SELF-ESTEEM COLOURED GLASSES:

TOP-DOWN VERSUS BOTTOM-UP PROCESSING

IN HIGH AND LOW SELF-ESTEEM PEOPLE'S RESPONSES

TO POSITIVE SELF-DISCREPANT FEEDBACK

by

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Abstract

Although individuals with low self-esteem both receive and enjoy positive feedback, their global levels of self-esteem remain low over time. In hopes of shedding light on this puzzling state of affairs, this research examined how people with low and high self-esteem (LSEs and HSEs) respond to positive feedback. Fifty-four female participants received tailored feedback that they were high on a desired personality trait; HSEs and LSEs were matched on the self-discrepancy of the feedback. Via a "Think-Aloud" procedure, participants' thoughts were examined for the presence of "self-comparison" processes, as well as for their positivity versus negativity. Results indicated that, contrary to previous suggestions that HSEs and LSEs respond similarly to success, HSEs accepted the positive feedback to a greater extent than did LSEs. In addition, participants appeared to reach these conclusions through a deductive, "top-down" process, rather than by an inductive, "bottom-up" process. Implications for understanding the nature and maintenance of self-esteem, as well as for clinical interventions, are discussed.

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Dedication

I would like to dedicate this work to the memory of my aunt and godmother, Theresa Christine Mormul, whose life and death have had and continue to have a profound effect on me, my life, and my work.

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Introduction

People's global levels of self-esteem are quite stable over time, despite substantial short-term fluctuations (e.g., Brown, 1993a; Kernis, 1993). Research documenting such stability bodes well for individuals with high self-esteem (HSEs), but not for individuals with low self-esteem (LSEs). What keeps LSEs low in self-esteem? It has been shown that LSEs do believe that they have at least some positive attributes and abilities (Brown, 1993a; Pelham, 1993a), and clearly virtually all do encounter some positive feedback. Further, there is evidence that LSEs enjoy positive feedback and that they generally prefer positive feedback to negative feedback (Baumeister, Tice, & Hutton, 1989; Blaine & Crocker, 1993; Brown, 1993b; Swann, Pelham, & Krull, 1989). So the question becomes, if LSEs encounter positive feedback, and they enjoy it, why do their global levels of self-esteem stay low? It seems that LSEs somehow do not make use of these doses of positive feedback to achieve the levels of self-esteem that their HSE counterparts do. We speculated that this may be because LSEs are less likely to accept positive feedback than HSEs. In the present study, we examined this possibility, and we sought to uncover the mechanisms that may underlie such a differential acceptance of positive feedback.

Previous research concerning people's responses to feedback has focused largely on reactions to negative feedback. This research has shown that, in general, HSEs use self-serving biases to offset failure experiences, but that LSEs do not (e.g., Blaine & Crocker, 1993; Brown & Mankowski, 1993). For example, HSEs are more likely than LSEs to discredit negative feedback, attribute their failure to external causes, devalue the task or trait in question, derogate others, exaggerate the percentage of people who share their limitations, or compensate for the negative feedback by focusing on their strengths in other areas (e.g., Blaine

& Crocker, 1993; Brown & Mankowski, 1993; Wood & Dodgson, 1996). Less attention has been paid to reactions to positive feedback. Although positive feedback conditions are included in most studies, their primary role is to serve as comparison groups for the more central failure conditions. As a result, much less is known about the ways in which HSEs and LSEs respond to success feedback. An exception to this rule is the common finding that LSEs and HSEs do not differ in their affective reactions to positive feedback (e.g., Blaine & Crocker, 1993; Brown, 1993b; Shrauger, 1975; Swann et al., 1987). Some researchers have concluded from such results that LSEs and HSEs do not differ in their responses to success, but only in their responses to failure (e.g., Brown & Mankowski, 1993).

However, affective reactions may not be the end of the story. Many theorists have argued that affective reactions represent only the outcome of initial, minimal processing of feedback, and that more complex cognitive processing follows (e.g., Eisenstadt & Leippe, 1994; Epstein, in press; Jussim, Yen, & Aiello, 1995; Morling & Epstein, 1997; Swann, 1993). Indeed, several researchers have found that HSEs and LSEs do differ in their more cognitive reactions to positive feedback. Specifically, HSEs are more likely than LSEs to attribute positive outcomes to internal causes, to find positive feedback especially credible and accurate, and to feel that they have control over producing positive outcomes (Blaine & Crocker, 1993; Shrauger & Kelly, 1988; Shrauger & Rosenberg, 1970; Swann, Griffin, Predmore, & Gaines, 1987). Two studies support our speculation that HSEs are more likely than LSEs to accept positive feedback: Research by Shrauger and his colleagues found that HSEs are more likely than LSEs to accept favourable statements about themselves (Shrauger & Kelly, 1988), and to respond to positive feedback by increasing their self-ratings in the domain of feedback (Shrauger & Rosenberg, 1970). In the present study, we examined

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whether HSEs would come to accept positive feedback more than LSEs would, and we sought to understand the processes by which HSEs and LSEs reach their conclusions about feedback.

<u>Differentially Discrepant Feedback?</u>

One possible, if pedestrian, explanation for why HSEs may accept positive feedback to a greater extent than LSEs is that such feedback may be less self-discrepant and hence, more credible for HSEs than for LSEs. Virtually all studies of reactions to feedback have used feedback manipulations that deliver the same success feedback to all participants in the success condition (e.g., Wood, Giordano-Beech, Taylor, Michela, & Gaus, 1994). Although such manipulations seem to promise experimental control because they offer superficially identical feedback, they actually may not achieve the goal of delivering equal feedback to all participants (cf. Morling & Epstein, 1997), because participants with varying levels of self-esteem may not perceive the feedback as equally positive and self-discrepant. The two studies by Shrauger just discussed (Shrauger & Kelly, 1988; Shrauger & Rosenberg, 1970), however, were unusual in that they did explore this possibility, by virtue of examining pre-test self-ratings from participants in the feedback domain. These studies indicated that even when their pre-feedback self-views in the domain of feedback were equal, HSEs' reactions to the feedback were more positive than those of LSEs. In the present study, we went a step further by explicitly tailoring the positive feedback to individual participants to ensure that it was equally self-discrepant for HSEs and LSEs. Shrauger's findings suggest that the two self-esteem groups would differ in their acceptance of the positive feedback nonetheless. However, we delivered positive feedback on personality traits that participants had identified as truly self-discrepant. Participants were told that they possessed "Ideal-self" traits—traits they had said earlier that they wanted to possess but did not (cf. Eisenstadt & Leippe, 1994). Would HSEs come to

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accept such feedback more than LSEs?

<u>Self-Comparison Processes</u>

LSEs may accept positive feedback to a lesser extent than HSEs if the way that

feedback is processed results in different outcomes for them than for HSEs. A number of

theorists have proposed that when individuals receive new information about themselves, they

conduct some form of self-comparison to evaluate whether or not they should accept and

integrate that information (e.g., Eisenstadt & Leippe, 1994; Esses, 1989; Jussim et al., 1995;

Swann & Schroeder, 1995). These self-comparison theories suggest that people compare the

feedback with what they already know about themselves, to evaluate its plausibility and to

determine conclusions about it. However, it is not clear precisely how this process operates.

For example, Eisenstadt and Leippe (1994) suggest that when people receive feedback, they

automatically compare it with their Actual self-concepts (who they think they currently are),

their Ideal self-concepts (who they would like to be but are not), and their Rejected self-

concepts (who they would not like to be and are not), in search of a match for the feedback.

But how do people determine where this match lies? Do they compare the feedback with

specific experiences from their past, with their pre-existing summary judgments of their

attributes, or with their overall self-concepts?

Several perspectives can be generated that describe how a self-comparison process may

unfold. These perspectives vary in their emphasis on "bottom-up" versus "top-down"

processes. By "bottom-up," we refer to an inductive process, in which people consider

specific, concrete pieces of evidence in order to draw a broader conclusion. By "top-down,"

we refer to a more deductive process, whereby higher-level generalizations colour the

interpretation of specific pieces of information. Next we identify four perspectives on how

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people process feedback that differ in their focus on these two types of reasoning.

The Objective Bottom-Up Perspective

One possibility for how people process self-relevant feedback is that they take a purely bottom-up approach, evaluating new information about themselves in a methodical, objective fashion, akin to the way an impartial scientist evaluates data. That is, people may begin at the "bottom" by collecting and evaluating specific pieces of evidence from their past experience, with which they compare the new feedback. This evidence may entail, for instance, memories of behaviours relevant to the feedback (e.g., Locksley & Lenauer, 1981). For example, when a woman receives feedback that she is extraverted, she may recall times when she was outgoing at parties, times when others called her shy, and any other previous experiences related to her level of extraversion. She may then use such "evidence" as the basis for an objective decision about whether or not she is extraverted--perhaps by weighting and summing her level of extraversion in each experience, for instance.

The Motivationally Biased Bottom-Up Perspective

Another possibility is that people may conduct bottom-up evidence searches that are biased to support certain conclusions. For example, Kunda and her colleagues have found that people bias their memory searches to recruit memories that support a desired self-view (e.g., Kunda, 1990; Kunda & Sanitioso, 1989). In one study, Sanitioso, Kunda, and Fong (1990) found that when people were motivated to see themselves as either extraverted or introverted, they reported more memories for whichever trait had been described as desirable. Presumably they had selectively recruited memories to support the conclusion that they desired. For example, if led to believe that extraversion was desirable, a participant may have focused on the times she was outgoing, rather than shy.

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Such findings demonstrate what is known as a "self-enhancement" bias. Self-enhancement theories suggest that people are motivated by a desire to see themselves positively (e.g., Jussim et al., 1995; Shrauger, 1975; Swann et al., 1987). Thus, people motivated to self-enhance may bias their evidence searches towards supporting positive feedback. However, a biased evidence search could be driven by other motivations as well. According to "self-verification" (e.g., Swann 1983, 1990) and "self-consistency" (e.g., Jussim et al., 1995) theories, people are motivated to maintain their self-concepts out of a desire for predictability and control over their worlds, whether their self-concepts are negative or positive. LSEs may be particularly motivated to maintain their poor self-images because they may fear that they could not meet the heightened expectations that may be placed upon them if their self-image improved (e.g., Blaine & Crocker, 1993). They may also fear that adopting a better self-image would create a "set up" for later failure and disappointment (e.g., Blaine & Crocker, 1993; Pyszczynski & Greenberg, 1987; Tice, 1993). People motivated to self-verify may bias their evidence searches towards supporting feedback that would maintain their current self-views.

Although Kunda and her colleagues have demonstrated that people may bias their evidence searches to support a desired conclusion, they also found that people changed their self-concepts only to the extent that their prior self-knowledge would permit, according to a sort of "reality constraint." For example, even when motivated by a belief that introversion was desirable, people who previously saw themselves as very extraverted shifted their self-conceptions only a small degree towards introversion. Such studies support a central tenet of the perspectives incorporating bottom-up processes, namely that people's conclusions about feedback are constrained by the evidence they can recruit to support it. For example,

Eisenstadt and Leippe (1994) suggest that if people can find sufficient evidence to support

feedback on a domain they previously considered part of their Ideal-self, they will accept the

feedback and integrate it into their Actual self-concepts, but that if they cannot find sufficient

evidence, they will not accept the feedback.

The Domain-Specific Top-Down Perspective

In contrast to perspectives that focus on bottom-up evidence searches, "top-down"

perspectives suggest that people's conclusions about self-relevant feedback are reached

through deductive reasoning from more general self-knowledge. Research has shown that pre-

existing self-views may indeed colour responses to feedback. People's initial expectancies

about themselves affect their recall of and judgment of the credibility of feedback. For

example, feedback that is consistent with a person's view of his or her own competence is

better remembered than feedback that is inconsistent with that view (Shrauger, 1975). Self-

schemata, which represent information about one's personality and other aspects of self-

concept, appear to guide how people take in, remember, and make inferences about new self-

relevant information (e.g., Fiske & Taylor, 1984). For example, Markus (1977) found that

people based predictions for their future behaviour on their existing self-schemata, and were

resistant to accepting information inconsistent with those schemata. People who considered

themselves to be "independent," for instance, were resistant to feedback that they were

"conforming."

