,” “No matter who you are, you can significantly change your intelligence level,” and “You can change even your basic intelligence level considerably.” All scale items are included in Appendix N. Participants responded to these items using a five-point Likert scale (1 = *strongly disagree*, 2 = *disagree*, 3 = *neither*, 4 = *agree*, 5 = *strongly agree*), and negatively worded items were reverse-scored prior to summing responses.

General Self-Efficacy. Participants completed the eight-item New General Self-Efficacy Scale (Chen, Gully, & Eden, 2001) to assess their belief in their ability to affect outcomes across a variety of achievement situations. As opposed to other existing measures and conceptualizations of self-efficacy, this measure examines a more trait-like and general form of self-efficacy. Sample items include, “I am confident that I can perform effectively on many different tasks,” “Even when things are tough, I can perform quite well,” “In general, I think that I can obtain outcomes that are important to me,” and “I believe I can succeed at any endeavor to which I set my mind.” All scale items are included in Appendix O. Participants responded to these items using a five-point Likert scale (1 = *strongly disagree*, 2 = *disagree*, 3 = *neither*, 4 = *agree*, 5 = *strongly agree*), and responses were summed to create an index of general self-efficacy.

Regulatory Focus. Participants completed the 18-item General Regulatory Focus Measure (Lockwood, Jordan, & Kunda, 2002) to assess two different goal orientations:

promotion focus and prevention focus. Promotion focus emphasizes the pursuit of desirable outcomes and involves a concern with gains and non-gains. Prevention focus emphasizes the avoidance of undesirable outcomes and involves a concern with losses and non-losses. Promotion focus could be described as a more eager strategy, while prevention focus could be described as a more vigilant strategy. Sample items include, “In general, I am focused on preventing negative events in my life,” “I frequently imagine how I will achieve my hopes and aspirations,” “I often think about the person I am afraid I might become in the future,” and “I often think about the person I would ideally like to be in the future.” All scale items are included in Appendix P. Participants responded to these items using a five-point Likert scale (1 = *strongly disagree*, 2 = *disagree*, 3 = *neither*, 4 = *agree*, 5 = *strongly agree*), and responses were summed separately to create indices of promotion focus and prevention focus.

Trait Ratings. After reading the article, participants completed a set of items beginning with ratings of the target student and of themselves on a list of five positive traits related to academic success (rated on the same five-point scale). Again, responses on each group of items were summed to create indices of target ratings and self-ratings.

Perceived Attainability and Similarity. Participants responded to the same three items as in the previous studies to indicate their perceptions of the attainability of the student’s success. Responses were summed to create an index of perceived attainability. Participants were also asked to indicate their perception of their similarity to the target.

State Self-Esteem. Participants again responded to 14 items from the Current Thoughts Scale (Heatherton & Polivy, 1991) to assess their momentary feelings of self-

worth after comparison. After reverse-scoring the negatively-worded items, responses across all of those items were summed to create an index of state self-esteem.

Results

Optimism

Responses on six items were summed to create an index of optimism ($M = 20.10$, $SD = 3.53$, $\alpha = .69$). Optimism correlated positively with both ratings of the target ($r = .21$, $p < .05$) and ratings of the self ($r = .39$, $p < .01$). So, more optimistic participants tended to view both the target and themselves more positively. Scores on optimism also significantly predicted the perceived attainability of the target ($r = .39$, $p < .01$) and the perceived similarity of the self to the target ($r = .32$, $p < .01$), such that more optimistic participants were more likely to view the target's success as attainable and more likely to view themselves as similar to that target. Finally, more optimistic participants tended to report higher state self-esteem after comparison ($r = .42$, $p < .01$). See Appendix Q for a summary table of the correlational results for this measure and the other scales below.

Self-Esteem

Responses on ten items were summed to create an index of chronic self-esteem ($M = 31.33$, $SD = 4.43$, $\alpha = .84$). Self-esteem correlated positively with both ratings of the target ($r = .31$, $p < .01$) and ratings of the self ($r = .55$, $p < .01$). So, participants with higher self-esteem tended to view both the target and themselves more positively. Scores on self-esteem also significantly predicted the perceived attainability of the target ($r = .32$, $p < .01$) and the perceived similarity of the self to the target ($r = .23$, $p < .05$), such that those with higher self-esteem were more likely to view the target's success as

attainable and more likely to view themselves as similar to that target. Finally, individuals with higher self-esteem tended to report higher state self-esteem after comparison than those lower in self-esteem before the comparison ($r = .59, p < .01$).

Self-Doubt

Responses on eight items were summed to create an index of chronic self-doubt ($M = 22.96, SD = 5.25, \alpha = .78$). Self-doubt correlated significantly with ratings of the self ($r = -.51, p < .01$) but not ratings of the target ($r = -.11$). So, participants with higher self-doubt tended to view themselves less positively on success-relevant traits. Scores on self-doubt also significantly predicted the perceived attainability of the target ($r = -.35, p < .01$) but not the perceived similarity of the self to the target ($r = -.13$), such that those with higher self-doubt were less likely to view the target's success as attainable. Finally, individuals with higher self-doubt tended to report lower state self-esteem after comparison than those who were lower in self-doubt ($r = -.73, p < .01$).

Locus of Control

Responses on twelve items were summed to create an index of the internality of one's locus of control ($M = 48.69, SD = 6.55, \alpha = .71$). Locus of control correlated positively with ratings of the self ($r = .31, p < .01$) but not ratings of the target ($r = .19$). So, participants with a more internal locus of control tended to view themselves more positively on success traits. Scores on the locus of control scale also significantly predicted the perceived attainability of the target ($r = .26, p < .01$) but not the perceived similarity of the self to the target ($r = .13$), such that those with a more internal locus of control were more likely to view the target's success as attainable. Finally, individuals

with a more internal locus of control tended to report higher state self-esteem after comparison than those with a more external locus of control ($r = .50, p < .01$).

Approach and Avoidance

Responses were summed to create four three-item subscales representing achievement goals: mastery-approach ($M = 11.86, SD = 1.94, \alpha = .69$), mastery-avoidance ($M = 10.29, SD = 2.55, \alpha = .62$), performance-approach ($M = 12.36, SD = 1.85, \alpha = .81$), and performance-avoidance ($M = 11.33, SD = 2.48, \alpha = .73$). Mastery-approach ($r = .26, p < .01$), performance-approach ($r = .35, p < .01$), and performance-avoidance goals ($r = .22, p < .05$) significantly predicted ratings of the target; however, only mastery-approach goals ($r = .44, p < .01$) and performance-approach goals ($r = .37, p < .01$) predicted ratings of the self. So, more approach-oriented individuals tended to view themselves more positively. Mastery-approach goals ($r = .35, p < .01$) and performance-approach goals ($r = .30, p < .01$) also significantly predicted perceived attainability of the target's success, such that those who scored higher on approach goals were more likely to view the target's success as attainable. However, none of the four different types of goals significantly related to state self-esteem after comparison.

