Finding What Works, Works; But Doing It Requires Self-Control:

An Evaluation of a Solution-Focused Online Intervention to Increase Goal Striving

Paolo Terni

University of Pennsylvania

A Capstone Project Submitted

In Partial Fulfillment of the Requirements for the Degree of

Master of Applied Positive Psychology

Advisor: Angela Lee Duckworth, Ph.D.

August 1, 2014

Finding What Works, Works; But Doing It Requires Self-Control:

An Evaluation of a Solution-Focused Online Intervention to Increase Goal Striving

Paolo Terni
BriefCoachingSolutions@gmail.com

Capstone Project
Master of Applied Positive Psychology
University of Pennsylvania
Advisor: Angela Lee Duckworth, Ph.D.
August 1, 2014

Abstract

Solution-Focus (SF) is an evidence-based interviewing protocol that increases goal commitment and facilitates goal striving, yet few attempts have been made to use it in scalable interventions. This study tested a SF-inspired online intervention (Solution-Focus with Implementation Intentions, SFII) designed to enhance academic goal striving. SFII led students to find study strategies that worked for them and then it directed them to formulate implementation intentions (II) specifying when and where to replicate those strategies. Undergraduate students (N = 170) were randomly assigned to either SFII or an essay-writing condition. Daily study goal achievement for the following week was not significantly different between the two groups; however, students who carried out II did better in achieving their study goal than those who did not execute them, both within the SFII condition (d = 0.55, p = .042) and across the sample (partial η^2 = .02, p = .047). Students in the SFII condition who followed through had on average higher levels of self-control than those who did not (d = 0.73, p = .003). These findings suggest that the SF distinctive approach might have helped in the formulation of effective II, and that carrying them out was mostly a matter of self-control.

Finding What Works, Works; But Doing It Requires Self-Control:

An Evaluation of a Solution-Focused Online Intervention to Increase Goal Striving

Distractions are more readily available in our society than ever before (Akst, 2011), so much so that the most sought after skill in the future workforce may be the ability of the individual to maintain focus long enough to complete the task at hand (Goleman, 2013; Newport, 2012). We can see the deleterious effect of distractors on study habits across ages. For example, researchers observed the study behaviors of middle school, high school and college students, and they found between two and three technology-related distractors (such as a Facebook page or a smartphone) readily accessible to students in their work area — the average study time before students turned to the distractors was six minutes (Rosen, Carrier, & Cheever, 2013). Ever more connected via social media, students use it as a distraction rather than for academic purposes (Skues, Williams, & Wise, 2012). This happens in a context where only 35% of full-time college students in the US earn a degree in 4 years; and where 25% of students never finish university at all (Knapp & Kelly-Reid, 2007), even though on virtually every measure of economic well-being and career attainment young college graduates outperform their peers (Taylor, Fry, & Oates, 2014).

As students' environments become richer in temptations, books and classes about self-control became increasingly popular (e.g., Baumeister & Tierney, 2011; McGonigal, 2012). Likewise, researchers took to investigate the role of self-control in achieving positive academic and life outcomes (Duckworth, 2011; Duckworth & Kern, 2011). What follows is a brief summary of the main findings.

First, self-control is instrumental for school success. Self-control predicts class grades (Duckworth, Quinn, & Tsukuyama, 2012; Duckworth, Tsukayama, & May, 2010;

Tangney, Baumeister, & Boone, 2004) and does so better than IQ (Duckworth & Seligman, 2005) or than any other personality or temperament trait (Duckworth & Allred, 2012; Duckworth & Carlson, 2013). It actually appears that self-control in early childhood fosters the personality trait of conscientiousness later in life (Eisenberg, Duckworth, Spinrad, & Valiente, in press). Even though IQ is a better predictor of Standardized Achievement Test (SAT) scores than self-control, the latter still explains a substantial amount of the variance in SAT results (Duckworth, Tsukayama, & Kirby, 2013; Mischel, Shoda, & Rodriguez, 1989). Individual differences in self-control are salient early in life (Eisenberg, Smith, Sadovsky, & Spinrad, 2004). They predict a smooth transition to formal schooling (Morrison, Ponitz, & McClelland, 2010) and specific early school outcomes ranging from math (Mazzocco & Kover, 2007) to classroom conduct (Valiente, Lemery-Chalfant, Swanson, & Reiser, 2008).

Second, higher self-control predicts positive life outcomes, such as better social competences (Mischel, 1974; Mischel, Shoda, & Peake, 1988; Shoda, Mischel, & Peake, 1990; Tangney, Baumeister, & Boone, 2004), less delinquency (Benda, 2005; Moffitt et al., 2011), better finances (Borghans, Duckworth, Heckman, & ter Weel, 2008; Duckworth, 2009; Moffitt et al., 2011), occupational prestige (Moffitt et al., 2011), and better health (Moffitt et al., 2011; Tsukayama, Toomey, Faith, & Duckworth, 2010). The predictive power of self-control for these positive life outcomes is roughly the same as that of either general intelligence or socio-economic status (Moffitt et al., 2011).

The construct of self-control itself is complex. Its mirror image, impulsivity, has been the subject of many different conceptualizations, depending on the theoretical framework used (Buss & Plomin, 1975; Eysenck & Eysenck, 1968, 1975, 1977; Newman & Wallace, 1993; Zuckerman, Kuhlman, Joireman, Teta, & Kraft, 1993). Whiteside and Lynam

(2001) gained a lot of consensus (Duckworth & Kern, 2011) when they anchored

impulsivity to the Five Factor Model of personality (FFM; McCrae & Costa, 1990) and they

created the UPPS Impulsive Behavior Scale, a 45-item self-report questionnaire. This

measure distinguishes four distinct personality factors linked to impulsivity, which are the

following: urgency, (lack of) premeditation, (lack of) perseverance, and sensation seeking.

Furthermore, self-control is both domain-general and domain-specific, as most

behaviors are (Epstein & O'Brien, 1985). Researchers found that individuals do have an

average level of self-control that carries across situations, and yet there still are significant

differences in within-subject responses to different kinds of temptations. More specifically,

individuals differ in how gratifying they find activities related to the following domains:

work, relationship, food, drug, exercise, and finance (Tsukayama, Duckworth, & Kim, 2012).

Researchers found the same interplay of domain-general and domain-specific facets of self-

control in school-age children, with the domain-specific areas being the schoolwork

domain and the interpersonal domain (Tsukayama, Duckworth, & Kim, 2013).

A thorough analysis by Duckworth and Kern (2011) assessed the convergent

validity of different measures of self-control (executive function tasks, delay of gratification

tasks, and self- or informant- report questionnaires) and found moderate convergence

among the measures, but it also found substantial differences in their degree of correlation.

Thus, the authors of the review concluded that self-control is a coherent but

multidimensional construct.

It makes sense then that some of the most promising strategies regarding enhancing

self-control are nuanced (McGonigal, 2012). For example, Duckworth, Gendler and Gross

(in press) proposed the *process model of self-control.* In this model, self-control is seen as a

process with five sequential steps, which are the following: situation selection (choosing environments where there is only a small or no likelihood of temptations arising; e.g., going to the library to study); situation modification (changing the environment to facilitate the desired behavior and to remove distractors; e.g., turning off the smartphone); selective attention (choosing what to focus on; e.g., tracking the teacher instead of looking at a goofy classmate); cognitive change (reframing the situation to strengthen long-term goals and to weaken short-term temptations; e.g., framing mental effort as a willpower challenge); and response modulation (resisting the temptation; e.g., deep breathing).