Moreover, research by Klein, Loftus, and their colleagues argues against the crucial

role that bottom-up perspectives assign to autobiographical memories in the establishment and

maintenance of self-views (e.g., Klein, Sherman, & Loftus, 1996). These researchers (and

others, e.g., Lord, 1993) have argued that self-knowledge about one's traits is not represented

by a collection of behavioural exemplars, but is stored in an abstract, summary form in memory. A series of studies investigated whether recalling specific behavioural exemplars of a trait stored in memory facilitated people's judgments about the self-descriptiveness of that trait. Results suggested that it did not; although behavioural exemplars influenced people's self-descriptiveness judgments under certain conditions (e.g., in a domain in which they had little experience), behavioural exemplars were never required to make such judgments (e.g., Klein & Loftus, 1993a, 1993b; Klein et al., 1996). Instead, individuals were able to evaluate the descriptiveness of a trait based only on self-knowledge at an abstract, semantic level.

These findings contradict the bottom-up view that people must recruit specific evidence from memory to assess the accuracy of self-relevant feedback. However, the studies by Klein et al. leave unclear whether the abstract knowledge that people use to make self-descriptiveness judgments is domain-specific, or is based on overall levels of self-esteem. That is, top-down processing may be driven by self-views in specific domains relevant to the feedback (cf. Markus, 1977), or by more global or abstract self-views (cf. Shrauger & Kelly, 1988). For example, when one receives feedback that one is extraverted, one's judgment about whether to accept that feedback may be based on one's prior beliefs about one's extraversion, or on one's global self-esteem. The former view--that feedback recipients consult summary judgments or self-schemata in the domain relevant to the feedback--is what we call the "domain-specific top-down" perspective.

The Global Top-Down Perspective

The view that people instead base their judgments about feedback on their overall self-esteem is what we refer to as a "global top-down" perspective. For example, Esses (1989) has suggested that feedback may be compared with general positive or negative views of the self

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stored in memory. Feedback that one is extraverted, for instance, would be evaluated for its match to one's overall self-concept, not to one's belief about one's extraversion in particular: Higher self-esteem would result in more favourable judgments of one's extraversion, and lower self-esteem would result in less favourable judgments.

A global top-down perspective concerning processing of feedback also follows from Brown's "top-down" view of self-esteem (Brown, 1993b; Brown & Dutton, 1995). Prior conceptions of self-esteem have portrayed it as the additive product of a number of evaluations of oneself in a variety of specific domains (see, e.g., Brown, 1993b; Pelham & Swann, 1989). For example, the belief that one has a number of positive attributes--say, that one is intelligent, attractive, and athletic--should produce a high level of global self-esteem. In contrast, Brown's top-down perspective suggests that the reverse is true: Self-esteem may determine the specific self-beliefs one holds. Thus, one would not have high self-esteem because one believes that one is intelligent, attractive, and athletic; rather, one would believe that one is intelligent, attractive, and athletic because one has high self-esteem. In addition, Brown (1993b) suggests that self-esteem is affectively rather than cognitively based--that self-esteem is an affective disposition towards the self that colours people's specific self-views. Brown's theory, when applied to the receipt of feedback, may suggest that global self-esteem guides processing of feedback in a less direct manner than Esses (1989) has proposed. Global self-esteem may influence the processing of feedback relevant to specific self-views via its determining effect on those self-views. For example, a woman's global self-esteem would colour her interpretation of how extraverted she is, which in turn would colour her interpretation of feedback that she is extraverted. Alternatively, perhaps global self-esteem may colour feedback directly, in the same manner as Brown suggests it colours specific self-

views.

Does one's global self-esteem or one's domain-specific self-view drive top-down reactions to feedback? Swann et al.'s research (1989) argues for the latter, at least in the realm of feedback seeking. They found that when people believed that they were going to receive feedback on a domain in which they felt weak, both HSEs and LSEs sought negative feedback—that is, they sought feedback consistent with their specific self-views, regardless of their global levels of self-esteem (Swann et al., 1989). These authors suggest that this finding is consistent with other "evidence that measures of specific self-views are better predictors of behaviour than are measures of global self-esteem" (Swann et al., 1989, p. 788). However, in contrast, Shrauger and colleagues' findings (described earlier) that HSEs and LSEs differ in their responses to feedback even when they do not differ on their pre-feedback self-views in the feedback domain support the global top-down perspective (Shrauger & Kelly, 1988; Shrauger & Rosenberg, 1970; Shrauger & Sorman, 1977). Furthermore, a recent study by Story (1998) found that individuals' memory for feedback was not predicted by the congruence of the feedback to their pretest self-ratings on the feedback dimension, but by the congruence of the feedback with their overall levels of self-esteem.

We have described these top-down perspectives in very cognitive terms. Based on the deductive nature of top-down processing (in which a conclusion is largely pre-determined), it seems unlikely that it would be susceptible to type of process-altering bias that we described in the context of bottom-up processing. Top-down processes could, however, operate in the service of motivations. Because these perspectives hold that one's pre-existing self-view (whether global or domain-specific) guides the processing of feedback, such processing would ultimately perpetuate one's pre-existing self-view. Hence, such processing would inherently

serve a self-verification motive. Whether such processing not only satisfies but is actually

driven by self-verification motives, however, is not clear. It is less plausible that top-down

processes would be driven by a self-enhancement motive for participants in the context of the

current study. Given that the positive feedback was explicitly tailored to be in a domain in

which specific self-views were negative, domain-specific top-down processing would fail to

successfully satisfy such motives. Self-enhancement motives could be met via a global top-

down process in the current study, but only for HSE, and not LSE, participants. However,

even in this case, it would again be unclear whether such processing not only serves but is

actually driven by self-enhancement motives.

Both bottom-up and top-down processes may represent unmotivated processes,

because much of human cognitive processing occurs at fairly automatic levels (e.g., Bargh,

1982; Epstein, in press; Gilbert, Giesler, & Morris, 1995; Higgins, 1987). A "motivated"

self-verification theory implies that LSEs do not improve their self-views after positive

feedback because at some level they do not want to. A more purely cognitive view implies that

LSEs are simply not able to improve their self-views because of the nature of their information

processing, regardless of whether they want to. Unfortunately, it is very difficult to empirically

examine the motivations that underlie the processing of self-relevant feedback, and to tease

them apart from unbiased cognitive processes (cf. Blaine & Crocker, 1993), and the current

research did not attempt to do so.

Self-Esteem and Bottom-Up versus Top-Down Processing

The four perspectives we have identified lead to different explanations for potential

differences between LSEs and HSEs in their responses to feedback. The context of the current

study allowed us to focus on certain possible explanations while ruling out others. We gave

HSE and LSE participants feedback that they were high on a trait they had identified as part of their Ideal-selves (therefore, a desirable but self-discrepant trait), and we ensured the feedback was equally self-discrepant for the two groups by matching them on their pretest self-ratings on the traits. Either bottom-up or top-down processing could operate in this context, and we did not favour either as being more likely to guide the processing of feedback. However, we did make predictions as to which type of bottom-up processing would be most likely to operate and which type of top-down processing would be most likely to operate.

Bottom-up predictions. The two perspectives incorporating bottom-up processes suggest that the degree to which people accept feedback is dependent on the amount of evidence that they can recruit to support it; if people cannot access enough memories to substantiate positive self-relevant feedback, they will not accept and incorporate that feedback into their self-concepts. If the objective bottom-up perspective is true, and people recruit and evaluate evidence in an unbiased fashion, HSE and LSE participants in our study would presumably recruit equal amounts of evidence to support the positive feedback, because they were equal in their initial beliefs of how much they possessed the traits. Hence, they would accept (or, more likely, reject) the feedback to an equal extent. Therefore, if our hunch was correct that HSEs would accept the positive feedback to a greater extent than LSEs, any bottom-up process would have to be biased. The evidence searches would have to have different outcomes for LSEs and HSEs if they reach different conclusions; specifically, LSEs must find less evidence to support the positive feedback than HSEs.

A biased evidence search that would lead LSEs to find less supportive evidence than HSEs could come about through several routes. However, one route that it could not involve is the motive to self-verify specific self-beliefs in the domain of feedback. That motive would

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lead both HSEs and LSEs to search for evidence to disconfirm the feedback, and hence reject it, because the feedback concerned a trait that both initially felt they did not possess. If a self-verification motive was involved, it would have to be the motive to verify global self-esteem. HSEs would be biased to find evidence to support the feedback, and hence to accept it, whereas LSEs would be biased to find evidence to disconfirm the feedback, and hence to reject it.

Another route toward the same biased search could even involve self-enhancement motives. If both HSEs and LSEs strive to self-enhance, they would be biased to find evidence to support the positive feedback. Moreover, given their initially equivalent self-views, the "reality constraints" (cf. Sanitioso et al., 1990) limiting such a bias would be equal for both groups. However, we believed that LSEs may be less adept than HSEs at conducting a biased search for supportive evidence. As Brown (1993b) points out, most life events are ambiguous and can be interpreted in many ways, and HSEs appear to be more adept at identifying and adopting interpretations that are conducive to feelings of self-worth. In contrast, although LSEs value outcomes that build their self-esteem, they have low expectations that they are capable of producing such outcomes (Brockner, Wiesenfeld, & Raskas, 1993). LSEs have been characterized as "the little engine that can but won't," because they tend to underestimate their capabilities (Heatherton & Ambady, 1993). Just as HSEs use a variety of self-serving strategies after failure, whereas LSEs tend to be even-handed or even self-depreciating (e.g., Blaine & Crocker, 1993; Brown & Mankowski, 1993), HSEs may be more able to recruit and interpret past experiences as supportive of positive feedback, whereas LSEs may be handicapped in such efforts. Thus, either a motive to self-verify global self-views, or a self-enhancement striving that LSEs are simply less adept at satisfying, could give rise to biased

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bottom-up evidence search processes that would lead HSEs to accept positive feedback to a greater extent than LSEs.

Top-down predictions. Top-down perspectives focus on self-views rather than evidence searches as the key to understanding how HSEs and LSEs draw conclusions about positive feedback. In our study, because HSE and LSE participants were matched on the positivity of their self-views in the domain of feedback, they did not differ in their domain-specific self-beliefs. Given that the feedback traits were part of participants' Ideal-selves (traits they wished to possess but did not think they did), the domain-specific top-down perspective would predict that both LSEs and HSEs would reject the feedback, and to an equal extent. Thus, again, if our prediction was correct that HSEs would accept the feedback to a greater extent than LSEs, any top-down influences in this context must come from global self-esteem. This global top-down perspective would predict that LSEs' relatively negative self-concepts would lead them to draw negative conclusions about the feedback, whereas HSEs' more positive self-concepts would allow them to draw positive conclusions about the feedback. Therefore, we expected that, if a top-down process guides the processing of feedback, it would operate in accordance with the global top-down perspective: HSEs would accept the feedback to a greater degree than LSEs despite being matched on their domain-specific self-views.

To summarize, the current study evaluated whether the processing of self-relevant feedback is guided by primarily top-down or bottom-up influences, in hopes of coming to a better understanding of why LSEs may be less able than HSEs to accept and benefit from positive feedback. We predicted that if a bottom-up process operates, it would do so in accordance with a "biased bottom-up" perspective. LSEs would be less able to accept positive feedback because they would find less evidence to support it than HSEs. If a top-down

process operates, we favoured a "global" top-down perspective, and predicted that LSEs would not accept positive feedback to the same extent as HSEs because their poor self-concepts would not permit them to.

Previous Studies

Our prior research in this area strongly influenced the design of the present study. In previous studies, we have focused exclusively on the evidence search phase of responses to positive feedback. For example, in one recent study, we compared the ability of HSEs and LSEs to recruit memories in support of Ideal and Actual-self traits after receiving feedback on one of these dimensions (MacLeod & Wood, 1997). This study used a two-study paradigm (modeled after that used by Sanitioso et al., 1990) in which female participants first received bogus feedback that they were high on a trait they had identified in pre-testing as part of either their Ideal or Actual-selves. In a supposedly separate study, they were then asked to recruit memories relevant to their standing on an Ideal-self trait and an Actual-self trait (order was counterbalanced), again drawn from their pre-testing self-descriptions--thus, one of these traits matched the feedback domain. After listing memories, participants rated each one for the degree to which it supported their possession of the trait.