Maximization

Responses on six items were summed to create an index of maximization ($M = 21.13, SD = 3.41, \alpha = .54$). Maximization did not correlate significantly with ratings of the target ($r = .10$) or ratings of the self ($r = .13$). Scores on the maximization scale did significantly predict the perceived attainability of the target's success ($r = .29, p < .01$) but not the perceived similarity of the self to the target ($r = .16$), such that those who seek

to maximize their outcomes were more likely to view the target's success as attainable. Maximization scores also failed to predict state self-esteem after comparison ($r = -.05$)

Lay Theories

Responses on eight items were summed to create an index of lay theories, with higher scores indicating a belief that intelligence is more malleable ($M = 28.02$, $SD = 6.23$, $\alpha = .91$). Lay theories correlated positively with ratings of the self ($r = .31$, $p < .01$) but not ratings of the target ($r = .07$). So, participants who said they believed that intelligence was more malleable tended to view themselves more positively on success traits. Scores on the measure of lay theories also significantly predicted the perceived attainability of the target's success ($r = .25$, $p < .05$) but not the perceived similarity of the self to the target ($r = .06$), such that those who believe intelligence to be more malleable were more likely to view the target's success as attainable. Finally, individuals who believe that intelligence is more malleable tended to report higher state self-esteem after comparison than those who believe intelligence is more fixed ($r = .23$, $p < .05$).

General Self-Efficacy

Responses on eight items were summed to create an index of general self-efficacy ($M = 31.72$, $SD = 4.10$, $\alpha = .89$). Self-efficacy correlated positively with both ratings of the target ($r = .25$, $p < .05$) and ratings of the self ($r = .40$, $p < .01$). So, participants with higher self-efficacy tended to view both the target and themselves more positively. Scores on self-efficacy also significantly predicted the perceived attainability of the target's success ($r = .35$, $p < .01$) and the perceived similarity of the self to the target ($r = .34$, $p < .01$), such that those with higher self-efficacy were more likely to view the

target's success as attainable and more likely to view themselves as similar to that target. Finally, individuals with higher self-efficacy tended to report higher state self-esteem after comparison than those with lower self-efficacy ($r = .36, p < .01$).

Regulatory Focus

Responses were summed to create subscales for promotion focus ($M = 36.42, SD = 3.97, \alpha = .80$) and prevention focus ($M = 29.50, SD = 5.65, \alpha = .78$). Promotion focus correlated positively with both ratings of the target ($r = .30, p < .01$) and ratings of the self ($r = .46, p < .01$), but prevention focus only correlated negatively with ratings of the self ($r = -.20, p < .05$). So, participants who scored higher on promotion focus tended to view both the target and themselves more positively, whereas those who scored higher on prevention focus tended to view only themselves more negatively. Scores on promotion focus also significantly predicted the perceived attainability of the target ($r = .50, p < .01$) and the perceived similarity of the self to the target ($r = .41, p < .05$), such that those with higher promotion focus were more likely to view the target's success as attainable and more likely to view themselves as similar to that target. Prevention focus did not significantly relate to either perceived attainability ($r = -.09$) or perceived similarity ($r = .18$). Finally, individuals with higher promotion focus tended to report higher state self-esteem after comparison ($r = .25, p < .05$), while those with higher prevention focus tended to report lower state self-esteem after comparison ($r = -.49, p < .01$).

Regression Models

Finally, all the of the previously mentioned scale measures were simultaneously regressed onto the measure of perceived attainability. Here, the scores on maximization

($B = .19$, $t(86)$, $p < .05$) and promotion focus ($B = .29$, $t(86)$, $p < .01$) remained as significant predictors of perceived attainability, indicating that they accounted for unique variance in how people viewed the attainability of the target's success. So, many of the other individual differences (e.g., self-doubt, self-esteem, self-efficacy) likely shared variance in target attainability and thus did not remain significant in this analysis.

Discussion

Study 5 was designed as a means to further understand the nature of attainability judgments and the factors that influence them. Specifically, this study explored the extent to which certain personality characteristics would predict whether people viewed an upward comparison target's success as attainable. Overall, the findings indicated that many individual differences related to the perceived attainability of the target's success. Significant relationships with chronic self-esteem, self-doubt, and self-efficacy suggest that how people generally feel about themselves and their abilities affects whether they view a target's success as attainable. Significant relationships with optimism and internal locus of control imply that people who expect good outcomes in the future, and those who trust in their ability to effect those outcomes, will be more likely to view a target's success as attainable. And, significant relationships with maximization, promotion focus, and approach goals indicate that individuals who are dispositionally oriented towards striving in a positive direction tend to view better-off targets as more attainable.

So, to return to Festinger's (1954) original discussion of social comparison, the individuals who are most likely to perceive an upward target's success as attainable are those who most exhibit the unidirectional drive upward. Given their belief in themselves

and their desire to approach their ideals (either in mastery or performance), these individuals might also be the most likely to actually improve and reach the level of the upward targets to which they compare. Since the relationship between promotion focus and perceived attainability emerged so strongly in this study, one might also wonder whether perceiving a target as attainable involves not merely a striving towards positive outcomes but also a history of success pursuing that strategy (see Higgins, Friedman, Harlow, Idson, Ayduk, & Taylor, 2001). And if that were the case, it would indicate that people use past experiences when judging whether some future success is attainable.

Chapter 9: General Discussion

Over the last 15 years, researchers have appeared to be captivated by the notion that upward social comparison is self-enhancing when one maintains the belief that he or she could attain a comparable level of success to that upward target. Researchers have cited Lockwood and Kunda's (1997) original research on the topic of attainability over 550 times. At the same time, few researchers have exhibited the motivation to further explore the construct of attainability and understand its role in upward social comparison.

Across seven studies, the present research addressed some of the most glaring weaknesses in the existing literature. Specifically, the studies mentioned here began to situate attainability in broader theoretical frameworks regarding upward social comparison, explaining more precisely how attainability comes to affect how people view and feel about themselves. Along these lines, it was hypothesized that perceived similarity to an upward target would mediate the effects of attainability on self-views. Additionally, the research provided insights into the diverse antecedents and consequences of perceptions of attainability, with the belief that attainability would reach beyond specific self-evaluations to affect even momentary feelings of self-worth. Evidence in support of these hypotheses would vastly increase the understanding of attainability and how it generates self-enhancement in upward social comparisons.