Approaches that target the ability to commit and to stick to a specific goal are also counted as strategies for increasing self-control. Indeed, self-control and goal pursuit can be seen as intertwined concepts: self-regulation has been defined as the voluntary control of impulses "in the service of personally valued goals and standards" (Duckworth & Carlson, 2013, p. 209); and goal-setting has been characterized as a form of self-regulatory strategy (Baumeister, Gailliot, DeWall, & Oaten, 2006; Baumeister, Heatherton, & Tice, 1993; Carver & Scheier, 1998; Latham & Locke, 1991; Oettingen, Pak, & Schnetter, 2001; Stadler, Oettingen, & Gollwitzer, 2009). Both self-control and goal pursuit require an evaluative representation of possible future states; therefore, they both have roots in our capacity to prospect effectively (Duckworth, Gendler, & Gross, in press), which is our ability to represent possible futures and to simulate our actions in them (Gilbert & Wilson, 2007; Seligman, Railton, Baumeister, & Sripada, 2013).

Thus, another way to support self-control is to make goal pursuit more robust in the face of temptation. This can be done in at least two ways. The first is to make goals more appealing, and that generates commitment (Locke, Latham, & Erez, 1988; Oettingen, 1999).

The second is to plan and enact effective goal-oriented behaviors (Carver & Scheier, 1981; Locke & Latham, 1990; Oettingen & Gollwitzer, 2001; Shah & Kruglaski, 2002), and that strengthens the subsequent goal striving process (Gollwitzer, 1999; Halvorson, 2010).

To summarize, any strategy that enhances goal commitment or goal striving would fit in the current efforts to improve the crucially important self-regulation skills of students. I am now going to review one such strategy, *Mental Contrasting with Implementation Intention* (MCII), a research-supported intervention; and I am going to compare it with *Solution-Focus* (SF), an evidence-based interviewing protocol used in therapy and in coaching. In the process, I am going to highlight how SF could be the basis for a new intervention similar to MCII in structure and scope.

Mental Contrasting with Implementation Intentions (MCII) vs. Solution-Focus (SF)

Mental Contrasting with Implementation Intentions (MCII) is an intervention that enhances both goal commitment and goal striving (Oettingen, 2000, 2012; Oettingen, Marquardt, & Gollwitzer, 2012; Oettingen, Mayer, & Thorpe, 2010), in a process that transforms positive fantasies about the future (in themselves ineffective in activating goal-oriented behaviors; Oettingen, 2012; Taylor, Pham, Rivking, & Armor, 1998) into self-regulated behavioral change (Duckworth, Kirby, Gollwitzer, & Oettingen, 2013).

In the Mental Contrasting (MC) phase of the MCII intervention, subjects contrast a desired future state (e.g., studying more) with obstacles that might stand in the way of the realization of such fantasies (e.g., being easily distracted by social activities). This technique has been shown to increase goal commitment (Oettingen, 2000, 2012; Oettingen, Mayer, Thorpe, Janetzke, & Lorenz, 2005; Oettingen, Pak, & Schnetter, 2001; Oettingen, Stephens, Mayer, & Brinkmann, 2010). In the Implementation Intention (II) phase of the intervention,

subjects formulate specific plans to deal with the obstacles, using the following format: *if* obstacle, *then* specific action (e.g., if my roommate is too chatty when I need to study, then I will go to the library). This technique increases the likelihood of goal attainment (Gollwitzer, 1999; Gollwitzer & Sheeran, 2006; Sheeran, Webb, & Gollwitzer, 2005), because it creates an instant habit activated automatically (Bayer, Achtziger, Gollwitzer, & Moskowitz, 2009; Brandstätter, Lengfelder, & Gollwitzer, 2001; Gollwitzer & Brandstätter, 1997;). MCII is more effective than either Mental Contrasting (MC) or Implementation Intentions (II) alone (Adriaanse et al., 2010: Kirk, Oettingen, & Gollwitzer, 2012). MCII training increases self-control in adults (Adriaanse et al., 2010; Christiansen, Oettingen, Dahme, & Klinger, 2010; Kirk, Oettingen, & Gollwitzer, 2012) and in school-age children and adolescents (Duckworth, Gollwitzer, Kirby, & Oettingen, 2013; Duckworth, Grant, Low, Oettingen, & Gollwitzer, 2011).

Solution-Focus (SF) is an evidence-based interviewing technique (De Jong & Berg, 2012; de Shazer & Berg, 1997; de Shazer et al., 2007; Grant, 2013; Kim, Smock, Trepper, McCollum, & Franklin, 2010; Macdonald, 2007) which has been shown to lead to positive outcomes in brief therapy (Bond, Woods, Humphrey, Symes, & Green, 2013; Gingerich, & Eisengart, 2000; Gingerich & Peterson, 2013) and in brief coaching (Grant, 2012; Theeboom, Beersma, & van Vianen, 2014) by increasing goal commitment and goal striving (Bannink, 2010; De Jong & Berg, 2012; de Shazer et al., 1986; Green, Oades, & Grant, 2006; Miller & de Shazer, 1991; Warner, 2013).

The SF process is organized around two activities: goal negotiation and crafting solutions. The former aims at developing goals that are relevant within clients' frame of reference; measurable; and that imply an active role for clients (i.e., doing something

instead of hoping for something to happen). The latter activity aims at developing solutions based on exceptions, which are times when things went better and expected obstacles either did not materialize or they did so in a milder form (De Jong & Miller, 1995; de Shazer, 1985; de Shazer et al., 2007). The following two paragraphs will present the SF goal negotiation activity in detail, and the SF solution-finding activity in detail.

To clarify what clients want, the SF practitioner invites them to walk him or her through a day when all their best hopes have been realized, often by using the *Miracle Question* (MQ; de Shazer, 1988). The MQ unfolds as follows. Clients are told that a miracle happened overnight and whatever brought them to the session was taken care of, be it solving a problem or achieving a goal. The SF practitioner stresses to clients the fact that they were asleep when the miracle happened, so when they wake up the following morning they do not know a miracle happened — that is why the MQ ends with the following prompt: how would you notice, as the day unfolds, that a miracle has happened? (de Shazer, 1988; Szabó & Meier, 2009). The MQ (and similar; Bannink, 2010; De Jong & Berg, 2012) is an "opening gambit" (De Jong & Berg, 2012, p.85) to trick clients into searching for useful behavioral strategies as they simulate going through the day after the miracle. For this reason, I believe the SF exploration of the desired future qualifies as a process simulation rather than an outcome simulation— the former facilitates goal pursuit whereas the latter does not (Pham & Taylor, 1999).

Once clients are clear about what they want, the SF conversation shifts to the second main activity: finding solutions. To do so, the SF practitioner invites clients to find examples of bits and pieces of the miracle already happening in reality (De Jong & Berg, 2012; de Shazer, 1988; de Shazer et al., 2007; Miller & de Shazer, 1991). If clients fail to find

any examples, then the SF practitioner invites clients to simply do something different (De Jong & Berg, 2012; de Shazer, 1985, 1988; de Shazer et al., 2007). If, as very often happens, clients do find that they have already been doing something that works, then the SF practitioner invites them to think of ways to replicate those behavioral strategies more frequently or more consistently (Berg, & Szabó, 2005; De Jong & Berg, 2012; de Shazer et al., 2007; de Shazer, 1991; Grant, 2013). That entails exploring when, where, with whom and how they can put those strategies into action (Berg & Shilts, 2005; Berg & Szabó, 2005; de Shazer, 1985; Warner, 2013). Therefore, even though the formulation of specific implementation intentions is not part of the SF praxis, I argue that the invitation to do more of what is working can be construed as an implementation intention.