These memory ratings were analyzed as the dependent measure to test our prediction (among others) that LSEs would find less support for their Ideal-self traits than would HSEs. However, findings revealed a complex and difficult to interpret four-way interaction of self-esteem, feedback, the type of trait (Ideal or Actual), and the order in which the memory task was presented (recalling memories for Ideal-self trait first or Actual-self trait first). Furthermore, an important confound emerged: Participants differed on the degree to which they felt they possessed their Ideal-self traits at pre-testing. Specifically, LSEs reported that

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they possessed their Ideal-self traits to a lesser degree than did HSEs. When these pre-testing ratings were entered first into regression analyses, they predicted participants' memory ratings, and none of the other predictors were significant. Thus, this confound provided a very plausible alternative explanation for any self-esteem differences seen in the study.

These findings influenced the design of the current study in two main ways. First, the confound in our results clearly demonstrated the importance of controlling for participants' baseline perceptions of their standing on the feedback domain--that is, of equating the self-discrepancy of the feedback for HSEs and LSEs. Second, the complexity of the results, as well as leading us to consider possibilities other than bottom-up evidence searches, also prompted us to explore a more direct and open-ended examination of how people think after receiving positive feedback about themselves. We elaborate on each of these issues below.

The Current Study

We examined our bottom-up and top-down hypotheses by providing participants with a more spontaneous, open-ended response format than has been employed previously. Rather than administering feedback and then looking only at the outcomes of participants' thought processes, such as self-ratings on traits relevant to the feedback, we also attempted to tap into their thoughts via a "Think-Aloud" procedure: Participants spoke aloud into a tape recorder following the feedback manipulation. Would self-comparison processes be evident in their thoughts? Such processes may operate beyond awareness, so may not be expressed. We examined whether participants considered bottom-up evidence such as memories of their previous experiences relevant to their Ideal-self trait, and whether participants engaged in top-down considerations of their self-concepts. We also examined the positivity versus negativity of their thoughts—whether the evidence or the aspects of their self-concepts they considered

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supported or refuted their possession of their desired trait. Based on HSEs' tendency to use self-serving strategies more often than LSEs (e.g., Blaine & Crocker, 1993), we predicted that HSEs would engage in more positive and self-serving thinking than LSEs.

A comparison group also engaged in a Think-Aloud procedure; they were asked to muse about an Ideal-self trait without having received feedback on it. This unusual context allowed us to examine the conditions under which a self-comparison process is triggered. Theorists who have posited self-comparison processes have described them as a consequence of feedback (e.g., Eisenstadt & Leippe, 1994; Esses, 1989; Swann & Schroeder, 1995), but we wondered whether simply thinking about a self-discrepant trait would be enough to trigger a self-comparison process. Ideal-self traits are likely to figure prominently in people's thoughts in daily life, and people may attempt to evaluate their standing on them frequently. Hence, explicit feedback may not be required to trigger self-comparison. Furthermore, we wondered whether explicit feedback would have effects on thoughts, mood, and conclusions that differed from the effects of simply thinking about the trait. It is possible that HSEs do not require feedback to come to believe they possess a desired trait; perhaps a self-comparison process is enough.

The present study also used a more idiographic approach to feedback manipulation than has often been used in the past, as has been advocated (in theory) by a number of researchers (e.g., Higgins, 1987; Morling & Epstein, 1997; Pelham, 1993b; Pelham & Swann, 1989; Story, 1998). Our method of individually tailoring feedback ensured not only that feedback was truly self-discrepant for each individual and equally self-discrepant for HSEs and LSEs, but also that it was in a domain of personal importance for all participants (cf. Higgins, 1987; Pelham & Swann, 1989).

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Method

Pretest Phase

Approximately one month before the beginning of the study, University of Waterloo (UW) undergraduates enrolled in an introductory psychology course completed a package of psychological measures, for which they received extra credit towards their course grade. Included in this mass testing package was the Self-Rating Scale (SRS; Fleming & Courtney, 1984), a 36-item self-esteem measure based on the Feelings of Inadequacy Scale (Janis & Field, 1959). The SRS has been shown to have high reliability, with a test-retest coefficient of .82 and internal consistency (alpha) of .92 (Fleming & Courtney, 1984). Validity data support its use as a measure of global self-esteem (Blascovich & Tomaka, 1991).

Also included in this package was a "Self-Description Questionnaire" (SDQ) modeled after one used by Eisenstadt and Leippe (1994). Students were given a list of 77 personality traits. From this list, they were asked to choose the five traits that best described their "Actual self," defined as traits that "accurately describe how you see yourself at the present time." The students were then asked to choose the five that best described their "Ideal-self," defined as traits that "best describe how you would ideally like to be, but currently are not." After listing five traits for each of the Ideal and Actual selves, the students were asked to go back and give each of these 10 traits a rating on two scales: a rating from 1 to 10 of how much they currently felt they possessed the trait, and a rating from 1 to 10 of how important they considered the trait. On these scales, "1" represented not possessing the trait/not considering it important, and "10" represented possessing the trait a great deal/considering it very important.

Participants and Design

Only students who scored in the top and bottom 30% of the SRS distribution were eligible to participate. Of the 54 participants recruited, 26 were considered to be LSE ($M =$ 111; range = 62 to 132), and 28 were considered to be HSE ($M = 184$; range = 166 to 226). Participants also had to have a trait on the SDQ that met our criteria for an "Ideal-self" personality trait. Specifically, the trait had to have been rated as a "6" or greater in importance, and as a "5" or less on perceived degree of possessing the trait. Among participants who met these criteria, participants and traits were chosen such that HSE and LSE participants were matched for the degree to which they rated themselves as possessing the trait. Participants were not matched on their ratings of the importance of the trait. After cancellations of two LSE participants, new matches were not found for the remaining two HSE participants, resulting in the uneven number of LSE and HSE participants in the study.

The mean age of participants was 19.7 years, with a range from 18 to 37 years. To simplify the design of the study, only female participants were selected. Participants were recruited by telephone. They received extra credit towards their course grade for participation.

HSE and LSE participants were randomly assigned to either an "Ideal-feedback" or a "no-feedback" condition, resulting in a two (HSE versus LSE) by two (Ideal-feedback or no-feedback) experimental design.

Procedure

Participants were run through the study individually by one female experimenter. Upon arrival at the lab, participants were seated at a table with a computer, and the experimenter explained that research was being conducted on the "Maxwell Personality Inventory" ("MPI;" in truth, a bogus inventory), which was described to be a very reliable, valid, and widely-used personality inventory. Participants were told that normative data were being collected on UW

students' profiles on the MPI so that the personalities of students in different faculties could be compared, and that a second aim of the study was to examine peoples' reactions to the inventory itself. The experimenter explained that, after participants completed the MPI on the computer, they would complete a "Think-Aloud" task and fill out a number of questionnaires concerning their reactions to the task. Participants in the no-feedback condition were informed that due to the research nature of the setting, the researcher was not permitted to provide the participant's scores. Participants in the Ideal-feedback condition were informed that due to time constraints and the detailed nature of the MPI profiles, it would not be possible to give them their entire profiles, but that the computer would randomly select one subscale on which their score would be provided.

The computer-administered "MPI" consisted of 60 questions requiring true/false responses, presented one at a time. Upon completion of the last item, participants in the Ideal-feedback condition saw a screen asking them to wait while their score was computed. After a few seconds' delay, they were then given a bogus percentile score, ostensibly on a randomly-chosen "subscale" of the inventory. In fact, each of these participants was told that they had scored in the 89th percentile on the personality trait earlier chosen from their "Ideal-self" list.

Next, all participants were told about an upcoming "Think-Aloud" task. Participants in the Ideal-feedback condition were told the task would focus on the personality trait they had just received feedback on; those in the no-feedback condition were told that they had been randomly assigned a trait to focus on, and were then given what was in truth the "Ideal-self" trait earlier chosen for them. At this point, the experimenter ostensibly noticed that she had run out of copies of the materials needed to proceed. She left the room, creating a four-minute delay designed to allow time for the feedback to "sink in" (cf. McGuire & McGuire, 1996).

Upon returning, the experimenter completed the instructions for the task.

It was explained that the Think-Aloud task would entail participants verbalizing their thoughts into a tape recorder. The instructions for the task included an explanation that "We're interested in people's real-life, personal reactions and thoughts about the personality traits that the inventory gives feedback on," and that it had been found previously that people were able to give more spontaneous responses orally than in writing. Participants were encouraged to avoid organizing or censoring their thoughts. The following is an excerpt from the oral instructions that the experimenter gave:

> We'd like you to . . . muse and ponder about that trait, and any information you just
>
> got about yourself on it, how it applies to you in your life, and so on. As you're
>
> thinking, we'd like you to simply say things out loud as you're thinking them. An
>
> important part of this is that we want to know about how people naturally think, so we
>
> don't want you to worry about . . . organizing or monitoring your thoughts - we just
>
> want you to "spit them out" as they come to you . . ..

Participants were assured that their responses would be entirely anonymous and confidential. The experimenter then pushed the record button on the tape recorder, and left the room. Participants notified the experimenter when they had completed the task. The time spent on the task was left to the participant's discretion, and participants spent an average of five minutes "thinking aloud." When their narratives were later transcribed, the average length of the transcripts for all participants was 22.3 lines of text (for HSEs, $\underline{X}$ = 21.0, for LSEs, $\underline{X}$ = 22.3).

Following the "Think-Aloud" task, a number of self-report measures were administered. The first was the Brief Mood Introspection Scale (BMIS; Mayer & Gaschke,

1988), a 16-item mood measure based on the Mood-State Introspection Scale (MIS; Mayer, Mamberg, & Volanth, 1988). The BMIS has been shown to have two independent factors: a Pleasant-Unpleasant dimension, and an Arousal-Calm dimension. These subscales have been found to have moderately adequate to adequate reliability (Cronbach's alpha = .83 and .58, respectively), and good factorial validity (Mayer & Gaschke, 1988). In accordance with the author's recommendations (Mayer & Gaschke, 1988; personal communication, 1997), a 7-point response scale was used in place of the original 4-point scale in an attempt to improve the reliability of the Arousal-Calm subscale. The original scale used the following anchors at points 1 to 4, respectively: definitely do not feel; do not feel; slightly feel; definitely feel. These anchors were spaced 2 steps apart in the modified format used in this study. Internal consistency of the Pleasant-Unpleasant scale was good in our sample, as in previous research (Cronbach's alpha = .81). However, internal consistency for the Arousal-Calm scale remained only moderately good in our sample (Cronbach's alpha = .57). Subscale scores were computed for each participant on the two subscales; these subscales were also largely independent in our data, $r = .08$, $N = 52$.

Following the mood measure, participants filled out a questionnaire that was designed to introduce an increased level of "prompting" in its inquiry into the nature and outcome of participants' "self-comparison" processes, in comparison to the largely un-prompted Think-Aloud task. The questionnaire first asked participants to make several ratings on 10-point scales. In all cases, "1" indicated the low end of the scale (e.g., do not possess trait) and "10" the high end (e.g., possess trait a great deal). The exact questions, in the order given, were as follows:

(in Ideal-feedback condition only) How well does your score on the one subscale of

the MPI "fit" with your perception of your standing on that trait?

Considering the trait that you were just thinking about, how much do you think you possess that trait at the current time?

How certain do you feel of the rating you just gave of how much you possess that trait?

How important to you is the trait you have just been thinking about?

Next, two questions aimed to measure participants' "meta" level of awareness of performing the type of evidence search hypothesized by bottom-up perspectives:

When you were thinking about the trait and how it applies to you, did you find yourself thinking about ways in which you possessed the trait, times in the past that you have demonstrated the trait, etc.?

When you were thinking about the trait and how it applies to you, did you find yourself thinking about ways in which you did not possess the trait, times in the past that you have demonstrated not having the trait, etc.?

If you did think about ways in which you possessed the trait, how difficult was it to think of times that you demonstrated it in some way?

Following these questions was an open-ended question that asked participants to think about specific, concrete evidence relevant to how much of the trait they felt they possessed, and to list examples of such behaviour or events. These examples were listed in point form.