Studies 1, 2a, 2b, and 3 demonstrated that the perceived attainability of the target's success had an indirect effect on self-views through affecting the perceived similarity to the target, such that individuals who viewed the target's success as more attainable then viewed the target as more similar to themselves, which led them to assimilate towards the target in their self-views. Therefore, these findings are consistent with Mussweiler's (2003) hypothesis that viewing a target's success as more attainable facilitates testing for (and finding) similarity, whereas viewing a target's success as less attainable renders similarity unrealistic and facilitates testing for (and finding) dissimilarity. Furthermore, in these studies, the perceived attainability of the target's success always had an indirect effect on state self-esteem through perceived similarity and self-views. And so, the effects of attainability do not appear to stop at the point of self-views; rather, those effects on self-views matter for how people feel about themselves more globally after engaging in upward social comparison.

Studies 4a and 4b, on the other hand, showed that subjective identification with the upward comparison target did not appear to have an indirect effect on self-views through affecting the perceived attainability of the target's success. Therefore, the data could not support the competing perspective from Stout et al. (2011) that subjective identification with a comparison target would lead his or her success to be perceived as more attainable. As intuitive as this notion might be, the correlational data in these two studies suggested that subjective identification with and similarity to the target affected self-views and self-esteem directly (as opposed to indirectly through some mediator), which is consistent with contemporary theories of social comparison (e.g., Collins, 1996;

Mussweiler and Strack, 2000). And, even in these studies, the mediational pathway from perceived attainability through perceived similarity and self-views to state self-esteem, the same pathway that pervaded the first four studies, emerged again.

Study 5 approached the construct of perceived attainability from yet another angle, illustrating that a diverse array of individual difference variables affected the extent to which people viewed the comparison target's success as attainable. Feelings of self-worth, expectations of good outcomes, confidence in one's abilities, and beliefs that one's ability in the relevant domain can change contributed to attainability judgments. So, too, did the dispositional drive to approach and maximize positive outcomes affect whether an individual perceived the comparison target's success as attainable. Although others have already speculated that variables like self-esteem and optimism would be relevant to attainability (Major et al., 1991), or found that lay theories affected the self-evaluative consequences of social comparison (Lockwood & Kunda, 1997), none has considered the appreciable effects of promotion focus and approach motivations.

Despite the wealth of information these studies provided on the construct of attainability, several ineffective experimental manipulations and inconsistent patterns in the data slightly obscured the main findings. Six studies showed the same significant indirect effect of perceived attainability on self-esteem through perceived similarity and self-ratings; however, three studies additionally showed a significant indirect effect through self-ratings alone. And, on occasion, partial correlations showed that perceived similarity and perceived attainability accounted for unique variance in self-views. So, at

least in these studies, perceived attainability had an effect on self-views and then self-esteem that was not explained by differences in perceived similarity.

Since no other mechanism has been offered to explain how attainability affects self-views, it remains unclear what could be driving this more direct effect of attainability on self-views. Perhaps not every social comparison follows the tenets of the selective accessibility model (Mussweiler & Strack, 2000), and thus similarity and dissimilarity testing do not always occur after people evaluate the attainability of the target's success. However, the data here consistently showed strong relationships between similarity and self-views, which would not seem to support that interpretation. Engaging in social comparison with an attainable target might also increase the confidence in one's successful possible future self, or at minimum cause one to think about a possible future self, and that effect could trickle down into evaluations of the current self. Markus and Nurius (1986) asserted that self-views incorporate possible future selves, and considerations of one's future self can at times be more important than one's current self-conceptions. And so, if an attainable target makes one's successful possible future self more accessible, that alone could boost current self-views.

Implications

Beyond establishing a mechanism to explain the effects of attainability, the present work has several broader implications. First, for instance, the data here form the foundation for a theoretical model placing attainability as a preeminent factor in upward social comparison. Among other discussions of social comparison, most consider attainability to be one of many factors affecting the process of social comparison. Major

et al. (1991) place perceived control over comparison discrepancies at the core of understanding social comparison, but no other perspective has come close to stressing the importance of attainability. Contemporary theories tend to highlight similarity as the crux of the self-evaluative consequences of social comparison, perhaps in part because the concept was so near-and-dear to Festinger's own theorizing in the 1950s.

Yet, if attainability judgments affect similarity judgments and precede similarity judgments temporally, then perceived attainability of a target's success must be considered a major factor in how upward social comparisons unfold. Although there is no guarantee that people spontaneously consider attainability in response to every upward social comparison target or opportunity, from an intuitive standpoint, it is hard to imagine comparing oneself to a better-off target and yet not also thinking about the prospects of matching that target's success (unless of course that upward target has been so successful that no one could even entertain the notion of approaching his or her level – say, the astronaut who first walked on the moon; a Nobel prizewinner; the mother of octuplets).

Furthermore, if attainability ascends to preeminence in social comparisons with better-off others, then a link could be drawn between attainability judgments and the basic construction of the self-concept. Obviously, the present studies show that self-evaluations vary depending on the perceived attainability of the target's success; however, those judgments of attainability could be critical for how people build their sense of self. For example, when approaching some novel activity, an individual might naturally compare with others who excel in that domain and try to determine whether or not he could eventually be as skilled as those targets. So, the adolescent who wants to

learn to play the guitar might compare himself to his friend who has played for several years and decide either that he could become as good as his friend (cementing his musical talents as a central feature of his self-concept) or that he can never be so good (ripping any notion of musical prowess from how he defines himself). Based on the downstream consequences of these attainability judgments, relevant aspects of the self-concept could be thrust into the limelight or fall by the wayside. Or, from another vantage point, if one's possible self does not meet or exceed the target's success, he or she might abandon any commitment to that possible self, ultimately triggering change in the self-concept.

Another interesting implication of this work follows from the complex relationship between perceived attainability and perceived similarity. So far, this work has examined that relationship in the context of how those two variables affect self-views and self-esteem. However, one could also consider what this attainability-similarity link means from a more relational perspective. Whether or not people believe that they could achieve comparable success to someone else appears to affect how they view themselves in context with that other person. An attainable target is viewed as more similar, and perhaps more psychologically close, to oneself, whereas an unattainable target is viewed as less similar, and perhaps less psychologically close, to oneself.

Attainability judgments might then determine what Heider (1958) referred to as a unit relationship, or the connection that exists between people who are "perceived as belonging together in a specifically close way," (p. 201). And while this might not be so significant when one's upward comparison target is a celebrity or another person with whom the individual would never come in contact, this could be quite impactful for

social relationships with known others who could be considered upward comparison targets in some relevant domain. Tesser (1988) believed that individuals might distance themselves from close others who excelled in a relevant domain; however, it could be the case that such distancing behavior would only occur when one views that person's success as unattainable because doing so begins to break down that unit relationship.

