

A Qualitative Forensic Investigation of an Intervention that Backfired

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Objective

The present project represents a secondary analysis of a study previously conducted at the University of California, Irvine evaluating the effects of a motivational program encouraging downgrading expectations as a motivational strategy (Heckhausen et al., 2010) for pre-medicine college students. Given the potential benefits of this motivational strategy for academic adjustment, and prior intervention studies in which downgrading expectations corresponded with gains in academic motivation, emotions, and performance (Hall et al., 2006c), the intervention was expected to yield similar benefits. However, study results revealed that although the intervention paradoxically encouraged higher expectations and optimism (Sverdlik et al., 2013), it also predicted lower cumulative achievement outcomes (Sverdlik & Hall, 2013). The present analysis represents a secondary qualitative investigation of participants' written responses following this intervention to determine potential explanations for these iatrogenic results.

Background

This study was informed by the motivational theory of life-span development (Heckhausen & Schulz, 1995; Heckhausen et al., 2010). According to the theory, the motivational strategies individuals use largely depend on the control that they perceive to have over their environment. This perception depends on several characteristics, such as environmental constraints, one's abilities, and one's perceptions of the two (e.g., the individual may incorrectly perceive their abilities as insufficient to accomplish a goal). Individuals who perceive that their behaviour has an impact on the environment (i.e., primary control) are hypothesized to use adaptive strategies to modify their behaviour so as to maximize their chances of success. In contrast, those who perceive that they are limited in their ability to change their environment may use cognitive strategies to adapt to their existing context (i.e., secondary control).

The ability to alternate between primary and secondary control based on performance outcomes, has repeatedly been found to have positive effects on students' overall motivation, academic emotions, performance, and health (Hall et al., 2006a, 2006c; Ruthig et al., 2008; Wrosch et al., 2007). Wrosch et al. (2003) divided motivational strategies into those used for attainable vs. unattainable goals. When an academic goal becomes unattainable, it is most adaptive for the student to disengage from it and reengage in another, more attainable goal. This pattern of primary and secondary control self-regulation was found to be associated with optimal levels of self-mastery (McCrathy et al., 2006), perceived stress (Hall et al., 2006a; Wrosch et al., 2003), intrusive negative thoughts (Wrosch et al., 2003), and depressive symptoms (Ruthig et al., 2008; Wrosch et al., 2003). Moreover, reengaging in an attainable goal after disengagement from an unattainable goal was found to buffer the negative effects (e.g., depression, low subjective well-being) of realizing that a desired goal cannot be reached, and disengaging from it (Wrosch et al., 2003).

No previous literature was found exploring the role of downgrading expectations as a motivational strategy for overconfident students with respect to its potential benefits for their expectations, emotions, health, motivation, and achievement. However, previous related findings with college students has highlighted the psychological benefits of downgrading overly optimistic aspirations (Wrosch et al., 2003, 2007), with interventions that encourage secondary control (e.g., obtaining a better "fit" between one's cognitions and environmental constraints) also found to lower unrealistic aspirations yet increase achievement considerably (10%; Hall et al., 2006b). This finding is similar to studies showing brief

interventions encouraging overconfident college students to adopt realistic explanations for their performance (i.e., personally controllable attributions such as effort) to result in adaptive downgrading of ability beliefs and achievement gains (Haynes et al., 2006; Ruthig et al., 2004). Thus, the reviewed study's aim was to evaluate why a similar intervention in which downgrading aspirations as a motivational strategy was explicitly encouraged had significant *negative* effects on achievement outcomes for college students in a pre-medicine degree program.

It was initially anticipated that by downgrading their expectations, students would demonstrate higher positive academic emotions, have greater mastery-oriented achievement motivation, and perform better due to motivational gains (Hall et al., 2006c; McCarthy et al., 2006). However, the intervention instead led to increased expectations as well as lower GPAs, consequently contributing to even greater overconfidence (Sverdlik et al., 2013; Sverdlik & Hall, 2013). To investigate these paradoxical effects, students' qualitative responses to a reflective writing exercise administered following the intervention were analyzed in search of trends and patterns in participants' descriptions of their interpretation and reaction to the intervention content presented.

Methods

Participants & Procedure

The study sample consists of 52 pre-medicine college students (mean age = 18.25, $SD = .52$; 34.5% male) in foundational biological and physical sciences courses at the University of California, Irvine. In the Winter of 2007, participants completed an online questionnaire assessing motivation, emotions, and well-being (15 minutes). Following the questionnaire, students attended one of multiple in-person sessions in which either the intervention or control activities were administered (activities randomly assigned to sessions; 30 minutes). Participants were entered into raffles for video iPods and bookstore gift certificates.

Independent Measures

Intervention. The intervention was administered to groups of 25 participants and consisted of three phases. Participants first completed a GRE-type aptitude test (Hall et al., 2004) as a simulated failure experience, after which they were immediately debriefed. In Phase 2, participants were provided a short reading with the intervention group reading outlining the benefits of downgrading one's expectations concerning academic performance (e.g., Rather than thinking "anything less than the best is failure," more realistic alternatives were presented such as "overly high goals can make you feel like a failure even when you succeed"). The control reading discussed medical myths vs. facts. A writing exercise was subsequently administered based on elaborative learning theory (Entwistle, 2000) requiring participants to summarize and discuss the main points of the reading (depth), provide several examples of "*academic goals* which university students are often overly optimistic about, and discuss how lowering one's expectations could be beneficial in these situations" (breadth), and explain the emotions surrounding failure events as well as how they could apply the content in their own lives (personal structure, affective writing; cf., Pennebaker, 1997). Four months later, participants again completed the online questionnaire and GPAs were obtained from institutional records.