Upon completion of these measures, participants were probed for suspicion before they realized that the experiment was over, following procedures suggested by Aronson and Carlsmith (1968). Although it was not uncommon for participants in the Ideal-feedback condition to express surprise at their "scores" on the MPI, no participant expressed doubt

about the veracity of the feedback. Those participants who maintained that the feedback did not seem accurate to them considered other explanations for the inaccuracy (e.g., something about how they had answered the questions), and did not indicate any suspicion that the feedback might be bogus. The debriefing that followed this included a "process debriefing" (Ross, Lepper, & Hubbard, 1975), which emphasized the importance of understanding the false nature of the feedback. Participants agreed not to discuss the experiment with other potential participants, were thanked for their participation, and excused.

<center>Results</center>

Participants' Mass Testing Ratings of Traits

We examined whether HSE and LSE participants were matched successfully on their mass testing ratings of how much they possessed the Ideal-self trait selected for them. As expected, a t-test indicated that the mean rating for HSEs ($\underline{M}$ = 3.93, $\underline{sd}$ = 1.02) did not differ significantly from the mean rating for LSEs ($\underline{M}$ = 3.73, $\underline{sd}$ = 1.00), $\underline{t}(52)$ = -.72, $\underline{p}$ = .48.

Participants' mass testing ratings of how important the trait was were also examined. As described earlier, traits used in the study were all rated as a 6 or higher in importance, but participants were not matched on this variable. A t-test indicated that at the time of mass testing, LSEs rated the traits as significantly more important ($\underline{M}$ = 8.96) than did HSEs ($\underline{M}$ = 7.82), $\underline{t}(52)$ = 3.27, $\underline{p}$ = .002, which may reflect HSEs' tendency to downplay the importance of attributes that they do not possess (Blaine & Crocker, 1993; Brown & Mankowski, 1993). To rule out the possibility that this pre-test difference might account for results found in the study, we included this variable as a covariate in all major analyses reported below. Virtually all effects that emerged remained the same regardless of whether the covariate was included; therefore, analyses without this covariate are reported. The few instances in which inclusion of the covariate resulted in small changes in the results will be indicated as they are reported.

Acceptance of Ideal-Self Trait

Next we examine our prediction that HSEs would be more likely than LSEs to accept the Ideal-feedback. Two measures administered after the Think-Aloud task address this prediction. First, participants in the Ideal-feedback condition rated how well the Ideal-feedback "fit" with their own perceptions of their standing on the trait ($\underline{n}$ = 27). A t-test supported our prediction, revealing that HSEs rated their Ideal-self trait feedback as fitting

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significantly better ($\underline{M}$ = 5.71) than did LSEs ($\underline{M}$ = 3.77), $\underline{t}(25)$ = -2.17, $\underline{p}$ = .04. Second, HSEs also reported that they possessed the trait to a greater extent than LSEs. "Possess" ratings were analyzed in a repeated-measures ANOVA with a repeated factor of time (mass testing or post-feedback manipulation), and between-subjects factors of self-esteem and feedback. Main effects of self-esteem, $\underline{F}(1,50)$ = 6.41, $\underline{p}$ = .015, and time, $\underline{F}(1,50)$ = 56.13, $\underline{p}$ < .001, were qualified by a significant interaction of time and self-esteem, $\underline{F}(1, 50)$ = 4.13, $\underline{p}$ = .048, which is presented in Table 1. Possess ratings were higher after the feedback manipulation than at mass testing for both HSEs and LSEs ($\underline{F}(1,26)$ = 45.74 and $\underline{F}(1,24)$ = 14.85, respectively, in simple effects analyses, $\underline{p}$ <.001 for both), but this was especially so for HSEs. Simple effects analyses indicated a main effect of self-esteem on possess ratings after the feedback manipulation, $\underline{F}(1,50)$ = 6.63, $\underline{p}$ = .013.

Table 1

Mean "Possess" Ratings at Time of Mass Testing and In Lab as a Function of Self-Esteem

	Mass Testing	In Lab
Low Self-Esteem	3.7	5.3
High Self-Esteem	3.9	6.7

Note. Ratings were made on a 10-point scale, with higher ratings indicating a higher degree of possession.

Thus, although HSEs and LSEs did not differ in their possess ratings at mass testing, HSEs rated themselves as possessing the trait significantly more than did LSEs after the feedback manipulation. Notably, there were no effects of feedback on possess ratings; participants came to believe that they were higher on their Ideal-self traits than they had

previously thought whether they were told that they were or had merely mused aloud about that trait, and this was especially true of HSEs. However, as we will describe, feedback did have effects on other measures.

"Think-Aloud" Responses

How did participants reach these conclusions concerning their standing on their Ideal-self traits? We now examine participants' tape-recorded responses to the Think-Aloud task, which were transcribed verbatim. These transcripts were coded by two independent coders, blind to self-esteem of participants. As far as possible, coders also were blind to feedback condition. However, many participants in the Ideal-feedback condition made specific reference to their scores from the "MPI," thereby revealing their condition. Responses were coded for instances of the categories listed below. A number of other categories were initially included, but were removed as a result of non- or rare occurrence. To examine inter-rater agreement, we correlated the two coders' frequencies for each category on a random sample of 14 participants (25.9%).[1] These correlations were typically quite high, and are reported in parentheses for each category below. Means and standard deviations for each category, as well as the intercorrelations of the categories, are presented in Appendix A.

A number of the categories reflected the types of thoughts one would expect to see from perspectives incorporating a "bottom-up" component, because they involved consideration of various types of evidence relevant to participants' standing on the trait.

Previous Experience "For" the Trait: Any reference to previous specific or general life experiences that indicate possession of the Ideal-self trait in question. ($r = .79$) (e.g., [trait in question is "bold"] "Pretty well any situation if there's something to be said, I will say it.")

Previous Experience "Against" the Trait: Same as above, but indicating the absence of the

trait, or arguing against possession of the trait. ($r = .79$)

Social Comparison: Any social comparison made, either to a specific other or to others in

general; coded as "Upward/negative" or "Downward/positive." (for "Upward," $r =$

.90, for "Downward," $r = 1.0$) (e.g., "they just seem to be more outgoing to me than

what I am, I didn't think I was as outgoing as they were" (upward))

Feedback From Others about the Trait: Any mention of feedback or comments received from

others with respect to the Ideal-self trait; coded as "Positive" or "Negative." (both $rs =$

1.0) (e.g., "maybe I am a bit warm, . . . I've had people tell me that")

Comparison With the Prototype: Any comparison made of the self to a previously described

prototype/typical person possessing the trait. Originally categories were included for

both upward and downward comparisons. However, as only one participant made a

downward comparison with a prototype, it was dropped and only the "Upward"

category was included in analyses. ($r = 1.0$)

Other categories were relevant to the more "top-down" perspectives, because they

reflected considerations of various aspects of participants' self-views. It is notable that

participants tended to tie their self-concept reflections to specific traits, rather than to make

statements about their global self-esteem or self-worth.

Self-Concept on Trait - "For": Any statement indicating a belief that she (the participant)

possesses the Ideal-self trait. ($r = .84$) (e.g., "Uh, I believe I'm a fairly self-confident

person")

Self-Concept on Trait - "Against": Any statement indicating belief that she does not possess

the Ideal-self trait. ($r = .94$) (e.g., "I never really think of myself as being that

confident")

<u>Self-Concept on Related Trait:</u> Any statement of self-concept with respect to a trait related to

(but not the same as) the Ideal-self trait; coded as "<u>Positive</u>" or "<u>Negative.</u>" (for

"Positive," $r = .98$, for "Negative," $r = .68$)

<u>Description of Change:</u> Any reference to change in the amount of the trait she feels she

possesses; originally coded as positive (describing increasing possession of the trait) or

negative. However, because only one participant described a negative change (decrease

in amount of the trait possessed), the negative category was dropped. ($r = 1.0$) (e.g.,

"Ever since I got into a serious relationship . . . I think I've become a lot more social,

outgoing")

<u>Reflected Appraisal:</u> Any reference to how she thinks/believes others see her; i.e., her

perceptions of how others see her with respect to the trait or a related trait (as opposed

to actual feedback received from others); coded as "<u>Positive</u>" or "<u>Negative.</u>" (both rs

$= .68$) (e.g., ". . . I might be perceived as more cold than warm . . .") We considered

this category to be relevant to top-down perspectives because reflected appraisals tend to

be projections of people's own self-views rather than accurate perceptions of how others

see them (Felson, 1989; Jussim et al., 1992; Shrauger & Schoeneman, 1979; Story,

1998).

Finally, a number of other categories were not anticipated by our interest in bottom-up

and top-down perspectives, but simply emerged from the data.

<u>Importance/Value of Trait:</u> Any reference to or evaluation of the importance or value of the

Ideal-self trait; coded as "<u>Positive</u>" (indicating that the trait is seen as important or

valuable) or "<u>Negative</u>" (indicating that the trait is seen as unimportant or of negative

value). ($\underline{r}$ = .93 and $\underline{r}$ = .89, respectively) (e.g., [after naming trait] "I feel it plays an important role in everyday life basically")

External Explanation for Feedback: (relevant to participants in Ideal-feedback condition) Any reference to an explanation for the score received on the "MPI" that draws on sources external to the degree to which they possess the trait. ($\underline{r}$ = 1.0) (e.g., ". . . I wished there was a middle way for the questions instead of it being true or false, because some of the questions were a bit puzzling to me; I guess that's why I received such a high percentage")

Association with Others who Possess Trait: Any reference to or description of others with whom she is closely associated who possess the trait. ($\underline{r}$ = 1.0) (e.g., "[name], my friend, she was a great non-conformist")

Characteristics of Prototype: Any mention of positive or negative characteristics as part of a "prototype" of the trait or someone who possesses the trait; each "characteristic" coded as "Positive" or "Negative." ($\underline{r}$ = .98 and $\underline{r}$ = .68, respectively) (e.g., "Complimentary people are very nice people. they like to make people feel good about themselves, . . . they're not rude to others, they don't brag about themselves")

Subtyping Trait: Any clear reference to or description of specific subtypes (usually two) of the trait. (e.g., "I'm probably a non-conformist more in my uh ambitions and goals than the way I appear or speak or act to other people . . ." [goes on to elaborate "mental" versus "social" non-conformists]) Such instances originally were coded as either "self-serving" or "self-defeating" based on the apparent outcome of the subtyping for the participant's view of self. However, because only one participant received a code for "self-defeating" subtyping, this category was dropped. ($\underline{r}$ = 1.0)

<u>Importance of Subtype:</u> Any statement(s) asserting the greater value/importance of one of the previously defined subtypes over another. Originally these were to be coded as either "self-defeating" or "self-serving," but the self-defeating category was never observed, so was dropped. The "self-serving" category was seen in the responses for 3 participants; agreement between coders for these three occurrences was perfect.

<u>No Self-Reference:</u> A code was given for any participant who made no specific reference to herself throughout her entire response. Agreement between coders for this category was perfect.

In addition to this coding of "counts" for various categories, the Think-Aloud responses also were rated by both coders on five more global, impressionistic dimensions. Each participant was given a score from 1 to 5 on each of the scales listed below. Again, correlations between raters were computed for a random sample of 14 (25.9%) of the participants, and are reported in parentheses below.

<u>Positivity:</u> A rating for how positive the participant's attitude/feelings toward herself seemed to be. Rated as <u>very negative</u> (1) to <u>very positive</u> (5). ($r = .76$)

<u>Acceptance of Trait:</u> An overall rating of how much the participant seemed to accept that she possessed the trait. Rated as <u>not at all</u> (1) to <u>completely</u> (5). ($r = .83$)

<u>Clarity/Wavering, or Coherence:</u> A global rating of how clear and coherent the participant seemed on her self-concept with respect to the trait, as opposed to how much she "wavered" about whether she possessed the trait. Rated as <u>very unclear</u> (wavered a great deal, etc.) (1) to <u>completely clear and certain</u> (5). ($r = .89$)

<u>Positivity of Prototype:</u> This scale was rated only for participants who had described a prototype of the trait in question. An overall rating of how positive the prototype was.