Finally, the present research has further implications for how social psychologists think about self-esteem. Obviously, a link between social comparison processes and self-esteem is not a new discovery; it has permeated the research on downward social comparison (Wills, 1981) and appears, more generally, in the literature on social comparison no less than Festinger's initial assertion that social comparison serves the interests of seeking accuracy and reducing one's uncertainty about his or her place in the world. Further, there is a burgeoning literature showing that self-esteem fluctuates over time (see Rosenberg, 1986), and that such variability in one's self-esteem from moment to moment can matter for various aspects of psychological functioning (see Kernis, 2005). Self-esteem then should not be viewed as some fixed entity but rather as a process which reacts both to interpersonal and intrapersonal events as they unfold in daily life. Related to the present work, self-esteem appears to shift as a consequence of whether someone initially judges the success of an upward comparison target to be more or less attainable. Almost like a butterfly flapping its wings and causing a hurricane halfway around the world, so too might a seemingly minute judgment about attainability come to meaningfully determine one's affective life after social comparison.

Given this view of attainability, one could develop a novel understanding of the nature of self-esteem. Sociometer theory (Leary & Baumeister, 2000) explains that self-esteem evolved to monitor one's level of social acceptance. So, according to this theory, self-esteem derives exclusively from one's perceived relational value to others. However, the present research shows that social comparisons of ability and performance matter greatly for self-esteem as well. Therefore, self-esteem could also be viewed as a gauge of one's perceived ability to perform well in relevant domains. As the sociometer constantly monitors the social environment for cues regarding the degree to which one is (or will be) accepted by other people, so might this other meter constantly monitor the environment for cues regarding the degree to which one is (or will be) competent. Social comparisons could then be viewed, in this context, as rather powerful cues that cause fluctuations in self-esteem which are reflected in that competence-based meter.

Furthermore, treating self-esteem as a monitor of both one's social fitness and competence fits nicely with an existing view of self-esteem (Tafarodi & Swann, 1995) that conceptualizes global self-esteem as a combination of *self-liking* (a sense of social worth) and *self-competence* (a sense of personal efficacy). Sociometer theory could account for changes in self-liking as a response to interpersonal experiences (e.g., rejection), and this additional piece could account for changes in self-competence as a response to objective information about one's competence (e.g., an exam grade), or in lieu of that, information gleaned from social comparisons. Rather than considering everything as an indicator of relational value, this perspective allows for feelings of competence to promote self-esteem above and beyond any interpersonal implications.

Future Directions

Since the literature on attainability remains so sparse, the present work highlights a number of potential paths for future research. As it pertains to the consequences of attainability judgments, these studies cannot show whether boosts from attainable targets or hits from unattainable targets more account for the significant effects of attainability on self-views and state self-esteem. Although Lockwood and Kunda (1997) found that individuals who compared themselves to unattainable targets tended not to differ significantly from controls, two studies alone cannot definitely prove whether unattainable targets are ego-deflating. Perhaps a stronger manipulation, or examining more vulnerable populations (such as those low in self-esteem or those with more uncertain or fragile self-esteem) would reveal that unattainable targets can have as much a negative effect as attainable targets have a positive one. Adding a control condition to these studies would help clarify if attainable targets enhance the self, if unattainable targets damage the self, or if both effects occur (and perhaps to varying degrees).

Another limitation of these studies is that they stop at the point of measuring state self-esteem minutes after engaging in social comparison. Future research on attainability might adopt a more long-term focus with its dependent variables. For example, an individual who generally feels good about himself and his abilities might be likely to view an upward comparison target he encounters as attainable, leading him to feel even better. So, when he next compares himself with a better-off target, this individual might be even more likely to view that target as attainable as well. An accumulated number of these experiences could lead to a sort of upward spiral in which the individual continually

judges comparison targets to be within his reach and feels increasingly positive affect. On the other hand, an individual who generally feels bad about himself and his abilities might be likely to view an upward comparison target he encounters as unattainable, leading him to feel even worse and potentially starting a downward spiral through future social comparisons. Therefore, attainability judgments might be another means through which people who already have positive or negative self-views come to reinforce those optimistic or pessimistic visions of themselves. And, it is tempting to wonder whether people's levels of aspiration might be motivated by spiraling optimism, or spiraling pessimism, driven by escalating assessments of one's comparative link to relevant others.

Despite the best attempts to address it here, the present studies fall short of understanding how exactly people decide whether a comparison target is attainable or unattainable, and so further research should address these judgments. Any attainability judgment would seem to require a consideration of both one's own potential for future achievements and the past achievements of the comparison target. However, it remains unclear which of those two evaluations more influences the final judgment, as well as all the other processes that may be relevant to such comparative appraisals (e.g., which evaluation comes first, temporally). An individual might start with a range of possible outcomes for himself and then decide whether the target's success fits within or outside of that range, something like a "latitude of acceptance – latitude of rejection" judgment. And, if such an order does take place, the first judgment might come to contaminate the second, with people being motivated to view the target's success as more within the realm of possibility than objective reality would suggest. Or, perhaps judgments of the

target matter little, and people rely mostly on what they think of themselves to determine whether a target's success is attainable or unattainable. Thus, evaluations of people's possible future selves, and their confidence in becoming those future selves, might be critical to understanding how people make these attainability judgments.

At the same time, it seems wise not to assume that people are making attainability judgments in any logical or rational manner. Just as often, such judgments could be as much or more driven by affective considerations. Similar to what the selective accessibility model predicts in regards to how people make quick, holistic judgments about their similarity to comparison targets, people might also make heuristic-based, gut-level judgments about attainability. Objective information that might indicate whether the target's success is more likely to be attainable or unattainable might never come into consideration, with people perhaps focusing more on a general feeling about if they are good and capable to inform any notion of attainability. These processes could be at the foundation of some of the saddest and most poorly articulated judgments about what people can and should accomplish in life and when a change of trajectory in one's life pursuits is advantageous (see Carroll, Shepperd, & Arkin, 2009). The question of whether attainability judgments are influenced more by cognitive or affective processes, and under what conditions, will surely generate some compelling hypotheses.