Solution-focused contrasting. To better compare SF with MCII, it is useful to distinguish the following three kinds of self-regulatory thoughts: indulging; dwelling; and contrasting (Oettingen, 2000, 2012). As the names imply, indulging is about enjoying the fantasized future, without taking into consideration how to get there; dwelling is about worrying about obstacles in the present reality, without thinking about how to overcome them; and finally, contrasting is about simultaneously activating thoughts of the desired future and of the present difficulties, a process that energizes people to act (Oettinger, 2012).

I argue that in this framework the SF solution-finding process would be a case of contrasting. The difference is that in MCII the future is contrasted with the present in search of what isn't working, whereas in SF the future is contrasted with the present in search of what is already working (de Shazer, 1985, 1988). The activation from SF contrasting would come from the realization that we are already on our way towards the

desired future because some things are already going in the right direction at present, and therefore it is only a matter of finishing what we started by doing more of what works. The mechanism would be the same as the one at work in the following study into consumers' behaviors. Customers who receive a ten-stamp loyalty card with two free stamps in it are more likely to return to the issuing business and complete the program than customers who receive an eight stamp loyalty card (Heath & Heath, 2010; Nunes & Dreze, 2006) — objectively both cards require customers to return eight times before claiming the free product, but psychologically the former has a different effect.

Similarly, SF contrasting seems to exploit, or correct for, several other automatic cognitive processes, as the following paragraph will briefly explain.

First, specifically engaging in a search for positive occurrences corrects for the negativity bias, which is our tendency to give more weight to negative events (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001; Rozin & Rozyman, 2001). Second, because this search is performed from the perspective of the miracle scenario, clients are primed to look for the positive (in the sense of increased activation potential of that information in memory; Bargh, & Pietromonaco, 1982; Wilson, 2002; Wilson & Brekke, 1994), therefore increasing the salience and relevance of positive events in memory (availability bias; Ariely, 2008; Gigerenzer, 2008; Tversky & Kahneman, 1973). Third, by assuming the existence of "bright spots" (Heath & Heath, 2010) and of positive outliers (De Jong & Berg, 2012; de Shazer, 1988; de Shazer et al., 2007; Miller & de Shazer, 1991), SF contrasting counterbalances the tendency of the "remembering self" to average out experiences (Gilbert, 2006; Kahneman, 2011). Lastly, because SF practitioners refrain from providing solutions, SF contrasting uses the "not-invented-here" bias (attachment to own ideas and

solutions; e.g., Ariely, 2010; Pierce, Kostova, & Dirks, 2003) to its advantage (Glass & Dierolf, 2009).

To summarize, I argue that MCII and SF both use contrasting, but in different ways. In MCII, contrasting the desired future with the present reality activates both representations; and the contrast energizes people to act, with the result of increasing goal striving (Oettingen et al., 2009). In SF, contrasting the desired future with the present reality increases the salience of positive outliers. These are evidence of goal commitment and goal striving, a realization that energizes further goal striving (Bem, 1972; Cialdini, 1993; James, 1890). I also argue that both MCII and SF use implementation intentions, but in different ways. In MCII, implementation intentions enhance goal striving by linking the emergence of an obstacle with a specific action plan (Gollwitzer, 1999; Gollwitzer & Sheeran, 2006; Oettingen et al., 2001, 2005) — even children do better at avoiding distractions and temptations if they have a plan (Mischel & Patterson, 1976). SF enhances goal striving by linking the emergence of opportunities to act with behaviors that worked in the past (Bannink, 2010; Cavanagh & Grant, 2010; De Jong & Berg, 2012; de Shazer, 1988, 1991; Macdonald, 2007; Szabó & Meier, 2009).

MCII and SF in schools. MCII has been used extensively and effectively in school interventions targeted at populations ranging from elementary school children to college students, with the purpose of increasing their goal commitment and goal striving (Duckworth, Grant, Loew, Oettingen, & Gollwitzer, 2011; Duckworth, Kirby, Gollwitzer, & Oettingen, 2013; Gawrilow, Morgenroth, Schultz, Oettingen, & Gollwitzer, 2013; Oettingen, Hönig, & Gollwitzer, 2000).

SF has been widely used for counseling in schools (Berg & Steiner, 2003; Corcoran, 1998; Franklin, Biever, Moore, Clemons, & Scamardo, 2001; Gingerich & Wabeke, 2001; Heath & Heath, 2010; Littrell, Malia, & Wood, 1995; Murphy, 1997; Newsome, 2004). However, my literature review reveals no attempts to create a solution-focused brief intervention comparable to MCII in its potential to be scalable to the entire student population. I did find sporadic application of SF in schools under the banner of solution-focused education (Ajmal & Reese, 2001; Måhlberg, Sjöblom, & McKergow, 2004; Metcalf, 2003). However, their main focus has been to integrate the traditional teaching approach with SF methodologies rather than to create a stand-alone intervention for academic goal attainment. The most promising SF application aimed at the classroom that appears in literature is: Working On What Works (WOWW), a 10-week program delivered by external consultants who give specific feedback and instructions to teachers on how to engage children in a SF way (Berg & Shilts, 2004, 2005; Brown, Powell, & Clark, 2012; Kelly, 2009).

The Present Research

In this study, I tested a SF-inspired brief online intervention (Solution-Focus with Implementation Intentions; SFII) to enhance undergraduates' academic goal striving. More specifically, I hypothesized that (i) the SF process would lead participants in the SFII condition to formulate effective implementation intentions, and that (ii) SF contrasting would motivate participants in the SFII condition to implement their intentions. As a result, I posited that on average participants in the SFII condition would do better in achieving a self-selected daily study goal over a one-week period than participants in a motivational essay-writing condition.

Method

Participants

One hundred and seventy-eight undergraduates elected to participate by completing two online surveys in exchange for research participation credits. Eight students were excluded from all analyses because they failed a control item ("Please select the bubble furthest to your left") that I embedded in the surveys to ensure participants paid attention. Sixty-five percent of the $N = 170$ participants were female. About 57% of the students in the sample were Caucasian, 26% Asian, 12% Hispanic, 9% African American, 7% of other ethnicities. Approximately 43% were freshmen, 25% sophomores, 22% juniors and 10% seniors. The *mean* of the cumulative college GPA of the sample was 3.47 ($SD = 0.46$).

Procedure

Participants were randomly assigned to either a SF-inspired intervention (Solution-Focus with Implementation Intentions; SFII) or a motivational essay-writing condition. Exactly one week later, participants received a link to a second survey to evaluate the activities.

Measures

Studying. A single-item measure asking participants "On average, how many hours do you study per day?" was used to assess how much participants studied at baseline.

**Self-efficac*y*. To measure participants' academic self-efficacy the survey asked students to rate the three following statements using a 6-point Likert scale (6 = *completely true*, 1 = *not at all true*): "I know I can learn the material in my classes"; "I believe that I can be successful in my classes"; and "I am confident that I can understand the material in my

classes" (Kosovich, Hulleman, Barron, & Getty, 2013). The observed internal reliability for the self-efficacy scale was α = .93.

Self-control. I assessed students' self-control using the Brief Self-Control Scale (BSCS), a 13-item questionnaire that instructs respondents to rate themselves on a 5-point Likert scale (5 = *very much like me*, 1 = *not at all like me*) on statements such as: "I wish I had more self-discipline" (reverse-scored); "I am good at resisting temptations" (Tangney, Baumeister, & Boone, 2004). The observed internal reliability for the BSCS was α = .86.