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Rated as <u>very negative</u> (1) to <u>very positive</u>, to the point of being "perfect" or unattainable

(5). ($r = 1.0$)

<u>Self-Serving/Self-Defeating:</u> An overall rating of how self-serving versus self-defeating the

participant was in her thinking about the trait. Rated as <u>very self-defeating</u> (1) to <u>very</u>

<u>self-serving</u> (5). ($r = .81$)

<u>Analyses of "Think-Aloud" Responses</u>

Perspectives incorporating a "bottom-up" component predicted that participants would

examine specific "evidence" with respect to their Ideal-self trait. If they did so, we predicted

that LSEs would come up with less evidence to support their trait than would HSEs. The

"global top-down" perspective predicted that participants would be influenced by their overall

self-concepts and self-esteem. If this was true, HSEs may make more positive statements

about their self-esteem and self-concepts than LSEs. To explore these questions and

hypotheses, we examined conceptual groupings of the coding categories to address the

bottom-up and top-down perspectives.

When combining individual categories into groupings to examine our hypotheses, we

did not take the traditional approach of using factor analysis to identify clusters of covarying

categories[2]. We did not believe that individuals who have one type of thought also necessarily

have other thoughts within that grouping, as a factor analytic approach assumes. For example,

individuals may differ in the type of evidence they consider with respect to a trait, with some

people focusing on social comparisons and others focusing on feedback from others. Instead,

we grouped categories based on their apparent functional equivalence from a conceptual basis,

because that was more appropriate to our questions. Our interest was in examining the effects

of engaging in any type of thought or combination of thoughts within each grouping—for

example, the effects of considering any of a variety of forms of evidence with respect to the trait. This approach is consistent with that advocated by Bollen and Lennox (1991) for situations in which the construct to be studied is the emergent product of the specific components being measured, rather than the underlying cause of each component. For such constructs, the indicators of the construct should not necessarily be expected to display internal consistency. Other researchers also have taken a similar approach (e.g., Woody, Drugovic, & Oakman, 1997).

Thus we formed three conceptual groupings from the individual coding categories: (1) consideration of specific "evidence" with respect to the trait, (2) consideration of aspects of one's self-concept, and (3) attempts to define the trait. We examine the groupings one by one[3].

Specific evidence. The first conceptual grouping addresses the bottom-up view that people consider specific evidence from their past experiences when they evaluate whether they possess a trait. Consistent with this perspective, participants did consider several types of evidence with respect to their standing on their Ideal-self trait: previous experiences with respect to the trait (positive or negative), feedback received from others with respect to their standing on the trait (positive or negative), and comparisons of themselves with others (positive or negative), or with a prototype of the trait (negative only). We summed these categories to form two composite scores reflecting the amount of positive and negative evidence, respectively, that participants considered, and entered them into a repeated-measures ANOVA, with a repeated factor of positive/negative and between-subjects factors of self-esteem (high or low) and feedback (none or Ideal). A main effect of the repeated factor, $F(1,50) = 4.80$, $p = .033$, indicated that all participants considered more negative ($M = 2.07$)

than positive ($\underline{M}$ = 1.54) evidence with respect to their Ideal-self traits. This result makes

sense, because participants had identified the Ideal-self trait as one they did not possess;

hence, their past experiences and feedback should dispute their possession of the trait, rather

than support it. There were no other significant effects. Thus, consistent with perspectives

incorporating bottom-up processes, participants did consider evidence with respect to their

standing on the Ideal-self trait. However, contrary to our prediction, LSEs did not garner less

evidence to support possession of their Ideal-self traits than did HSEs.

Domain-related self-concept. If HSEs and LSEs did not differ in the specific evidence

that they considered for their Ideal-self traits, did they differ in their considerations of their

self-concepts, as top-down perspectives would predict? The answer is yes. Although

participants did not make direct statements about their overall levels of self-esteem, they did

express thoughts about various aspects of their self-concepts. The categories summed in this

second conceptual grouping were: self-concept on trait, self-concept on related trait,

"reflected appraisals" (all positive/negative), and positive change (positive). Again, positive

and negative composite scores were formed by summing these categories, and were analyzed

in a repeated-measures ANOVA with a repeated factor of positive/negative and between-

subjects factors of self-esteem and feedback. On this "domain-related self-concept" composite,

a significant interaction of self-esteem and positive/negative emerged, $\underline{F}(1,50) = 4.38$, $\underline{p} = .041$.

Means are presented in Table 2. To examine simple effects, we ran separate repeated-

measures ANOVAs for each self-esteem group (Howell, 1997). Consistent with top-down

perspectives, these analyses indicated that LSEs made more negative than positive statements

about their self-concepts in domains related to their Ideal-self traits, $\underline{F}(1,24) = 8.04$, $\underline{p} = .009$.

However, rather than showing the reverse tendency, HSEs made similar numbers of positive

and negative statements about their self-concepts, $F < 1$. Examination of the means presented

in Table 2 suggests that HSEs made somewhat more positive comments about their self-

concepts than LSEs, and LSEs made somewhat more negative comments than HSEs.

However, follow up analyses indicated that these differences were not significant. A main

effect of feedback also emerged in the overall analysis, $F(1,50) = 5.85$, $p = .019$, such that

participants made more statements concerning their self-concepts after Ideal-feedback ($M =$

1.76) than after No-feedback ($M = 0.87$).

Table 2

Mean Positive and Negative "Domain-Related Self-Concept" Composite Scores as a Function
of Self-Esteem

	Positive	Negative
Low Self-Esteem	0.85	1.73
High Self-Esteem	1.43	1.25

Note. Values in table reflect mean number of self-concept statements made.

Trait definition. The third conceptual grouping of categories involved apparent

attempts to define or consider the meaning of the trait in question. We did not have any

predictions for these types of thoughts. Again, we formed composite scores to reflect the

amount of positive and negative "defining" thoughts by summing the following categories:

characteristics of the prototype (positive/negative), importance of the trait (positive/negative),

and subtyping (positive). These composite scores were analyzed in a repeated-measures

ANOVA identical to that used for the previous composites. Significant main effects of

feedback, $F(1,50) = 17.01$, $p < .001$, and positive/negative, $F(1,50) = 33.94$, $p < .001$, were

qualified by a significant interaction of feedback and positive/negative, $F_{(1,50)} = 10.47$, $p = .002$. Most thoughts that participants had about the "definition" of the trait were positive ones. This is not surprising, given that the trait was one they considered to be highly desirable. However, this was especially true in the no-feedback condition, in which participants showed a particularly large number of positive "definition" thoughts ($M = 4.26$; in Ideal-feedback condition, $M = 1.30$; for negative thoughts: in no-feedback condition, $M = 0.52$; in Ideal-feedback condition, $M = 0.22$). There were no effects of self-esteem.

Global ratings. Finally, each of the five global ratings made by the coders was analyzed in an ANOVA with the between-subject variables of self-esteem and feedback. We expected that HSEs would be rated as more positive and self-serving in their thinking than LSEs, and that they would be rated as accepting possession of the trait to a greater extent than LSEs. Ratings could not be made for eight participants who made no reference to themselves in their Think-Aloud task (3 were LSE and 5 were HSE; 1 was in the Ideal-feedback and 7 were in the no-feedback conditions). As a result, $n = 46$ for most of these analyses. The predictions were supported by main effects of self-esteem on ratings of how positive the participant was about herself, $F_{(1, 42)} = 10.18$, $p = .003$, how self-serving versus self-defeating her thinking was $F_{(1,42)} = 7.75$, $p = .008$, and the extent to which she accepted possession of the trait $F_{(1,42)} = 4.66$, $p = .037$[4]. HSEs were rated as more positive about themselves, more self-serving in their thinking, and more accepting of the trait than were LSEs. No other effects were seen. There were no effects of self-esteem or feedback on global ratings of the clarity and coherence of participants' thinking about their Ideal-self trait, or on global ratings of the positivity of any prototypes described (for the latter analysis, $n = 23$, because only 23 of the participants described a prototype).

Summary of Think-Aloud Data

Self-esteem differences. How did HSEs and LSEs differ in their spontaneous thinking about their Ideal-self traits? As predicted, HSEs were rated as accepting possession of their Ideal-self traits to a greater extent than LSEs. Somewhat consistent with perspectives positing that people use bottom-up processes, participants did consider specific evidence with respect to their Ideal-self traits, in the form of various relevant previous experiences. However, contrary to our predictions, LSEs did not differ from HSEs in the amount or positivity of evidence that they considered: Both HSEs and LSEs considered more negative than positive evidence with respect to the traits. Instead, consistent with top-down perspectives, the two groups differed on their thoughts about their self-concepts. Participants expressed these thoughts as statements about various specific aspects of their self-views rather than as direct comments on their overall levels of self-esteem. LSEs made more negative than positive references to their domain-related self-concepts. However, rather than making predominantly positive references to their self-concepts, HSEs made a similar number of positive and negative references to their self-concepts. In addition, coders rated HSEs as more positive and self-serving in their thinking than LSEs.

Feedback differences. We also explored whether receiving explicit feedback on Ideal-self traits prompted different thoughts than simply considering such traits and verbalizing one's thoughts. Overall, participants were more likely to make reference to themselves after Ideal-self feedback than after no-feedback (not reported earlier, $F(1,50) = 5.72$, $p = .021$). The content of participants' thoughts also differed between the feedback conditions. Participants made more comments concerning their self-concepts after Ideal-feedback than after no-feedback, and expressed fewer thoughts related to defining the trait (this interacted with the

tendency to express more positive than negative thoughts about the trait's definition). Thus, when in a relatively "neutral" context (after no-feedback), participants pondered the meaning and importance of the trait in general, perhaps because they had nothing better to do. When the task was more self-relevant--after receiving feedback on their Ideal-self trait--participants seem to have abandoned some of these more abstract thoughts in favour of considering their own self-concepts. Although it seems common-sensical that people are more likely to think about themselves after receiving self-relevant feedback, this finding supports arguments that feedback particularly triggers a self-comparison process (e.g., Eisenstadt & Leippe, 1994; Esses, 1989), because participants thought more about themselves after receiving feedback on a trait than when simply musing about the trait.

Next we examine the measures that were administered following the Think-Aloud task.

Mood

We were uncertain as to whether our Ideal-feedback condition would improve participants' moods. Typically, mood measures are not reported in feedback studies. When they are, traditional "success" feedback manipulations sometimes increase positive mood, but often they do not (e.g., Murray, Holmes, MacDonald, & Ellsworth, in press; Wood et al., 1994, Study 1). In addition, we delivered feedback that was more self-discrepant than has been the case in most past research: We informed participants that they possessed traits that they had indicated that they did not possess. Participants may have been somewhat surprised by such feedback, and hence did not did not feel good about it immediately. Indeed, our results indicated that the moods of participants who received Ideal-feedback were not better than those of participants who received no-feedback. However, consistent with past research, the moods of LSEs and HSEs were not differentially affected by positive feedback, as we

expected.

An ANOVA on participants' scores on the Pleasant-Unpleasant subscale of the BMIS yielded no significant effects of feedback. A main effect for self-esteem, $\underline{F}(1,48) = 6.57$, $\underline{p} = .014$, indicated, as one would expect (e.g., Harter, 1993), that HSEs ($\underline{M} = 84.07$) felt more pleasant mood than did LSEs ($\underline{M} = 76.00$). On the Arousal-Calm subscale, a parallel analysis indicated that there were no significant effects of either self-esteem or feedback. Thus, hearing that they possessed a trait that they did not think they possessed did not improve participants' moods, and LSEs and HSEs did not differ in their affective reactions to this positive feedback.

Certainty and Importance Ratings

As reported earlier, HSEs rated themselves as possessing their Ideal-self trait more than LSEs did. However, no significant effects of feedback, $\underline{F}(1,50) = 1.18$, $\underline{p} > .10$, or self-esteem, $\underline{F}(1,50) = .28$, $\underline{p} > .10$, were found on participants' ratings of how certain they were of their "possess" ratings (overall $\underline{M} = 7.11$).