Conclusion

Seven studies were designed to further explore the role of perceived attainability of the target's of success in upward social comparison. Specifically, the present work was intended to link perceived attainability to broader theoretical perspectives about how

upward social comparisons enhance the self and examine whether the effects of attainability could reach beyond specific self-evaluations to momentary feelings of self-worth. Results indicated that perceived similarity to the target accounted for the effects of perceived attainability, such that more attainable targets facilitated viewing oneself as similar to the target, which led people to assimilate towards the target in their self-views and then feel better about themselves post-comparison. And so, the present research furthers the understanding of the construct of attainability and clarifies the mechanism through which perceived attainability of a target's success comes to impact affective life.

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Appendix A: OSU Article Text (Study 1)

OSU STUDENT NAMED CHURCHILL SCHOLAR

Last week, the Winston Churchill Foundation announced that an Ohio State student has received the prestigious Churchill Scholarship. Jordan Kessler, a [fourth-year/first-year] student from Dublin, Ohio, has been named the 2011 recipient of the award.

According to the Honors Collegium at Ohio State, the Winston Churchill Foundation awards 50 scholarships annually to graduating seniors who display exceptional academic talent, outstanding personal qualities, contributions to the community, and a capacity to contribute to the advancement of knowledge in their chosen field.

The scholarship, first awarded in 1963, grants students one year of post-graduate study in their chosen field at Cambridge University in England. Kessler plans to pursue a Master's degree while studying at Cambridge and then eventually return to the United States to start a doctoral program or begin working in the private sector.

Jordan first learned of the news two weeks ago. "I was really happy. I was excited. I'd been stressing out about it a lot," Kessler said.

Beyond having a strong focus on academic achievement, Kessler participates actively in student government and various forms of community service, including work in Columbus city schools. According to its mission statement, the Winston Churchill Foundation prides itself on finding and recognizing these exemplary and well-rounded undergraduate students.

"I was almost in tears when I read the article in the school e-mail," said William Kessler, Jordan's father. "Jordan has worked so hard for this, and I'm incredibly proud today."

Earlier in the year, Jordan was named a recipient of the Barry M. Goldwater Scholarship, another prestigious award recognizing the accomplishments of college undergraduates, and recently returned from conducting research at Cornell University.

Jordan credits hard work and dedication as the cornerstones for this achievement. "Sometimes you want to have a little more fun or relax a bit more, but that's when you have to push through. Spending a few extra hours in the library every week can really go a long way," Kessler said. "Developing strong study skills has a lot to do with where I am right now as a student."

Jordan is also quick to recognize the role that Ohio State University has played in all of this. "I can't imagine I would have these same opportunities had I gone to a different school. I feel like I've been extremely fortunate to become involved with the mentors and the programs that I have at Ohio State," Kessler said. "I can't imagine being as successful anywhere else."

Appendix B: FSU Article Text (Study 1)

FSU STUDENT RECEIVES SIMON AWARD

Last week, the Arthur Simon Foundation announced that Jordan Kessler, a student from Orlando, Florida, has been named the 2011 recipient of the Simon Scholarship.

According to the Honors Collegium at Florida State, the Arthur Simon Foundation awards one scholarship annually to a student at Florida State who displays exceptional talent in the performing arts, outstanding personal qualities, contributions to the community, and a capacity to contribute to the advancement of the performing arts.

The scholarship, first awarded in 1989, grants students one year of post-graduate study in the performing arts. Kessler plans to pursue studies in drama and theatre while on the scholarship. Jordan first learned of the news two weeks ago. "I was really happy. I was excited. I'd been stressing out about it a lot," Kessler said.

Beyond having a strong focus on theatre activities, Kessler participates actively in student government and various forms of community service, including work in city schools. According to its mission statement, the Arthur Simon Foundation prides itself on finding and recognizing these exemplary and well-rounded performing arts students.

"I was almost in tears when I read the article in the school e-mail," said William Kessler, Jordan's father. "Jordan has worked so hard for this, and I'm incredibly proud today."

Earlier in the year, Jordan was named a recipient of the Andrew Barnwell Scholarship, another award recognizing the accomplishments of college undergraduates who pursue the performing arts at Florida State University.

Jordan credits hard work and dedication as the cornerstones for this achievement. "Sometimes you want to have a little more fun or relax a bit more, but that's when you have to push through. Spending a few extra hours working on your craft every week can really go a long way," Kessler said.

Jordan is also quick to recognize the role that Florida State University has played in all of this. "I can't imagine I would have these same opportunities had I gone to a different school. I feel like I've been extremely fortunate to become involved with the mentors and the programs that I have at Florida State," Kessler said. "I can't imagine being as successful anywhere else."

Appendix C: Questionnaire Items

Target Ratings

1. How bright do you think _____ is?
2. How skillful do you think _____ is?
3. How dedicated you think _____ is?
4. How successful do you think _____ is?
5. How talented do you think _____ is?

Self Ratings

1. How bright do you think you are?
2. How skillful do you think you are?
3. How dedicated you think you are?
4. How successful do you think you are?
5. How talented do you think you are?

Perceived Attainability

1. How likely are you to reach the same success as _____?
2. How much do you feel like you could achieve what _____ has achieved?
3. How much do you feel like _____'s success is attainable for you?

Perceived Similarity

1. How similar are you to _____?

Appendix D: State Self-Esteem Items

1. I feel confident about my abilities.
2. I am worried about whether I am regarded as a success or failure. (R)
3. I feel frustrated or rattled about my performance. (R)
4. I feel that I am having trouble understanding things that I read. (R)
5. I feel self-conscious. (R)
6. I feel as smart as others.
7. I feel displeased with myself. (R)
8. I am worried about what other people think of me. (R)
9. I feel confident that I understand things.
10. I feel inferior to others at this moment. (R)
11. I feel concerned about the impression I am making. (R)
12. I feel that I have less scholastic ability right now than others. (R)
13. I feel like I'm not doing well. (R)
14. I am worried about looking foolish. (R)

Appendix E: Modified Article Text (Studies 2a & 2b)

Attainable Condition

According to the Honors Collegium, the Winston Churchill Foundation awards 100 scholarships annually to graduating seniors from around the country who display exceptional academic talent (maintaining a GPA above 3.0), outstanding personal qualities, contributions to the community, and a capacity to contribute to the advancement of knowledge in their chosen field.

Unattainable Condition

According to the Honors Collegium, the Winston Churchill Foundation awards just 10 scholarships annually to graduating seniors from around the country who display exceptional academic talent (maintaining a GPA above 3.9), outstanding personal qualities, contributions to the community, and a capacity to contribute to the advancement of knowledge in their chosen field.

Appendix F: Incremental Article (Study 3)

When she was young, Mary S. would not leave her mother to make friends with other children. Later, as she grew up, however, she had no difficulty getting along with other people. In her late forties, she was happily married and led a rich and satisfying social life.