Analysis

A bottom-up approach was taken to identify trends in participants' responses. A comparative analysis was used to compare incidents (i.e., individual responses) against each other in search of similarities and differences. Incidents that were found to be similar were colour coded to create visible patterns, and new incidents either elaborated on existing codes or created new ones. Recurring codes were then identified as trends in participants' responses and extracted in order to supplement and potentially offer insight into the disappointing quantitative study outcomes (Goulding, 2005; Soulliere, 2005).

Results

Analysis of participants' responses to the writing exercise revealed three themes. First, participants generally understood the message of the intervention and agreed that downgrading expectations can be an adaptive motivational strategy. For example: "I could apply the main points of the handout by having the mindset that complete success isn't always for sure", and another responded "After reading the handout, I am more assured about taking less units and just do my best within my ability. I think it is hard settle with not being the best, but I think I don't have to be the best compared to everyone else."

Second, participants also tended to provide defensive responses when asked whether they would incorporate the message into their study habits, and were reluctant to provide examples as to how the strategy of downgrading aspirations could be incorporated. For example: "I think fairly positively. I have confidence in my ability . . . even though I know there something more important than my goals, I have trouble believing it."

Third, participants indicated that although this motivation strategy may be useful for others, they considered themselves to be exceptional students, and as such, their high expectations were in fact realistic. For example: "Sure, lowering expectations is great along the way, but ultimately, I'll achieve what I want. I have the ability... and I recognize that I'm going to do it" and "I could also get rid of my "med school or bust" goal, just so I don't get disappointed later, but I don't think I will. Currently, I don't think too much of not making my goals or of failure, I just kind of think to study harder next time."

Discussion and Implications

College students in STEM disciplines are expected to successfully deal with academic stress and heightened competition while maintaining the emotional, psychological and physiological health needed to achieve superior performance (Wai et al., 2010). As such, these students are at risk of overconfidence and the negative implications thereof for psychological and emotional well-being, as well as disengagement (Perez, 2012; Robins & Beer, 2001). The present project investigated qualitative responses to help explain the paradoxical effects of an intervention encouraging pre-medicine students to adopt realistic expectations and revealed that although participants generally agreed with the message of the intervention, they were reluctant to apply this message to themselves as they felt their expectations were properly calibrated to their academic abilities. Students in the intervention condition generally took a defensive approach to the intervention content, and were not cooperative when asked to elaborate on the different ways in which the information presented to them could be adapted to their studies.

These findings contribute to our understanding of the possible reasons for the unexpected outcomes of this brief, well-intentioned intervention that was based on multiple prior descriptive and intervention studies. As downgrading interventions have been demonstrated to have motivational and performance benefits when applied to a variety of populations and contexts where some form of loss of control is experienced, such as higher education (Hall, 2008; Hall et al., 2006c; Tomasik et al., 2008; Wrosch et al., 2003), aging (Hall et al., 2010; Heckhausen & Schulz, 1998; Wrosch et al., 2000), and the transition from school to work (Haase et al., 2008; Tomasik et al., 2009), the previously observed iatrogenic findings are exceptional in their negative effects on GPA that persisted over multiple subsequent academic quarters. As the present qualitative investigation reveals, this could be because unlike in previous studies in which social science students were primarily sampled, as were first-year students who were particularly receptive to the intervention content, the present population was unique in consisting of overconfident students in a STEM discipline, preparing to apply for medical degree programs. As such, these students were more advanced and likely more specifically motivated and confident in their abilities, and consequently, less receptive to motivational feedback that was not directly related to achieving their highly difficult academic goals.

This explanation is consistent with recent findings showing college students with very high self-esteem to react defensively to brief interventions in which realistic attributions for potential failure experiences are encouraged (e.g., Hall et al., 2010, 2011). Similar findings from self-regulated learning research also show

learning software that explicitly encourages emotion regulation strategies to negatively impact students with high levels of prior knowledge – students already confident in their domain knowledge who react defensively to suggestions that they prepare themselves psychologically for unsuccessful outcomes (D'Mello et al., 2011; Wolfe et al., 2010). Moreover, Robin and Beer (2001) argue that when overconfident students are faced with failure in a domain in which they are particularly invested, self-enhancement is used as a defensive strategy to maintain self-esteem. Taken together, these findings suggest that special considerations and modifications may be needed prior to administering traditional (and brief) motivational programs to students in STEM or pre-medicine programs so as to acknowledge important differences in aptitude, prior knowledge, as well as sensitivity to failure-related content. In closing, these findings are valuable in highlighting not only potential reasons for the negative effects of this specific motivational program, but also the importance of using mixed methods to provide more comprehensive accounts of study findings. It is anticipated that by utilizing mixed method protocols to more thoroughly understand a population's characteristics prior to replicating previous research with a new population that similar iatrogenic effects can be avoided in the future and more effective motivational programs for student in STEM disciplines can be developed.

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