HSEs and LSEs also did not differ in their post-feedback manipulation ratings of how important their Ideal-self trait was to them. Importance ratings were entered into a repeated-measures ANOVA with a repeated factor of time (mass testing or post-feedback manipulation) and between-subjects factors of self-esteem and feedback. A significant interaction of time and self-esteem was seen, $\underline{F}(1,50) = 4.36$, $\underline{p} = .042$. Means are presented in the Table 3. The interaction indicated that importance ratings were about the same at mass testing and after the feedback manipulation for HSEs (simple effects indicate $\underline{F} < 1$), but were lower after the feedback manipulation than at mass testing for LSEs ($\underline{F}(1.24) = 7.57$, $\underline{p} = .011$). As a result, LSEs and HSEs did not differ on these ratings in the lab ($\underline{F} < 1$), although they had differed at the time of mass testing. It should be noted that all importance ratings remained quite high.

Again, there were no effects of feedback. Thus, an interesting pattern emerged in the possess and importance ratings: At mass testing, when matched on possess ratings, LSEs and HSEs differed in their importance ratings; after the feedback manipulation, LSEs and HSEs did differ in possess ratings, but they no longer differed in their importance ratings.

Table 3

Mean "Importance" Ratings at Time of Mass Testing and In Lab as a Function of Self-Esteem

	Mass Testing	In Lab
Low Self-Esteem	9.0	7.9
High Self-Esteem	7.8	7.9

Note. Ratings were made on a 10-point scale, with higher ratings indicating greater importance.

Relation of Possess Ratings to Think-Aloud Data

The bottom-up and top-down perspectives not only led to predictions about the content of participants' thoughts after receiving feedback and their conclusions about the feedback; they also led to predictions about the relation between those thoughts and people's acceptance of the feedback. The bottom-up perspectives predicted that the amount of evidence participants produced to support their Ideal-self traits would determine the degree to which they would accept possession of the traits. The top-down perspective predicted that participants' global self-esteem and thoughts related to their self-concepts would determine the degree to which they would accept possession of the traits.

To examine these predictions, we regressed possess ratings on self-esteem, feedback (both dichotomous variables), and the six intermediate composites from the Think-Aloud data

(positive and negative "evidence," "domain-related self-concept," and "definition"

composites). Self-esteem and feedback were entered on the first step of the regression.

Together, these two variables accounted for 12% of the variance in possess ratings, $F = 3.44$, p

$= .040$. However, only self-esteem was a significant predictor of the possess ratings ($\beta = 1.37$,

$p = .012$). The six composites were entered on a second step, and resulted in a significant

increase in the amount of variance in possess ratings accounted for (change in $R^2 = .36$, $F =$

5.08, $p = .002$); together, the variables entered in the first and second steps accounted for

47% of the variance in possess ratings, $F = 5.09$, $p < .001$. However, of the six composites,

only the two domain-related self-concept composites were significant predictors of the possess

ratings (for positive self-concept, $\beta = .48$, $p = .022$; for negative self-concept, $\beta = -.74$, $p <$

$.001$).

Thus, these findings are more supportive of a top-down than a bottom-up process:

Participants' self-esteem and thoughts about their domain-related self-concepts, but not the

amount of evidence they recruited, predicted their later ratings of the degree to which they

possessed their Ideal-self trait. The "definition" composite also was not a significant predictor.

Self-esteem remained marginally significant in predicting possess ratings in this second step (β

$= .86$, $p = .070$). The two-way interactions between all of the predictors were entered on the

third step of the regression, but they did not predict possess ratings beyond the contribution of

the variables on their own (change in $R^2 = .26$, $F = .60$, $p = .887$).

"Search" Ratings

In addition to exploring the outcome of participants' evidence searches, we also

investigated their subjective experiences of searching for evidence. Because self-comparison

may occur at an automatic level (cf. Eisenstadt & Leippe, 1994), it is possible that participants

may not be entirely aware of such processes. We found that although both LSEs and HSEs had produced more negative than positive evidence during the Think-Aloud task (as reported earlier), the two groups had different perceptions of their searches. Participants' ratings of the extent to which they had searched for positive and negative evidence for their Ideal-self trait were analyzed as a repeated-measures factor in an ANOVA with between-subjects factors of self-esteem and feedback. A significant interaction of positive/negative and self-esteem, $F(1, 50) = 4.99$, $p = .030$, indicated that HSEs reported doing more "positive search" than "negative search," whereas LSEs reported doing more "negative" than "positive search." A marginally significant 3-way interaction of positive/negative, self-esteem, and feedback also emerged, $F(1, 50) = 3.38$, $p = .072$, and is presented in Table 4.

Table 4

Mean Positive and Negative "Search" Ratings as a Function of Self-Esteem and Feedback Condition

	Feedback		
	None	Ideal	Mean[a]
Low Self-Esteem			
Positive Search	7.9	7.3	7.6
Negative Search	7.2	8.8	8.0
High Self-Esteem			
Positive Search	7.6	9.0	8.2
Negative Search	6.5	7.4	6.9

Note. Ratings were made on a 10-point scale, with higher ratings indicating a greater amount of perceived search.
[a] Mean collapsed over Feedback conditions

Follow-up analyses to examine this interaction suggested that Ideal-feedback may have prompted LSEs to perform extra negative search in comparison to no-feedback. To examine simple main and interaction effects, we ran separate repeated-measures ANOVAs for each self-esteem group (Howell, 1997). For HSEs, this analysis revealed a main effect of the repeated measure, $F(1,26) = 5.40$, $p = .028$, such that the HSEs rated themselves as performing more positive than negative search. For LSEs, there was a significant interaction of positive/negative and feedback, $F(1,24) = 5.41$, $p = .029$, such that they reported that after no-feedback, they conducted slightly more positive than negative search, whereas after Ideal-feedback, they conducted more negative than positive search.

Furthermore, when LSEs did feel that they had conducted a search for positive evidence, they rated that search as more difficult than did HSEs. Participants who felt they had conducted a positive search were asked to rate how difficult it had been to come up with instances to support their Ideal-self trait. Participants thus made their own decision concerning whether to respond to the question, resulting in $n = 41$ for responses to this item (19 of these were LSEs, 22 were HSEs). An ANOVA revealed a marginal main effect of self-esteem, $F(1,50) = 2.78$, $p = . 064^5$, such that LSEs reported more difficulty in coming up with positive evidence ($M = 6.16$) than did HSEs ($M = 4.64$). Again, this is despite the fact that LSEs and HSEs described equal amounts of positive evidence. There were no effects of feedback condition.

Prompted Evidence Search

Would the outcome of an "evidence search" be different if participants were explicitly prompted to conduct the search and to report their findings? Participants were asked to list

examples of past experiences relevant to how much they felt they possessed their Ideal-self

trait. Each of these examples were coded as being either "for" (i.e., evidence in support of the

trait) or "against" (i.e., evidence arguing against the trait) by coders blind to participants' self-

esteem and feedback condition. For example, when the Ideal-self trait under consideration was

"self-confident," an instance coded as "for" was: "[my] ability to speak up in class," and one

coded as "against" was: "[I] do not tell people when I am upset with them."[6] Inter-rater

reliability was computed for a sample of 20% of participants and was shown to be very good,

Kappa = .83.

Totals of the number of pieces of evidence listed "for" the trait and "against" the trait

were entered as a repeated measures factor in the usual ANOVA. A main effect of the

repeated factor emerged, $F(1,50) = 205.74$, $p < .001$, such that participants listed significantly

more evidence "for" their Ideal-self traits ($M = 4.04$) than "against" them ($M = 1.28$). This is

contrary to the pattern seen on the "evidence" composite scores from the Think-Aloud task,

where participants considered more negative than positive evidence. Again, as seen on the

evidence composite, there were no effects of feedback or self-esteem. It appears, then, that

feedback did not affect participants' ability to recruit evidence in support of their Ideal-self

trait, and that, even when both groups had been prompted to search for evidence, LSEs were

no less able to recruit it than HSEs.

Discussion

In this research, we explored the self-comparison processes that people engage in when thinking about desired traits and when responding to positive feedback about themselves. In contrast to the assumptions of previous researchers that LSEs and HSEs respond similarly to success and differ only in their reactions to failure (e.g., Brown, 1993b), we found that they responded differently. As we predicted, among participants who received positive feedback, HSEs accepted that feedback to a greater degree than did LSEs: They rated the feedback as fitting better with their views of themselves. HSEs also rated themselves as possessing their Ideal-self traits to a greater extent than LSEs. These differences occurred even though we had created a situation in which there seemed to be no logical reason for the two groups to accept possession of their Ideal-self traits to different degrees, because the traits were equally self-discrepant for both HSEs and LSEs. To understand such puzzling reactions, we attempted to tap into the self-comparison processes that theorists have posited but not defined clearly (e.g., Eisenstadt & Leippe, 1994; Esses, 1989; Jussim et al., 1995). We sought to determine whether conclusions about desired traits are driven by primarily top-down or bottom up processes.

Top-Down and Bottom-Up Processes

Consistent with the bottom-up view that one's conclusions about self-relevant traits are guided by inductive reasoning, participants in our study did examine evidence relevant to their standing on their Ideal-self traits. For example, they recalled their previous experiences and feedback they had received from others with respect to the trait. However, HSEs and LSEs did not differ either on the amount of evidence or on the positivity of evidence they recruited, as we predicted they would. This result could be seen as consistent with an "objective"

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bottom-up model of self-comparison, in that an objective evidence search would presumably have yielded equal amounts of supportive evidence for HSEs and LSEs, given that they had been equated on the degree to which the Ideal-self traits were self-discrepant. However, if an objective bottom-up process had been at work, the two groups should have accepted possession of the traits to an equal extent, which was not the case. Moreover, the evidence participants considered did not predict their conclusions about the feedback, as it should have if either an objective or a biased bottom-up process had been at work.

Instead, results were consistent with a top-down perspective, which suggests that processing of self-relevant information is guided by deductive reasoning from pre-existing self-views. Results supported this model in two ways. First, HSEs and LSEs differed in the thoughts they expressed about their self-concepts, in that HSEs expressed an equal number of positive and negative thoughts about their domain-related self-concepts, whereas LSEs expressed more negative than positive thoughts of this kind. Second, the positivity of these self-concept thoughts, as well as their global levels of self-esteem, predicted participants' ratings of how much they possessed their Ideal-self traits.

How did this top-down influence operate? The domain-specific top-down perspective cannot account for the difference between HSEs and LSEs because we equated the two groups on their self-views specific to the domain of self-evaluation. Hence, any differential top-down influence in our study must have come from global self-esteem. Our findings are consistent with Shrauger (Shrauger & Rosenberg, 1970; Shrauger & Kelly, 1988) and Story's (1998) findings that global self-esteem can influence processing of information independent of specific self-beliefs. The influence of global self-esteem, however, was not explicit in the Think-Aloud task. Participants rarely made statements about their overall self-concepts (e.g., "I'm not a

very good person" or "I'm a lovable person"). Instead, their comments about their self-concepts tended to be tied to various more specific aspects of their self-concepts (e.g., "I believe I'm a fairly self-confident person"). This discrepancy between explicit Think Aloud responses and our conclusion that global self-esteem influenced participants' decisions about their Ideal-self traits could have occurred for several reasons. First, although participants were influenced by their overall self-esteem, they may not have perceived it to be logical or socially appropriate to make comments about their global feelings towards themselves in the context of the study. For example, if a LSE participant was told that she was extraverted, a thought such as, "But I don't feel good about myself" may have seemed odd to express.

Alternatively, perhaps participants did not have such thoughts, or not consciously; the top-down influence of global-self esteem may operate in part at an unconscious level. Greenwald and Banaji (1995) and Epstein (e.g., 1985) have argued that people are not fully aware of their self-esteem or of its influence on their thoughts and actions. One's "implicit" self-esteem may be inaccessible, Epstein (1985) has argued, because it is so ingrained, unquestioned, and consisting in part of content that is not encoded in language. In contrast, people may be more aware of and therefore able to comment on their self-concepts in specific domains. If Brown (1993b) is correct in his assertion that global self-esteem is affective in nature and colours specific self-views, this affective colouration may well operate at an unconscious level, which may leave people aware only of their specific self-views, and not of how their affection for themselves influences their conclusions about themselves.