Benjamin M. exhibited very little self-discipline in his early childhood. When he was four years old, he constantly needed his parents to urge him to get dressed in the morning or to go to bed at night. However, through training from teachers and peer pressure in his highly competitive schools, he eventually learned good organizational skills, so that by the time he was in college, he was usually better prepared for his examinations than other students.

These cases were among the 812 cases researchers have collected at the Personality and Development Unit (PDU) at Stanford University, and they are some of the prototypical examples of personality development.

Researchers at the PDU, a unit within the Stanford Psychology Department, are interested in the various origins of personality characteristics and how they develop over an individual's life. To collect cases for the data bank, these researchers launched the largest-scale longitudinal study of human personality development ever, following hundreds of individuals over 30 years. This research program, under the guidance of PDU Director Dr. Lawrence Peterson, identified subjects at birth and has been collecting elaborate data on them ever since, including their school records, extensive observations at home and in the laboratory, and in-depth interviews with all of the individuals, their family members, and close friends.

In a recent article published in the February, 2003 issue of the *Journal of Personality* (Vol. 149, pp. 1178-1196), Dr. Peterson and colleagues reported their recent findings. Dr. Peterson concluded that, "we have observed repeatedly that one's various personality characteristics seem to be malleable and to develop significantly over time." His studies found that people's personality characteristics can be conceived of as cultivatable qualities. "Personality characteristics start as a bundle of potentialities, and the course of human development appears to draw out these potentials into a cohesive personality profile," he wrote.

He argued that, "although this profile may manifest itself in a more or less clearer behavioral pattern when people grow older, the underlying personality profile is not static; it can and does change over time." "We have found," he added, "that this change is due to both volitional and environmental factors. In other words, a person is a product of his or her willpower and environment."

Dr. Paula McCormack, a psychologist at the National Institute of Mental Health, came to a similar conclusion. In her keynote speech at the American Psychological Association's annual convention in Washington, DC in August, 2002, Dr. McCormack argued that, "in most of us, our character is rather easily molded like clay." She reported numerous longitudinal studies conducted by her experienced research team which show that "as people age and develop, so do their underlying dispositions."

According to Dr. McCormack, environmental influences (such as one's education, family setting, parenting, or socioeconomic status) and internal aspects (such as goals and beliefs) are able to change not only specific skills or isolated habits, but also more basic elements of personality.

Appendix F continued

Similar conclusions were echoed by other researchers in the field. For example, Dr. Russell H. Kelly, a longtime professor at UCLA, has done extensive research on the extent to which environment can influence people's behavior as well as their underlying personality. He used the metaphor of how people would behave in a church versus at a rock concert. "Of course, most people would behave very differently in the two situations. But prolonged exposure to one type of setting or another can lead to stable contingencies that translate into real differences in how individuals view themselves as well as how others view them," he noted.

Scientific study of the development of personality has been going on for over 80 years. One classic study was the Cambridge-Somerville Youth Study, published in 1935. Richard Clark, the author of the famous study, established one of the most ambitious and exciting intervention programs ever conceived. It was designed to serve the needs of youngsters whose behavior indicated that they were prime candidates for delinquency and criminality. The youngsters in the study were 250 boys from mostly working-class families in a densely populated area of eastern Massachusetts, many of whom were specifically judged by schools, police, or welfare agencies to be "at risk." They entered the program at ages ranging from 5 to 13 years and then continued in it for an average of five years.

During that time, the intervention program combined psychotherapy and several other kinds of direct, intensive assistance. Caseworkers visited each child twice a month and provided whatever assistance seemed warranted, including, in roughly one-third of the cases, active involvement in family conflicts. For 50 percent of the boys, the caseworkers arranged for tutoring in several different academic subjects. Over 100 boys, or roughly 40 percent of the sample, received some medical or psychiatric attention. The kids' social and recreational needs were similarly addressed. In short, the program was a long-term, multifaceted intervention.

The huge investment of effort and money paid off. The results of the intervention showed that, compared to youngsters who were also at risk, but were not in the program, those who had the intervention were less likely to commit any juvenile offenses. Later in adulthood, few of them committed crimes – roughly three to five percent of them committed any serious offenses against people or property, while twelve percent committed minor offenses.

Many other research intervention programs have yielded similar results. Indeed, this may explain why people spend millions of dollars each year on psychotherapy and other such services. According to Dr. Martin L. Cooper, a clinical psychologist at Harvard University, therapy "is essentially like a re-training, or a re-programming of motivation and environmental influence so that it reaches a sustainable threshold necessary to make change happen at a behavioral level."

Interestingly, it seems that malleable personalities have been found to be the rule for significant figures in history. Dr. Marsha Schneider, a historian at the University of Chicago, has researched the personality of important historical figures. Her research is based largely on biographies and published interviews with these individuals. In her recent article in the December, 2002 issue of *American Historian*, she reported that "many significant figures in history displayed evidence of key personality characteristics as adults that were entirely absent at an early age."

She cited several examples, one being Malcolm X, who "seemed to undergo changes in behavior so significant that it is tempting to say that real personality change did occur." The key, according to Dr. Schneider, appears to be the proper confluence of environmental factors and internal motivation that Malcolm X had, to be able to control and then "re-mold" his personality.

Appendix G: Entity Article (Study 3)

When she was young, Mary S. would not leave her mother to make friends with other children. Later, as she grew up, she had difficulty getting along with other people. In her late forties, she was still single and feeling lonely.

Benjamin M. exhibited a great deal of self-discipline in his early childhood. Even when he was four years old, he didn't need his parents to urge him to get dressed in the morning or to go to bed at night. By the time he was in college, he was usually better prepared for exams than the other students.

These cases were among the 812 cases researchers have collected at the Personality and Development Unit (PDU) at Stanford University, and they are some of the prototypical examples of personality development.

Researchers at the PDU, a unit within the Stanford Psychology Department, are interested in the various origins of personality characteristics and how they develop over an individual's life. To collect cases for the data bank, these researchers launched the largest-scale longitudinal study of human personality development ever, following hundreds of individuals over 30 years. This research program, under the guidance of PDU Director Dr. Lawrence Peterson, identified subjects at birth and has been collecting elaborate data on them ever since, including their school records, extensive observations at home and in the laboratory, and in-depth interviews with all of the individuals, their family members, and close friends.