Mind-wandering. I used the Mind Wandering Questionnaire (MWQ; Mrazek, Phillips, Franklin, Broadway, & Schooler, 2013) to measure participants' difficulty to focus on the task at hand. The MWQ has 5 items (e.g., "I have difficulty maintaining focus on simple or repetitive work," "While reading, I find I haven't been thinking about the text and must therefore read it again."). Participants rated how well those items described themselves on a 5-point Likert scale (5 = *very much like me*, 1 = *not at all like me*). The observed internal reliability for the MWQ was α = .78.

School interest. I measured the incentive valence of the online activity by asking students to rate their interest in school (Eccles et al., 1993). More specifically, students rated the following six items using a 6-point Likert scale (6 = *strongly agree*, 1 = *strongly disagree*): "I believe that what I learn in school is useful"; "It is important for me to be good at school"; "School is important compared to most of my other activities"; "I like school more than most of my other activities"; "I find working on school assignments interesting"; and "I like schoolwork." The observed internal reliability for this measure was α = .78.

SFII and essay-writing condition. Students were randomly assigned to either a SFII intervention or a motivational essay-writing condition. Both groups watched a short

video of about two minutes in length. Participants in the SFII condition watched an

animated introductory video about SF (Mitsopoulou, 2010), whereas participants in the

essay-writing condition watched a video about goal striving that displayed motivational

quotes set to a backdrop of inspirational pictures and music (Terni, 2014).

Next, the survey asked participants in both conditions the following: "Think of one

goal related to studying that you would like to accomplish each day over the next week. It

should be both specific and realistic. 'I want to study harder' is too vague. 'I want to spend

all of my free time studying' is probably unrealistic. A good example is: 'I want to read for

one hour every morning when I wake up'. This is both specific and realistic. Please describe

below a specific, realistic academic goal you would like to attain each day over the next

week." For example, in response to these instructions participants chose goals such as the

following: "I want to study with no Facebook for at least an hour every day," and "I want to

study for an extra hour every day."

Then the survey asked participants to identify two benefits of achieving their self-

selected academic goal. In our examples, the benefits that the two respondents identified

were, respectively: "I will not get distracted," and "I might be able to study better"; "It will

hopefully lead to better grades," and "It will help me with my self-discipline." To measure

incentive valence for the self-selected academic goal, participants answered the question

"How important is it to you to achieve this goal?" using a 7-point Likert scale (7 = *extremely*

important, 1 = *not at all important*).

Next, participants in the two groups underwent different activities. Students in the

essay-writing condition wrote two short pieces about an influential person or event in their

life (Duckworth, Grant, Loew, Oettingen, & Gollwitzer, 2011); overall, about 56% of the

essays were about immediate family members, and the rest were about friends or

significant others; mentoring figures; or specific inspirational accomplishments.

Participants in the SFII condition, instead, followed a quick SF process (de Shazer et al.,

2007; Macdonald, 2007) adapted to the online delivery format by creating two iterations

punctuated by the formulation of implementation intentions, as described below.

The first iteration was designed around the *Miracle Question* (MQ; de Shazer, 1988).

SFII instructed participants to write as vividly as possible about a perfect day when they

somehow managed to meet or exceed the study goal they had just identified, focusing on

what specifically they did as the day unfolded. The survey then prompted participants to

think of days that were like the ideal scenario, at least in part, and asked them "What is it

that you did differently on those days when things were going better?" In this manner, they

contrasted the perfect scenario with their actual experience, looking for positive outliers.

For example, participants wrote entries such as "I made an active effort to focus or hone in

on studying. I did not allow myself to get distracted by the other activities I participate in or

recreational social media"; and "On my better days, I loosely planned each morning, paying

special attention to what I will do after classes are over and what I will do in between

classes." Finally, SFII asked students to formulate one implementation plan about doing

more of what they did differently on those special days. The survey specifically instructed

participants to formulate their plans using a "when… then…" format, where "when" would

introduce a sentence describing the activating cue and "then" would introduce a sentence

describing the actual behavior that they intended to implement. For example, participants

formulated implementation intentions such as "When I go to the Café in the morning, then I

will open a textbook instead of Facebook"; and "When I get up in the morning, then I will set aside a few minutes to think about what I will do during the day."

The second iteration was designed around a scaling question (De Jong & Berg, 2012). The survey directed students to assess on a percentage point scale their study goal achievement on a typical day (100 = *fully achieved,* 0 = *nothing achieved*). Then it prompted participants to contrast the preferred future with their daily experience by asking them "What is there that is working between 0% and the number you selected? In other words, what parts of the ideal scenario are already happening?" Students answered the question with statements such as "I'm working hard and attentively for thirty minutes at a time without electronics and longer if no one is trying to contact me"; and "I often do readings every few days, with multiple readings in one day." Finally, SFII asked participants to formulate an implementation plan about doing more of what is already working using the same "when… then…" format outlined previously. In the examples mentioned, students came up with the following implementation plans, respectively: "When someone is contacting me when doing my work, I will not respond until after I am done studying"; "When I get back from my first class, I will do a reading."

Both the SFII and the essay-writing surveys ended by reminding participants of the two benefits they identified in achieving their self-selected study goal. In addition, students in the SFII condition were also reminded of their implementation plans.

Confidence*.* To test the short-term effects of the surveys on students' confidence regarding their ability to achieve their daily study goals, immediately after the activities the survey asked "How confident are you now that you are going to stick to your study goal?"

Participants answered that question using a 7-point Likert scale (7 = *extremely confident,* 1 = *not at all confident*).

Intervention evaluation: goal achievement score, usefulness scale, and follow through. In the follow-up survey one week later, participants evaluated the activities. To measure goal attainment, I asked participants the following question: "For each day of the past week listed below, did you accomplish the study goal you set for yourself (or at least made progress you were satisfied with)?" Respondents had a choice to answer either yes (coded as 1) or no (coded as 0) next to each day of the previous week listed in a table. I then tallied up their answers to obtain the variable *goal achievement score*. For example, if a participant indicated that she achieved her daily study goal on Sunday, Monday, Thursday and Friday of the previous week, her goal achievement score would have been four. To measure the perceived usefulness of the intervention for goal striving, I asked students "Overall, how useful do you think the exercise was to help you stick to your study goal?" using a 7-point Likert scale (7 = *extremely useful*, 1 = *not useful at all*)*.* To find out whether participants in the SFII condition followed through with their implementation intentions, the survey instructed them to answer either yes or no to the following question: "Did you try to implement at least one of the 'when... then...' plans you came up with during the exercise?"

<div align="center">

Results

</div>

I compared the SFII group with the essay-writing group in all variables at baseline (Table 1), and I found a marginally significant difference (p = .056) in hours studied per day. Consequently, I included it as a covariate in all subsequent analyses.

To test whether the intervention was successful, I ran an analysis of co-variance (ANCOVA) with studying at baseline as covariate, and I found that there was no statistically significant effect of condition on the key outcome variable goal achievement, $F(2, 167) = 1.08$, partial $\eta^2 = .01$, $p = .301$ (Figure 1).

However, I found that 72% of the participants in the SFII condition followed through with the implementation intentions they formulated when taking the survey, and 28% did not. To test whether implementation intentions found via the SFII process were effective, I compared the group that executed their implementation intentions (SFII with follow through, $n = 61$) with the rest of the sample (SFII with no follow through and essay-writing condition, $n = 109$), with studying at baseline as a covariate, and I found a significant effect on goal achievement, $F(2, 167) = 4.01$, partial $\eta^2 = .02$, $p = .047$.