Although the bulk of our data are consistent in supporting a top-down perspective, a finding that seems to contradict it is that although HSEs came to accept possession of their Ideal-self traits to a greater degree than LSEs, both HSEs and LSEs increased their ratings of

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how much they possessed their traits from mass testing to the study. If global self-esteem drives one's conclusions, such that HSEs are likely to conclude they possess positive traits and LSEs are not, LSEs should not have increased their self-ratings. It is possible that this increase is due to self-presentational biases; the mass testing context may have felt more anonymous to students than the laboratory context, and thus they may have become more self-aggrandizing in the laboratory. Alternatively, LSEs' increased ratings could indicate that self-enhancement strivings override the top-down influence of self-esteem to at least some extent.

However, when LSEs' ratings of the importance of the trait are taken together with their increase in possess ratings, the findings may in fact be consistent with a top-down perspective. Initially (in mass testing), LSEs rated their Ideal-self traits (which they did not feel they possessed) as more important than did HSEs. This result is consistent with previous evidence that LSEs value domains in which they are weak to a greater extent than do HSEs (e.g., Blaine & Crocker, 1993; Harter, 1996). When our LSEs later increased their ratings of how much they possessed their traits, however, they lowered their importance ratings. This self-defeating pattern was not seen in HSEs. Indeed, previous research has shown that HSEs are more likely than LSEs to engage in a certain self-serving strategy concerning importance ratings; after receiving unfavourable feedback concerning some dimension, they lower their ratings of the importance of that dimension (e.g., Brown & Mankowski, 1993; Harter, 1986). The present results suggest that LSEs not only fail to devalue traits that they are weak in, but that after improving their self-views on some dimension, they lower the importance they place on that dimension. LSEs' shift in importance ratings suggests a strikingly self-defeating strategy, which may reflect the top-down influence of their low self-esteem.

In Defense of Other Perspectives

Although the domain-specific top-down perspective cannot account for HSEs' and LSEs' differential acceptance of desired traits in our study, specific self-views may have a greater influence on self-evaluative processing in other contexts. Swann and colleagues (Swann et al., 1989) have found that, in some situations, specific self-views may have stronger effects than global self-esteem on people's choices of what feedback to seek. Perhaps specific self-views have greater influence for feedback seeking than for feedback acceptance. Future research could explore the role of domain-specific self-views by including participants with varying specific self-views as well as different levels of global self-esteem.

Similarly, our data do not rule out the possibility that bottom-up processes could operate in other contexts. Our use of particularly self-discrepant positive feedback may have handicapped bottom-up processing. Because participants' Ideal-self traits were ones they had initially felt they did not possess, they may have had relatively few corroborating memories for these traits (although they were able to find some supporting evidence). Perhaps if participants had considered positive but somewhat less self-discrepant traits, they would have found more corroborating memories, and such evidence would have more strongly influenced their conclusions about the traits.

It is even possible that participants in the present study did rely on specific evidence to evaluate their standing on their Ideal-self traits, but that LSEs and HSEs differ in their standards of what constitutes sufficient evidence to substantiate a trait. Perhaps LSEs need more evidence to be convinced than HSEs do. This possibility would fit with Baumeister et al.'s (1989) suggestions that LSEs are slow and cautious about claiming to have a desirable trait. Arguing against this possibility, however, is the finding that the amount of evidence that

participants found did not predict their conclusions about possession of the traits. For example, if LSEs need more evidence to be convinced, those who found more evidence should have been more convinced, but our regression results did not reflect this. A remaining possibility is that HSEs and LSEs may not differ in the amount of evidence that they require to be convinced, but in their interpretations of the evidence; LSEs may be less able than HSEs to interpret the evidence they find as supportive of the trait. Our simple counts of pieces of evidence would not have captured this difference. For example, perhaps a previous experience that we coded as evidence "for" the trait may have been considered irrelevant by a LSE participant. This possibility could be addressed in future studies by reincorporating a procedure we have used in the past, where participants rated the degree to which they saw each piece of evidence as supportive of their possessing the trait

Beyond Either-Or

We have considered top-down and bottom-up processes as largely alternative possibilities for how self-relevant information is processed. However, a more complex model that comprises aspects of both bottom-up and top-down processes may be needed to fully understand how people draw conclusions about themselves . For example, Eisenstadt and Leippe (1994) suggested that only if a discrepancy exists between feedback and Actual self-concept--a decision perhaps made via top-down processes--will a bottom-up evidence search ensue. However, their model does not clearly delineate the top-down components of the process. Some researchers have approached a top-down/bottom-up integration with respect to self-esteem (e.g., Pelham & Swann, 1989; Swann & Schroeder, 1995). Pelham and Swann (1989) have proposed that previous experiences and specific-self views may serve a bottom-up role as the "building blocks" of self-esteem, but that these building blocks are also impacted by

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top-down influences such as the framing of the importance of various "blocks." Further empirical exploration is needed of how top-down and bottom-up processing may interact in different contexts or stages of processing.

In sum, although we acknowledge that other processes may operate in other contexts and that bottom-up and top-down processes may interact, we conclude that the global top-down perspective best accounts for our findings that HSEs came to accept positive feedback and possession of desired traits to a greater extent than LSEs did. Assuming that this conclusion is correct, why would top-down rather than bottom-up processing guide people's self-evaluations on desired traits? Perhaps this manner of processing is a more efficient mode of processing the large volumes of self-relevant information people face every day; not only does it require only one overarching construct (i.e., high versus low self-esteem) to guide the interpretation of incoming information, but it also may operate unconsciously, thus sparing attentional resources for other tasks.

Positive and Negative Thinking

In addition to examining top-down versus bottom-up processing, we also examined the positivity versus negativity of people's thoughts after receiving feedback. Contrary to our predictions, HSEs did not express significantly more positive thoughts about themselves than did LSEs, nor did LSEs express more negative thoughts about themselves than HSEs. Instead, the key difference between the two groups was in the balance of positive and negative thoughts they expressed: HSEs expressed approximately equal numbers of positive and negative thoughts about themselves, whereas LSEs made more negative than positive statements about themselves. These findings contrast with previous suggestions that LSEs are largely neutral and even-handed in their responses to feedback, whereas HSEs show a preponderance of

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positive self-serving biases (e.g., Blaine & Crocker, 1993; Brown & Mankowski, 1993). In our participants' thoughts about their self-concepts, it was the HSEs who appeared to be even-handed, whereas LSEs showed a preponderance of negative thoughts. Perhaps HSEs had more negative thoughts than usual because they were considering a trait that they originally believed they did not possess.

Our findings with respect to the positivity of thoughts are, however, in line with the suggestions of Kendall (1992). In contrast to the emphasis of researchers such as Taylor and Brown (1988) on the importance of positive biases for maintaining psychological health, Kendall has asserted that the degree of negative thinking is as important as the degree of positive thinking. He has argued that healthy individuals tend to have both positive and negative thoughts, rather than an absence of negative thoughts (Kendall, 1992; Kendall, Howard, & Hays, 1989); the pattern of thinking that we saw in our HSE participants seems to fit with this suggestion. Our HSE participants' greater acceptance of their Ideal-self traits may not have been due to a particular abundance of positive thoughts, but to the absence of the disproportionate number of negative thoughts that LSEs had. Also consistent with Kendall's emphasis on the importance of both negative and positive thinking was our finding that both positive and negative domain-related self-concept composite scores predicted participants' ratings of how much they possessed their Ideal-self traits. The negativity of LSEs' thoughts, like their seemingly self-defeating shift in beliefs about the importance of positive traits they possess, may again be a product of the top-down influence of global self-esteem. Given such negative thought patterns, it is no wonder that LSEs' self-esteem does not change for the better.

Effects of Feedback

An additional issue we investigated concerned whether explicit feedback on a self-discrepant trait would have different effects on participants' thoughts than simply considering such a trait. It appears that feedback may have triggered a heightened state of self-comparison and self-reflection; participants who received Ideal-feedback expressed more self-concept-related thoughts than did participants in the no-feedback condition. However, our results also suggested that self-comparison processes do not occur only after feedback. Participants who simply mused aloud about an Ideal-self trait considered the same amount of and type of specific evidence as did participants who received Ideal-feedback. It seems very possible, however, that the Think-Aloud procedure, in which participants spoke their thoughts aloud onto a tape recorder that would later be heard by the researcher, prompted self-comparison processes more than privately thinking about a trait would have.

Although feedback did influence the number of domain-related self-concept thoughts and trait-definition thoughts, it did not affect participants' self-views concerning their possession of the Ideal-self trait more than did simply musing about the trait. Both Ideal-feedback and no-feedback groups came to believe they possessed the trait more than at mass testing (and this was especially true for HSEs). Again, the particularly self-discrepant nature of our feedback may have lessened its influence; feedback may have a greater effect on self-evaluations when it is moderately rather than extremely self-discrepant (e.g., Blaine & Crocker, 1993). Alternatively, it is again possible that the instructions for the no-feedback group to muse about the trait and the Think-Aloud procedure itself had an impact; they may have prompted thought processes that resulted in as much acceptance of the trait as receiving feedback about the trait. Thus, the Think Aloud task may have been sufficient in itself to

trigger some sort of self-comparison process. Future research could explore this possibility by examining and contrasting the responses of participants who neither receive feedback nor undergo a Think Aloud task. The absence of feedback effects on some of participants' reactions is consistent with previous evidence that reactions such as perceived ability and predictions for future performance are consistent with self-esteem rather than with feedback (McFarlin & Blascovich, 1981).

Methodological Contributions

Our study also incorporated two fairly novel methodological techniques. Our method of both tailoring feedback to individual participants (like Eisenstadt & Leippe, 1994) and matching HSEs and LSEs on the self-discrepancy of the feedback is a significant improvement over most success feedback manipulations. This technique allows us to be more confident that differences in the way the Ideal-self traits were perceived do not account for the self-esteem differences that emerged. Moreover, the technique allowed us to differentiate the role of global self-esteem from that of specific self-views in guiding top-down processing. Future studies could benefit from employing such tailoring methods.

In addition, our design incorporated a more open-ended measure of participants' responses than has been used in the past. The Think-Aloud procedure allowed us to glimpse the types of thoughts participants have when considering their standing on a desired trait, rather than only to witness the outcome of these thoughts. As a result, we learned more about participants' thoughts about desired traits than we could have from closed-ended measures alone. For example, the Think-Aloud responses allowed us to examine whether participants seemed to consider specific evidence, and the degree of positivity and negativity of their thoughts, which the closed-ended possess ratings could not speak to. Furthermore, the Think-

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Aloud data allowed us to see differences between the spontaneous and prompted thoughts that participants reported. In their Think-Aloud narratives, participants considered more negative than positive evidence for their Ideal-self traits, whereas when later explicitly prompted to list evidence, they reported more positive than negative evidence. We recognize, however, that the difference between prompted and unprompted thoughts was confounded with time, because the prompted measures were collected later.

The Think-Aloud procedure also revealed differences between the thoughts that participants actually produced (or, at least, the ones they reported) and their perceptions of their thought processes. Most interestingly, LSEs reported conducting more positive than negative evidence search after no-feedback but more negative than positive search after Ideal-feedback, whereas HSEs reported conducting more positive than negative search in both conditions. However, this reported differential effort was not reflected in the outcome of their searches; both HSEs and LSEs described the same amount of evidence regardless of feedback condition. Furthermore, LSEs reported positive search to be more difficult than did HSEs, although again this was not reflected in the fruits of their searches. These differences between thoughts reported and perceptions of searches may occur because those perceptions may reflect personal theories that are not valid. For example, LSEs' reports of difficulty searching for positive evidence and their reports of looking for more negative than positive evidence after positive feedback may reflect a theory that it is impossible for them to possess Ideal-self traits, or a theory about their own self-defeating tendencies--both of which may not correspond with their actual ability to find positive evidence. A related possibility is that these differences between perceptions and thoughts reported point toward aspects of feedback processing that are not entirely conscious. For example, LSEs' ability to recruit positive evidence may reflect

self-enhancement urges that they are not aware of. Differences such as these would not have been noted without the use of the Think-Aloud task.