In a recent article published in the February, 2003 issue of the *Journal of Personality* (Vol. 149, pp. 1178-1196), Dr. Peterson and colleagues concluded that, "we have observed repeatedly that one's personality characteristics seem to be fixed and to develop consistently over time." He found that people's personality characteristics can be conceived of as largely fixed entities. "Personality characteristics start as a bundle of potentialities, but in the early years, all of those potentials appear to consolidate into a cohesive personality profile," he wrote. He argued that, "this profile may manifest itself in a clearer behavioral pattern when people grow older, yet the underlying profile does not seem to change over time." "Moreover," he added, "we have also found that neither environmental factors nor willpower influence this basic stability."

Dr. Paula McCormack, a psychologist at the National Institute of Mental Health, came to a similar conclusion. In her keynote speech at the American Psychological Association's annual convention in Washington, DC in August, 2002, Dr. McCormack argued that, "in most of us, by the age of ten, our character has set like plaster and will not soften again." She reported the results of numerous longitudinal studies conducted by her research team which show that people, "age and develop, but they do so on the foundation of enduring dispositions." She added that "our data indicate that people's adult personalities are mostly a function of their genetic predispositions and their early learning experiences – both factors that are out of an individual's control."

According to Dr. McCormack, any external influences have just a limited ability to change personality, although they may be able to affect specific skills or some isolated habits. Yet, these characteristics change only "in ways that are consistent with the individual's essential underlying personality," Dr. McCormack said.

Appendix G continued

Similar conclusions have been echoed by other researchers in the field. For example, Dr. Russell Kelly, a professor of psychiatry at UCLA, has done extensive research on the extent to which environmental influences can affect people's behavior. He used the metaphor of how people would behave in a church versus at a rock concert. "Of course, most people would behave very differently in the two situations. But it does not mean that their underlying dispositions have changed. In fact, my research findings tend to indicate that sometimes a change in environment seems to affect behavior, but it does not change underlying personality to any scientifically meaningful degree."

The scientific study of the stability of personality has been going on for over 80 years. One classic study was the Cambridge-Somerville Youth Study, published in 1935. Richard Clark, the author of the famous study, established one of the most ambitious and exciting intervention programs ever conceived. It was designed to serve the needs of youngsters whose behavior indicated that they were prime candidates for delinquency and criminality. The youngsters in the study were 250 boys from mostly working-class families in a densely populated area of eastern Massachusetts, many of whom were specifically judged by schools, police, or welfare agencies to be "at risk." They entered the program at ages ranging from 5 to 13 years and then continued in it for an average of five years.

During that time, the intervention program combined psychotherapy and several other kinds of direct, intensive assistance. Caseworkers visited each child twice a month and provided whatever assistance seemed warranted, including, in roughly one-third of the cases, active involvement in family conflicts. For fifty percent of the boys, the caseworkers arranged for tutoring in academic subjects. Over 100 boys, or roughly forty percent of the sample, received some medical or psychiatric attention. Social and recreational needs were similarly addressed. In short, the program was a multifaceted, long-duration intervention.

Despite the huge investment of effort, time, and money, the results of the intervention were very disappointing. Compared to another control group of youngsters who were also at risk, but not in the program, the children who experienced the intervention were not less likely to commit juvenile offenses. Later, in adulthood, many of them committed crimes – roughly fifteen to twenty percent of them committed serious offenses against people or property, while over fifty percent of them committed minor offenses. Even those boys who exhibited unusually high motivation and a strong and sincere desire to succeed showed only minimal levels of improvement.

The results from the Cambridge-Somerville intervention study were an early sign and indication that a person's personality is resistant to change, even in the face of strong motivation or environmental influences. Many other research intervention programs have ultimately yielded similar results. Why then, do people spend millions of dollars each year on psychotherapy? According to Dr. Martin L. Cooper, a clinical psychologist at Princeton University, although psychotherapy may not be able to change a person's personality, to change personality, "it is effective in changing surface behaviors – behaviors that can lead individuals to function more effectively, but they may not be showing their true selves."

Interestingly, stable personalities have been found to be the rule for many significant figures throughout history. Dr. Marsha Schneider, a historian at the University of Chicago, has researched the personality of important historical figures. Her research is based largely on biographies and published interviews. In her article in the December, 2001 issue of *American Historian*, she reported that, "many significant figures in history displayed some elements of their key personality characteristics at an early age. These characteristics often served as a strong force to guide them through their life to achieve greatness."

She cited several examples, one being Mother Theresa. According to people who knew her as a child in the village where she was born, she often took care of other children, even those who were older than her.

Appendix H: Life Orientation Test – Revised

1. In uncertain times, I usually expect the best.
2. It's easy for me to relax. [Distracter]
3. If something can go wrong for me, it will. (R)
4. I'm always optimistic about my future.
5. I enjoy my friends a lot. [Distracter]
6. It's important for me to keep busy. [Distracter]
7. I hardly ever expect things to go my way. (R)
8. I don't get upset too easily. [Distracter]
9. I rarely count on good things happening to me. (R)
10. I expect more good things to happen to me than bad.

Appendix I: Rosenberg Self-Esteem Scale

1. I feel that I am a person of worth, at least on an equal plane with others.
2. I feel that I have a number of good qualities.
3. All in all, I am inclined to feel that I am a failure. (R)
4. I am able to do things as well as most other people.
5. I feel I do not have much to be proud of. (R)
6. I take a positive attitude toward myself.
7. On the whole, I am satisfied with myself.
8. I wish I could have more respect for myself. (R)
9. I certainly feel useless at times. (R)
10. At times I think I am no good at all. (R)

Appendix J: Self-Doubt Scale

1. When engaged in an important task, most of my thoughts turn to bad things that might happen.
2. For me, avoiding failure has a greater emotional impact than achieving success.
3. More often than not, I feel unsure of my abilities.
4. I sometimes find myself wondering if I have the ability to succeed at important activities.
5. I often wish that I felt more certain of my strengths and weaknesses.
6. As I begin an important activity, I usually feel confident in my ability. (R)
7. Sometimes I feel like I don't know why I have succeeded at something.
8. As I begin an important activity, I usually feel confident in the likely outcome. (R)

Appendix K: Locus of Control Scale

1. I can pretty much determine what will happen in my life.
2. To a great extent my life is controlled by accidental happenings. (R)
3. I feel like what happens in my life is mostly determined by powerful people. (R)
4. When I make plans, I am almost certain to make them work.
5. When I get what I want, it is usually because I'm lucky. (R)
6. I have often found that what is going to happen will happen. (R)
7. People like myself have very little chance of protecting our personal interests when they conflict with those of strong pressure groups. (R)
8. It's not always wise for me to plan too far ahead because many things turn out to be a matter of good or bad fortune. (R)
9. Getting what I want requires pleasing those people above me. (R)
10. I am usually able to protect my personal interests.
11. In order to have my plans work, I make sure that they fit in with the desires of people who have power over me. (R)
12. My life is determined by my own actions.