Furthermore, compared to the other participants in the SFII condition who did not follow through, on average students who carried out their implementation intentions achieved their study goal one additional day during the experimentation week; and they were more likely to evaluate the intervention as useful (Table 2).

So I wanted to understand what differentiated these two groups. There were no significant differences in demographics (gender, year in college, GPA) and in most study measures, except for one variable: on average, students who followed through had higher self-control (Table 2).

I then split the total sample in three conditions: SFII with follow through, $n = 61$; SFII with no follow through, $n = 24$; essay-writing condition, $n = 85$. First, I ran an ANCOVA with studying at baseline as covariate, and I failed to find a statistically significant effect of

the 3-way condition on goal achievement, $F(3, 166) = 2.24$, partial $\eta^2 = .03$, $p = .110$ (Figure 2).

I then added self-control as a covariate in the ANCOVA, and I found that self-control significantly accounted for the variance in goal achievement among the three conditions, $F(4, 165) = 4.33$, partial $\eta^2 = .03$, $p = .039$ (Table 3).

In fact, self-control at time one predicted goal achievement for the whole sample, $\beta = .28$, $p < .001$ (Table 4); and studying at baseline can be seen as a mediator for the indirect effect of self-control on goal achievement, $b = 0.27$, BCa CI [0.130, 0.465], a medium-size effect $\kappa^2 = .10$, BCa CI [.050, .172], as shown in Figure 3.

Furthermore, even though there were no significant changes in self-control at time two across the three groups (SFII with follow through, $n = 61$; SFII with no follow through, $n = 24$; essay-writing condition, $n = 85$; $F(3, 166) = 1.55$, partial $\eta^2 = .02$, $p = .216$), my analyses showed a significant reported increase in self-control for the whole sample from time one to time two (self-control at time one, $M = 3.34$, $SD = 0.67$; self-control at time two, $M = 4.00$, $SD = 0.69$; the difference was significant with a large effect size, $t(169) = 2.28$, $d = 0.97$, $p = 0.24$).

Next, I wanted to know where this reported increase in self-control was coming from, and I found that participants who implemented action plans reported a marginally significant perceived increase in self-control at time two ($d = 0.14$, $p = .052$). This was not the case for participants in the SFII condition who did not follow through (as a group they had the same average BSCS score at time one and at time two, $M = 2.9936$), whereas participants in the essay-writing condition reported some movement in a positive direction as well, even though not significantly so ($d = 0.07$, $p = .163$).

I then specifically wanted to know whether the implementation of the action plans had an effect above and beyond self-control on study goal achievement. I used an ANCOVA to compare SFII with follow through (n = 61) with the rest of the sample (n = 109), controlling for baseline studying and self-control at time one, and I found a marginally significant effect on goal achievement, $F(3, 166)$ = 2.75, partial η^2 = .02, p = .099.

Discussion

SFII was not better than a motivational essay-writing exercise in helping students achieve a self-selected daily study goal over the course of one week. SF contrasting helped participants in the SFII condition to formulate useful implementation intentions but failed to motivate students to act on them.

This finding seems to support the interactional interpretation of SF, which is the hypothesis that the active ingredient in SF is the unique act of co-construction that SF practitioners achieve in the interaction (Bavelas, 2011; De Jong, Bavelas, & Korman, 2013; McGee, Del Vento, & Bavelas, 2005; McKergow, 2013; McKergow & Korman, 2009; Miller & McKergow, 2012). More specifically, due to the constraints of the online delivery format, I did not include in my study two components of SF practice seen as essential by the proponents of the interactional view — one or both of which might be key to the effectiveness of SF interviewing in light of my results. These components are the following: the SF practitioner's focus on noticing and then verbalizing observable clients' strengths (Berg & De Jong, 2005; De Jong & Berg, 2012), which translates into an interaction rich in positive content (Jordan, Froerer, & Bavelas, 2013); and the SF practitioner's use of clients' words and perspectives in formulating questions or feedback (De Jong, Bavelas, & Korman, 2013; de Shazer, 1994; Jackson & McKergow, 2002), which translates into a back-and-forth

meaning-making process where a sense of competence is co-constructed (Bavelas, McGee,

Phillips, & Routledge, 2000; Berg & De Jong, 1996).

It is difficult to include interactional components in an online survey format. That is

why it is challenging to transform well-validated conversational protocols into useful

online interventions that could be scaled up to benefit many. Some attempts made in the

past using Cognitive Behavioral Therapy (CBT) as a template were more or less successful,

but were all characterized by poor adherence (Christensen, Griffiths, & Farrer, 2009;

Christensen, Griffiths, & Jorm, 2004; Christensen, Griffiths, Mackinnon, & Brittliffe, 2006;

Griffiths, Farrer, & Christensen, 2010). The same poor adherence characterized this study:

about a quarter of participants (28%) in the SFII condition failed to follow through.

Is there something unique in the interaction between practitioners and clients that

cannot be captured in online surveys, no matter how good researchers are at extracting the

key elements of the treatment protocol? Meta-analyses of the outcome of different

therapies seem to point to an affirmative answer, because they appear to show that

therapists' effects (*common factors*, such as: therapist-client alliance; and therapist

allegiance to a theoretical orientation) are better predictors of successful outcomes than

any specific therapy ingredients (Ahn & Wampold, 2001; Messer & Wampold, 2002).

However there are good reasons to be skeptical of these studies. First, these meta-analyses

lump together all treatments for all disorders for the purpose of assessing variances in

outcomes; and second, they fail to assess whether it is the strong therapeutic alliance that

predicts positive outcomes, or the positive outcomes that foster a strong therapeutic

alliance (Siev, Huppert, & Chambless, 2009). Furthermore, the success of some interactive

software platforms (e.g., the ELIZA software simulating a therapist; Weizenbaum, 1966)

also challenges the "common factor" hypothesis, or at least the assumption that only a therapist in flesh and blood can embody those factors. Therefore, it is still a worthwhile endeavor to experiment with online interventions. Moreover, the potential pay-off of scalable interventions is big, even if their effects turn out to be small (Morisano, Hirsh, Peterson, Pihl, & Shore, 2010).

Going into this study, I had two hypotheses regarding the workings of SF. The first hypothesis was that the distinctive SF approach of staying focused on the positive (i.e., searching for what went right instead of what could go wrong) would be effective for finding useful behavioral strategies. The second hypothesis was that once participants in the SFII condition realized that on some days they did better (thanks to SF contrasting, i.e., examining the present through the lenses of the desired future to find what is already going right), then they would be motivated to do more of the strategies that made their days better.

I found evidence that seems to support the first hypothesis but not evidence that would support the second hypothesis. What I found is that if students formulated and carried out action plans based on doing more of what works, as SF recommends, then they were more likely to achieve their study goal compared to students who failed to carry out their implementation intentions. It seems then that implementation intentions designed to notice and exploit opportunities for doing more of what works were effective, and this would lend support to SF practices. But it also seems that in this non-interactive format SF contrasting alone was not enough to motivate students to act on their intentions of doing more of what works.

So what differentiated students in the SFII condition who followed through and acted on their implementation intentions from those who did not? Self-control was the only variable that showed significant and large differences (d = .73, p = .003) between the two groups. This could be another example of the *Matthew effect* (Merton, 1968), the phenomenon often observed in different domains by which "the rich get richer, and the poor get poorer." As applied to our study, it appears that the students who benefited the most from SFII and found it most useful were those who had more self-control, and were therefore probably the least in need of an intervention to strengthen their academic goal striving in the first place. On the other hand, students who did not benefit from SFII were the ones who on average had less self-control, and therefore those most likely in need of help in their academic goal striving.