Although useful, the Think-Aloud procedure is not without its limitations. It cannot get a true "window" into people's thoughts. Speaking one's thoughts into a tape recorder removes the private context in which one's thoughts normally occur, and may have caused participants to be more aware of self-presentational concerns. For example, participants may have censored some highly positive or negative thoughts. Further, the act of speaking one's thoughts aloud requires that they be at least somewhat organized and coherent, which may alter the nature of the original thoughts. In addition, unconscious processes are clearly impossible to capture in a self-report format. We have suggested that the top-down influence of global self-esteem may have been beyond participants' awareness, which may explain why participants did not explicitly express thoughts about their global self-esteem.

A final methodological issue concerns our inclusion of only female participants in our study. Our results may not generalize to males. Given that previous findings concerning gender differences in self-esteem have been inconsistent (e.g., Josephs, Markus, & Tafarodi, 1992), the role of gender in processing of positive feedback will be an interesting area for future exploration.

Applied Implications

The issues that we have explored in this research are of great applied as well as conceptual interest. Our findings suggest the present road of inquiry eventually may inform interventions targeted at improving self-esteem, long a core issue in clinical treatment. Our conclusion that the processing of self-relevant information may operate primarily in a top-down fashion highlights the importance of overall acceptance and affection for oneself in the

establishment and maintenance of healthy self-esteem levels. From this perspective, the childhood roots of self-esteem are crucial (e.g., Brown, 1993b; Brown & Dutton, 1995; Pelham & Swann, 1989), as is the role of affect. If data continue to support this understanding of the nature of processing feedback, interventions targeted at improving self-esteem in adults may be advised to abandon bottom-up attempts to boost self-views, such as purely cognitive-behavioural approaches, or simply providing success experiences. Instead, clinicians may be advised to focus more on unconditional acceptance of the self, such as in a Rogerian approach (cf. Brown, 1993b). A greater understanding of the way top-down and bottom-up processes interact may ultimately inform clinicians on the optimal combination of such approaches.

Our findings with respect to the differential balance of positive and negative thinking about themselves in HSEs and LSEs also hold implications for clinical treatment. An overrepresentation of negative thoughts relative to positive thoughts is what set LSEs apart from HSEs in our study. Furthermore, the number of negative thoughts about their self-concepts was a significant predictor of our participants' conclusions about their possession of Ideal-self traits. These findings support Kendall's (1992) suggestion that treatment gains may be more strongly influenced by a focus on reducing negative thoughts than on increasing positive thoughts.

Conclusions

We set out to explore the largely neglected question of why the self-esteem of LSEs does not appear to profit from positive feedback. Through examination of the spontaneous thoughts and later conclusions of HSE and LSE individuals, we found that bottom-up evidence searches did not convince people of their standing on a trait; instead, people's conclusions about themselves appear to have been guided by the top-down influence of their global self-

esteem. Thus, although LSEs may temporarily enjoy positive feedback, the overriding influence of their preexisting self-esteem may ultimately prevent them from accepting possession of positive traits to the same extent that HSEs do. This top-down perspective may help to explain why low self-esteem remains so intransigent, despite positive feedback. If one's pre-existing self-esteem colours and guides the processing of new information, feedback in any particular domain could not be expected to have a lasting effect on such beliefs, nor could any evidence garnered to support the feedback. Future research should focus on how it may be possible to circumvent LSEs' "self-esteem-coloured glasses," to allow them to make greater use of positive feedback that they encounter in their lives.

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Appendix A

Means, Standard Deviations, and Intercorrelations of Think-Aloud Categories

Table A1

Means and Standard Deviations of Think-Aloud Categories

Category	Mean	Standard Deviation
Previous Experience "For"	1.39	1.38
Previous Experience "Against"	1.57	1.45
Social Comparison "Upwards"	0.20	0.45
Social Comparison "Downwards"	0.11	0.46
Feedback from Others "Positive"	0.04	0.19
Feedback from Others "Negative"	0.09	0.29
Comparison with Prototype	0.20	0.53
Self-Concept on Trait "For"	0.50	1.58
Self-Concept on Trait "Against"	1.11	1.31
Self-Concept Related Trait "Positive"	0.32	0.64
Self-Concept Related Trait "Negative"	0.26	0.65
Description of Change	0.26	0.91
Reflected Appraisals "Positive"	0.07	0.26
Reflected Appraisals "Negative"	0.11	0.37
Importance – "Positive"	0.85	1.20
Importance – "Negative"	0.11	0.37
External Explanation	0.19	0.55
Association with Other	0.15	0.60
Characteristic of Prototype "Positive"	1.82	3.00
Characteristic of Prototype "Negative"	0.19	0.59
Subtyping	0.11	0.32
Importance of Subtype	0.06	0.30

Note. Values in table reflect mean number of instances coded for that category.

Table A2

Correlation Matrix for Think-Aloud Categories

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1	1.0	.43*	.30*	.20*	.16	.28*	.36*	.44*	.37*	.44*	.05	.12	.10	.04	.05	.05	.01	.05	.16	.04	.16	.04
2		1.0	.25	-.07	-.01	.32*	.26*	-.03	.45*	.19	.30*	.30*	.02	-.09	-.17	-.09	.38*	-.06	-.02	.16	.06	-.16
3			1.0	.25	-.09	.00	.14	.06	.25	.23	.27*	-.08	-.13	.09	-.22	-.08	.07	.03	.07	-.02	.16	-.16
4				1.0	.25	-.05	-.09	.00	.14	.06	-.10	.06	.09	-.07	-.17	-.08	.03	.03	.07	-.12	.10	.05
5					1.0	-.06	-.08	.06	.49*	.20	.07	.06	.09	.21	-.06	-.11	.21	-.06	-.12	-.01	.43*	.36*
6						1.0	.25	.30*	.30*	.44*	.27*	.05	.15	.08	-.12	-.11	.24	-.08	-.05	-.06	-.07	.05
7							1.0	.18	.39*	.27*	.12	.16	.17	.08	-.22	.26	.06	-.04	.11	.09	-.07	-.06
8								1.0	.25	.32*	.12	.05	.15	.26	-.20	.03	.06	.05	.32*	.18	.09	-.07
9									1.0	.52*	.15	.16	.00	.36*	-.20	.34*	.39*	.05	-.19	.03	.11	.08
10										1.0	.07	.12	.08	.09	.04	-.03	.06	.05	-.06	-.01	.17	.01
11											1.0	-.12	-.03	-.12	-.19	-.10	-.06	-.10	-.07	.02	.10	.08
12												1.0	-.08	.09	.22	-.03	.23	-.04	-.13	-.07	.02	-.08
13													1.0	.49*	-.09	-.10	.21	-.10	-.05	-.05	.13	-.05
14														1.0	-.17	-.17	.39*	.10	.07	.03	-.04	.02
15															1.0	.07	-.10	.22	-.11	.05	-.05	-.06
16																1.0	-.05	-.10	-.06	-.01	-.04	-.08
17																	1.0	-.03	.07	.01	-.05	-.06
18																		1.0	.00	-.10	.13	.40*
19																			1.0	-.11	.31*	.79*
20																				1.0	-.12	.05
21																					1.0	.53*
22																						1.0

Note. 1 Previous experience "for"; 2 Previous experience "against" 3 Social comparison "upwards" 4 Social comparison "downwards" 5 Feedback from others "positive" 6 Feedback from others "negative" 7 Comparison with prototype 8 Self-concept on trait "positive" 9 Self-concept on trait "negative" 10 Self-concept on related trait "positive" 11 Self-concept on related trait "negative" 12 Description of change 13 Reflected appraisal "positive" 14 Reflected appraisal "negative" 15 Importance "positive" 16 Importance "negative" 17 External explanation 18 Association with others 19 Characteristic of prototype "positive" 20 Characteristic of prototype "negative" 21 Subtyping 22 Importance of subtype
* p < .05

Appendix B

Univariate Analyses of Categories in Think-Aloud Composites

Table B1

Univariate/Repeated Measures Tests of Categories in Evidence Composites

Source	Categories				
	prev.exp.[a]	soc.comp.[b]	fb.fr.oth.[c]	proto.comp.[d]	composite[e]
SE	0.01	3.60*	1.27	1.97	0.21
FB	0.75	3.27*	0.11	0.07	1.37
SExFB	0.75	1.10	4.17**	1.66	0.80
MS error	2.95	0.24	0.05	0.28	4.64
Pos/Neg	0.89	1.57	1.16	NA	4.80**
SExPos/Neg	0.89	1.57	1.16	NA	1.79
FBxPos/Neg	0.24	0.51	0.13	NA	0.23
SExFBxPos/Neg	2.63	0.05	0.13	NA	0.89
MS error	1.12	0.16	0.07	NA	1.69

Note. With the exception of MS Error values, entries in table are F values.
[a] Previous experience. [b] Social comparisons. [c] Feedback from others. [d] Comparison with prototype. [e] Evidence composite.
* $p < .08$. ** $p < .05$. *** $p < .01$.

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Table B2

Univariate/Repeated Measures Tests of Categories in Self-Concept Composites

	Categories				
Source	scon.trait[a]	scon.rel.tr.[b]	ref.app.[c]	pos.chng.[d]	composite[e]
SE	0.03	0.10	0.34	2.02	0.02
FB	5.87**	3.49*	2.13	0.36	5.85**
SExFB	1.78	0.43	0.19	1.39	0.69
MS error	1.65	0.44	0.15	0.83	3.55
Pos/Neg	9.39***	0.22	0.90	NA	1.93
SExPos/Neg	1.69	0.03	6.71**	NA	4.38**
FBxPos/Neg	0.08	2.93	0.67	NA	1.35
SExFBxPos/Neg	0.08	0.05	0.67	NA	0.01
MS error	1.11	0.39	0.05	NA	1.74

Note. With the exception of MS Error values, entries in table are F values.
[a] Self-concept on trait. [b] Self-concept on related trait. [c] Reflected appraisal. [d] Positive change. [e] Self-concept composite.
* $p < .08$. ** $p < .05$. *** $p < .01$.

Table B3

Univariate/Repeated Measures Tests of Categories in Definition Composites

	Categories			
Source	ch.of proto.[a]	imptce.of trait[b]	subtype[c]	composite[d]
SE	1.81	0.77	0.59	0.72
FB	8.06***	14.13***	2.98	17.01***
SExFB	2.38	0.09	0.00	1.84
MS error	4.02	0.75	0.10	4.31
Pos/Neg	18.88***	15.23***	NA	33.94***
SExPos/Neg	2.95	1.94	NA	0.86
FBxPos/Neg	8.25***	3.73*	NA	10.47***
SExFBxPos/Neg	1.88	1.55	NA	0.55
MS error	3.91	0.77	NA	4.66

Note. With the exception of MS Error values, entries in table are F values.
[a] Characteristic of prototype. [b] Importance of trait. [c] Subtype. [d] Definition composite.
* $p < .08$. ** $p < .05$. *** $p < .01$.

[1] It was not feasible to use Kappa as an assessment of inter-rater agreement. Participants were encouraged to speak without organizing or clarifying their thoughts, in an attempt to obtain as "natural" a thought sample as possible. This resulted in narratives that were often quite disorganized and informal. Thus it was not possible to parse the narratives into meaningful units upon which to calculate agreements and disagreements. Our interest was more in the amount of each type of thought in each narrative rather than in the specific wording or location of the thought. Correlations appropriately reflect agreement on this dimension.

[2] We did also explore this more traditional approach as well. However, examination of correlation matrices and factor structures of the Think-Aloud categories did not reveal a conceptually sensible organization of these coding categories.

[3] Univariate analyses for the categories in each grouping are presented in Appendix B.

[4] When mass testing "importance" ratings were included as a covariate in this analysis, the main effect of self-esteem became marginal rather than significant, $F(1, 41) = 3.40$, $p = .072$.

[5] When mass testing "importance" ratings were included as a covariate in this analysis, the main effect of self-esteem becomes significant, $F(1,36) = 4.25$ $p = .047$.

[6] Based on past research that has suggested that a distinction between specific and summary behavioural memories may be important (e.g., Klein, Loftus, & Sherman, 1993), each piece of evidence was also coded as referring to either a "specific" (single, discrete) previous experience or to "general" previous experience. For example, the two instances just described were considered "general," and a "specific" instance was: "a cashier overchanged me and I went back to give the extra money." However, because very few instances of "specific" examples were seen, the specific and general categories were collapsed.