Appendix L: Achievement Goals Questionnaire – Revised

1. My aim is to completely master the material presented in my classes
2. I am striving to do well compared to other students.
3. My goal is to learn as much as possible.
4. My aim is to perform well relative to other students.
5. My aim is to avoid learning less than I possibly could.
6. My goal is to avoid performing poorly compared to others.
7. I am striving to understand the content as thoroughly as possible.
8. My goal is to perform better than the other students.
9. My goal is to avoid learning less than it is possible to learn.
10. I am striving to avoid performing worse than others.
11. I am striving to avoid an incomplete understanding of course material.
12. My aim is to avoid doing worse than other students.

Appendix M: Maximization Scale

1. When I am in the car listening to the radio, I often check other stations to see if something better is playing, even if I'm relatively satisfied with what I'm listening to.
2. No matter how satisfied I am with my job, it's only right for me to be on the lookout for better opportunities.
3. I often find it difficult to shop for a gift for a friend.
4. Renting videos is really difficult. I'm always struggling to pick the best one.
5. No matter what I do, I have the highest standards for myself.
6. I never settle for second best.

Appendix N: Lay Theories

1. You have a certain amount of intelligence, and you can't do much to change it. (R)
2. Your intelligence is something about you that you can't change very much. (R)
3. No matter who you are, you can significantly change your intelligence level.
4. To be honest, you can't really change how intelligent you are. (R)
5. You can always substantially change how intelligent you are.
6. You can learn new things, but you can't really change your basic intelligence. (R)
7. No matter how much intelligence you have, you can always change it quite a bit.
8. You can change even your basic intelligence level considerably.

Appendix O: General Self-Efficacy Scale

1. I will be able to achieve most of the goals that I have set for myself.
2. When facing difficult tasks, I am certain that I will accomplish them.
3. In general, I think that I can obtain outcomes that are important to me.
4. I believe I can succeed at most any endeavor to which I set my mind.
5. I will be able to successfully overcome many challenges.
6. I am confident that I can perform effectively on many different tasks.
7. Compared to other people, I can do most tasks very well.
8. Even when things are tough, I can perform quite well.

Appendix P: General Regulatory Focus Measure

1. In general, I am focused on preventing negative events in my life.
2. I am anxious that I will fall short of my responsibilities and obligations.
3. I frequently imagine how I will achieve my hopes and aspirations.
4. I often think about the person I am afraid I might become in the future.
5. I often think about the person I would ideally like to be in the future.
6. I typically focus on the success I hope to achieve in the future.
7. I often worry that I will fail to accomplish my academic goals.
8. I often think about how I will achieve academic success.
9. I often imagine myself experiencing bad things that I fear might happen to me.
10. I frequently think about how I can prevent failures in my life.
11. I am more oriented toward preventing losses than I am toward achieving gains.
12. My major goal in school right now is to achieve my academic ambitions.
13. My major goal in school right now is to avoid becoming an academic failure.
14. I see myself as someone who is primarily striving to reach my “ideal self”—to fulfill my hopes, wishes, and aspirations.
15. I see myself as someone who is primarily striving to become the self I “ought” to be—to fulfill my duties, responsibilities, and obligations.
16. In general, I am focused on achieving positive outcomes in my life.
17. I often imagine myself experiencing good things that I hope will happen to me.
18. Overall, I am more oriented toward achieving success than preventing failure.

Appendix Q: Tables

Table 1: Summary of Correlations (Study 5)

	Self-Ratings	Attainability	Similarity	Self-Esteem
Optimism	.39**	.39**	.32**	.42**
Self-Esteem	.55**	.32**	.23*	.59**
Self-Doubt	-.51**	-.35**	-.13	-.73**
Locus of Control	.31**	.26**	.13	.50**
Mastery-Approach	.44**	.35**	.40**	.11
Mastery-Avoidance	.05	.15	.14	-.02
Performance-Approach	.37**	.30**	.39**	.20
Performance-Avoidance	.14	.18	.26*	-.04
Maximization	.13	.29**	.16	-.05
Lay Theories	.31**	.25*	.06	.23*
Self-Efficacy	.40**	.35**	.34**	.36**
Promotion Focus	.46**	.50**	.41**	.25*
Prevention Focus	-.20*	-.09	.18	-.49**

** $p < .01$, * $p < .05$

Appendix R: Figures

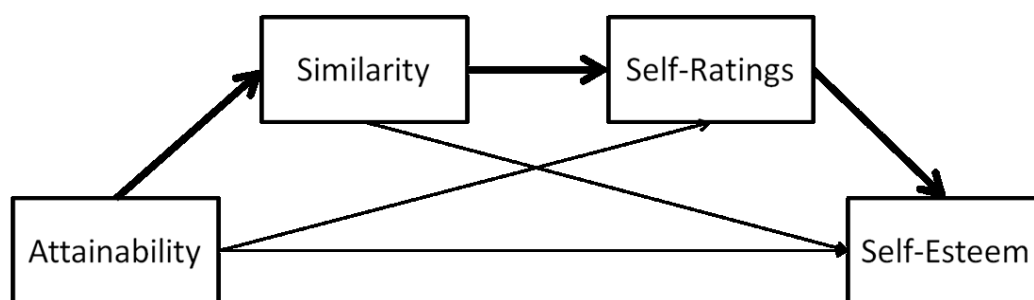


Figure 1. An indirect effect of attainability on state self-esteem was predicted to occur through changes to perceived similarity and self-ratings.

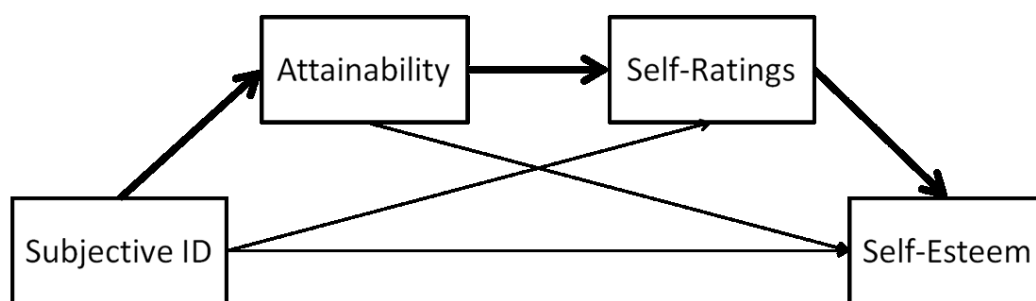


Figure 2. An indirect effect of subjective identification on state self-esteem was predicted to occur through changes to perceived attainability and self-ratings.