Was then achieving the daily study goal only a matter of self-control, or did the implementation intentions found via the SF process have an effect in themselves? As reported, carrying out implementation intentions had a significant and medium-to-large effect on goal achievement, controlling for studying at baseline. Performing the same analysis with self-control as an added covariate shows that carrying out implementation intentions alone has a marginally significant effect on study goal achievement, with an effect size roughly half of that accounted for by self-control. This seems to lend some degree of support to the hypothesis that executing study strategies conceived through a SF process has an effect on study goal achievement that goes above and beyond the ability to stay focused predicted by self-control (the correlation between studying at baseline and self-control across the sample was r = .33, p < .001). In other words, students might find

that acting on their implementation intentions allows them to better leverage their self-

discipline in studying.

Furthermore, only students who carried out their action plans on average reported

an increase in perceived self-control at time two compared to time one. It was a small and

marginally significant effect (d = 0.14, p = .052), yet it suggests that carrying out

implementation intentions enhanced their sense of mastery over the goal striving process.

Limitations and Future Directions

Several limitations of the current study suggest directions for future research.

First, a larger sample would address the following issues: significance of results;

failure of randomization; and other confounding factors. The trend in the data was in the

right direction (Figure 1), and a larger sample might have yielded significant results.

Additionally, failure of randomization regarding studying at baseline complicated my

analyses: students in the control group studied on average more than those in the SFII

group (d = 0.29, p =. 056). Furthermore, this difference in studying might have been the

effect of a third variable that we did not account for. Therefore, even controlling for

studying at baseline might have not been enough to prevent the effects of the failure of

randomization on the outcomes. Moreover, other confounding factors might have

contributed to the lack of significant results, such as the fact that Spring Break happened to

be in the middle of my data collection process. Even though I suspended the online survey

for that week, the upcoming vacation might have disrupted the academic focus of

participants who tried out the intervention the week before Spring Break (a total of 30% of

respondents in the sample had two or more days of experimentation in that week; and I

speculate the disruptive effect to be stronger for participants in the SFII condition, because

they had to implement some specific action plans whereas students in the control condition did not).

Second, future research needs to find ways to make online interventions stand out to a population that spends hours daily on their computers. Of the 33 participants who left a comment on the survey (19% of the total, almost equally split across conditions, 52% SFII vs. 48% control), six (18%; four in the SFII condition and two in the control condition) expressed the wish for a reminder of their self-selected goal or of their implementation plans, either daily or at least once during the experimentation week; and three of the commenters (two in the SFII condition and one in the control condition) said they forgot about the intervention altogether until they received the link to the second survey. Additionally, on average it took respondents in the SFII condition less than four minutes (in seconds, $M = 228$, $SD = 167$) to go through the hypothesized active part of the intervention (SF contrasting and the formulation of implementation intentions). That is a mere blip in the amount of time students spend online, so the impact of the intervention might have been drowned out by all the other computer-based activities students are routinely engaged in. Some strategies for addressing the issue of relevance might include the following: instructing participants to go to a specific computer lab at a specific time to take the survey, on the assumption that the fact they actually have to go somewhere might make the intervention stick out in their minds; or sending participants automated daily reminders via email about their self-selected goal and their action plans.

Third, future research might consider a less active control condition, such as inviting participants to write about what happened during that day; or inviting participants to write about goal setting in general. Even though, as shown in Table 2, participants in the SFII

condition who followed through rated the intervention as significantly more useful than those in the SFII condition who did not follow through, on average, participants rated the survey as "somewhat useful" in both the SFII (M = 3.86, SD = 1.19) and the control (M = 3.82, SD = 1.37) conditions. This suggests that the control I chose might have been too active. The specific essay-writing activity that participants in the control condition needed to perform was used as control in a previous study on the effectiveness of MCII (Duckworth, Grant, Loew, Oettingen, & Gollwitzer, 2011). However, the population in that study was high-school students. For our population of Ivy League undergraduates, the motivational essay writing might have had a different impact. In their essays, some students told stories of moral beauty, such as tales of immigrant parents who came to the US with nothing and yet made a successful life for themselves and for their families thanks to hard work and dedication. Even though research in moral emotions seems to indicate that the effects of inspirational events on actual subsequent behaviors are limited (Algoe & Haidt, 2009; Haidt, 2003), the telling of life stories can shape who we are (Mc Adams, 1994) and can lead to lasting changes (Pennebaker, 1997; Wilson, 2011).

Fourth, our study was testing two hypotheses at once, more specifically as follows: one, that SFII would work; and two, that SFII would work as an online survey with no mediation by the experimenter or by any other affiliate. Future research should test SFII *in real life* (IRL), with a trainer who leads students through either the control activity or SFII. Such a study would tease out whether the failure to find significant results was due to the online delivery format or to the limited effectiveness of SFII itself.

Fifth, future research should inject an interactive component in the SFII intervention to test the interactional view of SF. For example, SFII might be structured as a three-survey

intervention with personalized feedback in-between: the first survey would be about

formulating a desired future; the second survey would be about finding what works; the

third survey would be about how to do more of what works. A final and fourth survey

would ask participants to evaluate the results. Clearly, this process would require a lot of

time from the research team.

Finally, future studies might want to set up a control condition that involves

formulating some kind of action plan to be carried out during the week of experimentation.

That would fix an asymmetry in our study design that emerged when the significance of

following through became apparent: the control group had no specific task to carry out. As

a consequence, the SFII sub-group that followed through did not have a control sub-group

with which to be directly compared with.

Conclusion

The current investigation suggests that Solution-Focus (SF) delivered in a non-

interactive format is ineffective as a template for online interventions designed to increase

the achievement of daily study goals. This finding underscores the difficulties of scaling up

evidence-based one-on-one interventions with the purpose of reaching a wider population

in a cost-effective way (Bolier et al., 2014). Further research should address the following:

whether a SFII intervention delivered in-person by a trainer (in a manner similar to the

deployment of MCII) would have significant effects; and whether a SFII online intervention

with added interactive features would have significant effects.

However, the current study seems to support the SF methodology of leveraging

opportunities to act, rather than planning for hypothetical obstacles, to structure effective

implementation intentions — finding what works (e.g., "on days that I did better, I got my

studying done first thing in the morning") can lead to useful implementation intentions (e.g., "when I get up in the morning, then I am going to study for one hour before going online"). On average, students who executed the implementation intentions crafted using SFII did better on their study goal than their counterparts who did not have to formulate action plans (control) or who did not follow through.

The online, non-interactive survey delivery format imposed constraints on SFII that might explain why this study did not find evidence supporting the SF approach of motivating people to act on their implementation intentions by directing their attention to what they are already doing right. Instead, what set apart students in the SFII condition who followed through from their peers who did not was their average self-control score.

Should future research confirm my findings, two immediate implications for practice follow. The first one is that interventions aimed at increasing academic goal achievement should directly target self-control. The second one is that such interventions should also include some form of implementation intentions, which seemed to play a marginal but still detectable role above and beyond self-control to help students achieve their study goals.

To sum-up the results of this investigation in SF parlance: the *finding what works* part of SF proved to be useful as a building block for effective action plans; it was the *doing more of it* that proved to be harder and seemed to require some level of self-control.

References

Adriaanse, M. A., Oettingen, G., Gollwitzer, P. M., Hennes, E. P., de Riddler, D. T. D., & de Wit, J. B. F. (2010). When planning is not enough: Fighting unhealthy snacking habits by mental contrasting with implementation intentions (MCII). *European Journal of Social Psychology, 40*, 1277–1293.

Ahn, H. N., & Wampold, B. E. (2001). Where oh where are the specific ingredients? A meta-analysis of component studies in counseling and psychotherapy. *Journal of Counseling Psychology*, *48*(3), 251-257.

Ajmal, Y., & Reese, I. (2001). *Solutions in schools: Creative applications of solution-focused brief thinking with young people and adults.* London, UK: BT Press.

Akst, D. (2011). *We have met the enemy: Self-control in an age of excess.* New York: Penguin Press.

Algoe, S. B., & Haidt, J. (2009). Witnessing excellence in action: The 'other-praising' emotions of elevation, gratitude, and admiration. *The Journal of Positive Psychology*, *4*(2), 105-127.

Ariely, D. (2008). *Predictably irrational: The hidden forces that shape our decisions.* New York: Harper Collins.

Ariely, D. (2010). *The upside of irrationality: The unexpected benefits of defying logic at work and at home.* New York: Harper Collins.

Bannink, F. (2010). *1001 solution-focused questions.* New York: Norton.

Bargh, J. A., & Pietromonaco, P. (1982). Automatic information processing and social perception: The influence of trait information presented outside of conscious

awareness on impression formation. *Journal of Personality and Social Psychology*, *43*(3), 437-449.

Baumeister, R. F., Bratslavsky, E., Finkenauer, C., & Vohs, K. D. (2001). Bad is stronger than good. *Review of General Psychology*, *5*(4), 323-370.

Baumeister, R. F., Gailliot, M., DeWall, C. N., & Oaten, M. (2006). Self-regulation and personality: How interventions increase regulatory success, and how depletion moderates the effects of traits on behavior. *Journal of Personality, 74*(6), 1773-1801.

Baumeister, R. F., Heatherton, T. F., & Tice, D. M. (1993). When ego threats lead to self-regulation failure: Negative consequences of high self-esteem. *Journal of Personality and Social Psychology*, *64*(1), 141-156.

Baumeister, R.F. & Tierney, J. (2011). *Willpower: Rediscovering the greatest human strength.* New York: Penguin Press.

Bavelas, J.B. (2011). Connecting the lab to the therapy room. Microanalysis, co-construction, and solution-focused therapy. In C. Franklin, T. Trepper, W.J. Gingerich, & E. McCollum (Eds.), *Solution-focused brief therapy: From practice to evidence-informed practice* (pp. 144-162). Oxford, UK: Oxford University Press.

Bavelas, J. B., McGee, D., Phillips, B., & Routledge, R. (2000). Microanalysis of communication in psychotherapy. *Human Systems*, *11*(1), 47-66.

Bayer, U. C., Achtziger, A., Gollwitzer, P. M., & Moskowitz, G. B. (2009). Responding to subliminal cues: Do if-then plans facilitate action preparation and initiation without conscious intent? *Social Cognition, 27*, 183–201.

Bem, D.J. (1972). Self-perception theory. In L. Berkowitz, ed., *Advances in experimental social psychology.* Vol.6, (pp. 1-62). New York: Academic.

Benda, B.B. (2005). The robustness of self-control in relation to form of delinquency. *Youth & Society, 36,* 418-444.

Berg, I. K., & De Jong, P. (1996). Solution-building conversations: Co-constructing a sense of competence with clients. *Families in Society: The Journal of Contemporary Social Services*, *77*(6), 376-391.

Berg, I.K., & De Jong, P. (2005). Engaging through complimenting. *Journal of Contemporary Human Services, 77,* 376-391.

Berg, I.K., & Shilts, L. (2004). *Classroom solutions: WOWW approach.* Milwaukee, MI: BFTC Press.

Berg, I.K., & Shilts, L. (2005). Keeping the solutions within the classroom: WOWW approach. *School Counselor,* July/August, 30-35.

Berg, I.K. & Steiner, T. (2003). *Children's solution work.* New York: Norton.

Berg, I.K., & Szabó, P. (2005). *Brief coaching for lasting solutions.* New York: Norton.

Bolier, L., Majo, C., Smit, F., Westerhof, G. J., Haverman, M., Walburg, J.A., Riper, H., & Bohlmeijer, E. (2014). Cost-effectiveness of online positive psychology: Randomized controlled trial. *The Journal of Positive Psychology, 9*(5), 460-471.

Bond, C., Woods, K., Humphrey, N., Symes, W., & Green, L. (2013). The effectiveness of solution focused brief therapy with children and families: A systematic and critical evaluation of the literature from 1990–2010. *Journal of Child Psychology and Psychiatry*, *54*(7), 707-723.

Borghans, L., Duckworth, A. L., Heckman, J. J., & ter Weel, B. (2008). The economics and psychology of personality traits. *Journal of Human Resources, 43*(4), 972-1059.

Brandstätter, V., Lengfelder, A., & Gollwitzer, P. M. (2001). Implementation intentions and efficient action initiation. *Journal of Personality and Social Psychology, 81*, 946–960.

Brown, E. L., Powell, E., & Clark, A. (2012). Working on what works: Working with teachers to improve classroom behaviour and relationships. *Educational Psychology in Practice*, *28*(1), 19-30.

Buss, A.H., & Plomin, R. (1975). *A temperament theory of personality development.* New York: John Wiley & Sons.

Carver, C. S., & Scheier, M. F. (1981). *Attention and self-regulation: A control-theory approach to human behavior*. New York: Springer-Verlag.

Carver, C. S., & Scheier, M. F. (1998). *On the self-regulation of behavior*. Cambridge, UK: Cambridge University Press.

Cavanagh, M., & Grant, A.M. (2010). The solution-focused coaching approach to coaching. In E. Cox, T. Bachkirova, & D. Clutterbuck (Eds.), *Sage handbook of coaching* (pp. 34–47). London: Sage.

Christensen, H., Griffiths, K. M., & Farrer, L. (2009). Adherence in internet interventions for anxiety and depression: Systematic review. *Journal of Medical Internet Research*, *11*, e13.

Christensen, H., Griffiths, K. M., & Jorm, A. F. (2004). Delivering interventions for depression by using the internet: Randomised controlled trial. *British Medical Journal*, *328*(7434), 265-270.

Christensen, H., Griffiths, K. M., Mackinnon, A. J., & Brittliffe, K. (2006). Online randomized controlled trial of brief and full cognitive behaviour therapy for depression. *Psychological Medicine, 36*, 1737–1746.

Christiansen, S., Oettingen, G., Dahme, B., & Klinger, R. (2010). A short goal-pursuit

    intervention to improve physical capacity: A randomized clinical trial in chronic

    back pain patients. *Pain*, *149*(3), 444-452.

Cialdini, R. B. (1993). *Influence (rev): The psychology of persuasion*. New York: Harper

    Collins.

Corcoran, J. (1998). Solution-focused practice with middle and high school at-risk

    youths. *Children & Schools*, *20*(4), 232-243.

De Jong, P., Bavelas, J. B., & Korman, H. (2013). An introduction to using microanalysis to

    observe co-construction in psychotherapy. *Journal of Systemic Therapies*, *32*(3), 17-

    30.

De Jong, P., & Berg, I. K. (2012). *Interviewing for solutions* (3rd ed.). Belmont, CA: Cengage

    Learning.

De Jong, P., & Miller, S.D. (1995). How to interview for clients' strengths. *Social Work, 40,*

    729-736.

De Shazer, S. (1985). *Keys to solutions in brief therapy.* New York: Norton.

De Shazer, S. (1988). *Clues: Investigating solutions in brief therapy*. New York: Norton.

De Shazer, S. (1991). *Putting difference to work.* New York: Norton.

De Shazer, S. (1994). *Words were originally magic.* New York: Norton.

De Shazer, S., & Berg, I. K. (1997). 'What works?': Remarks on research aspects of solution-

    focused brief therapy. *Journal of Family Therapy*, *19*(2), 121-124.

De Shazer, S., Berg, I. K., Lipchik, E., Nunnally, E., Molnar, A., Gingerich, W., & Weiner-Davis,

    M. (1986). Brief therapy: Focused solution development. *Family Process*, *25*(2), 207-

    221.

De Shazer, S., Dolan, Y., Korman, H., Trepper, T., McCollum, E., & Berg, I.K. (2007). *More than miracles: The state of the art of solution-focused brief therapy.* Binghamton, NY: The Haworth Press.

Duckworth, A. L. (2009). (Over and) beyond high-stakes testing. *American Psychologist. 64*(4), 279-280.

Duckworth, A. L. (2011). The significance of self-control. *Proceedings of the National Academy of Sciences*, *108*(7), 2639-40.

Duckworth, A. L. & Allred, K. M. (2012). Temperament in the classroom. In R. L. Shiner & M. Zentner (Eds.), *Handbook of temperament* (pp. 627-644). New York: Guilford Press.

Duckworth, A. L., & Carlson, S. M. (2013). Self-regulation and school success. In B. W. Sokol, F. M. E. Grouzet, & U. Müller (Eds.), *Self-regulation and autonomy: Social and developmental dimensions of human conduct* (pp. 208-230). New York: Cambridge University Press.

Duckworth, A.L., Gendler, T.S., & Gross, J.J. (in press). Self-control in school age children. *Educational Psychologist*.

Duckworth, A. L., Grant, H., Loew, B., Oettingen, G., & Gollwitzer, P. M. (2011). Self-regulation strategies improve self-discipline in adolescents: Benefits of mental contrasting and implementation intentions. *Educational Psychology: An International Journal of Experimental Educational Psychology*, *31*(1), 17-26.

Duckworth, A. L. & Kern, M. L. (2011). A meta-analysis of the convergent validity of self control measures. *Journal of Research in Personality*, *45*(3), 259-268*.*

Duckworth, A. L., Kirby, T., Gollwitzer, A., & Oettingen, G. (2013). From fantasy to action: Mental contrasting with implementation intentions (MCII) improves academic performance in children. *Social Psychological and Personality Science*, *4*(6) 745-753.

Duckworth, A. L., Quinn, P., Tsukayama, E. (2012). What *No Child Left Behind* leaves behind: The roles of IQ and self-control in predicting standardized achievement test scores and report card grades. *Journal of Educational Psychology, 104*(2), 439-451.

Duckworth, A. L. & Seligman, M. E. P. (2005). Self-discipline outdoes IQ predicting academic performance in adolescents. *Psychological Science, 16*, 939-944.

Duckworth, A. L., Tsukayama, E., & Kirby, T. (2013). Is it really self-control? Examining the predictive power of the delay of gratification test. *Personality and Social Psychology Bulletin, 39*(7), 843-855.

Duckworth, A. L., Tsukayama, E., & May, H. (2010). Establishing causality using longitudinal hierarchical linear modeling: An illustration predicting achievement from self-control. *Social Psychology and Personality Science*, *1*(4), 311-317.

Epstein, S., & O'Brien, E.J. (1985). The person-situation debate in historical and current perspective. *Psychological Bulletin, 98,* 513-537.

Eisenberg, N., Duckworth, A. L., Spinrad, T. L., & Valiente, C. (in press). Conscientiousness: Origins in childhood*. Developmental Psychology.*

Eisenberg, N., Smith, C. L., Sadovsky, A., & Spinrad, T. (Eds.). (2004). *Effortful control: Relations with emotion regulation, adjustment, and socialization in childhood*. New York: Guilford Press.

Eysenck, H.J., & Eysenck, S.B.G. (1968). *Manual of the Eysenck Personality Inventory.* San Diego: Educational and Industrial Testing Services.

Eysenck, H.J., & Eysenck, S.B.G. (1975). *Manual of the Eysenck Personality Questionnaire.*

    London: Hodder and Stoughton.

Eysenck, S.B.G., & Eysenck, H.J (1977). The place of impulsiveness in a dimensional system

    of personality description. *British Journal of Social and Clinical Psychology, 16,* 57-68.

Franklin, C., Biever, J., Moore, K., Clemons, D., & Scamardo, M. (2001). The effectiveness of

    solution-focused therapy with children in a school setting. *Research on Social Work*

    Practice, *11*(4), 411-434.

Gawrilow, C., Morgenroth, K., Schultz, R., Oettingen, G., & Gollwitzer, P. M. (2013). Mental

    contrasting with implementation intentions enhances self-regulation of goal pursuit

    in schoolchildren at risk for ADHD. *Motivation and Emotion*, *37*(1), 134-145.

Gigerenzer, G. (2008). *Rationality for mortals: How people cope with uncertainty*. Oxford,

    UK: Oxford University Press.

Gilbert, D. (2006). *Stumbling on happiness.* New York: Knopf.

Gilbert, D. T., & Wilson, T. D. (2007). Prospection: Experiencing the future.

    Science, *317*(5843), 1351-1354.

Gingerich, W. J., & Eisengart, S. (2000). Solution-focused brief therapy: A review of the

    outcome research. *Family Process*, *39*(4), 477-498.

Gingerich, W. J., & Peterson, L. T. (2013). Effectiveness of solution-focused brief therapy: A

    systematic qualitative review of controlled outcome studies. *Research on Social*

    Work Practice, *23*(3), 266-283.

Gingerich, W. J., & Wabeke, T. (2001). A solution-focused approach to mental health

    intervention in school settings. *Children and Schools, 23*(1), 34-47.

Glass, C. & Dierolf, K. (2009). Ben Furman: SF respects the not invented here syndrome*. InterAction. The Journal of Solution Focus in Organisations, 1,* 2, 120-130.

Goleman, D. (2013). *Focus: The inner driver of excellence.* New York: Harper Collins.

Gollwitzer, P.M. (1999). Implementation intentions: Strong effects of simple plans. *American Psychologist, 54*, 493- 503.

Gollwitzer, P. M., & Brandstätter, V. (1997). Implementation intentions and effective goal pursuit. *Journal of Personality and Social Psychology, 73*, 186–199.

Gollwitzer, A., Oettingen, G., Kirby, T. & Duckworth, A. L. (2011). Mental contrasting facilitates academic performance in school children. *Motivation and Emotion, 35*, 403-412.

Gollwitzer, P. M., & Sheeran, P. (2006). Implementation intentions and goal achievement: A meta-analysis of effects and processes. *Advances in Experimental Social Psychology, 38*, 69–119.

Grant, A. M. (2012). Making positive change: A randomized study comparing solution-focused vs. problem-focused coaching questions. *Journal of Systemic Therapies, 31*(2), 21-35.

Grant, A.M. (2013). Steps to solutions: A process for putting solution-focused coaching principles into practice. *The Coaching Psychologist, 9,* 1, 36-44.

Green, L. S., Oades, L. G., & Grant, A. M. (2006). Cognitive-behavioral, solution-focused life coaching: Enhancing goal striving, well-being, and hope. *The Journal of Positive Psychology*, *1*(3), 142-149.

Griffiths, K. M., Farrer, L., & Christensen, H. (2010). The efficacy of internet interventions for

    depression and anxiety disorders: A review of randomised controlled trials. *Medical*

    Journal of Australia, *192*(11), S4.

Halvorson, H. G. (2010). *Succeed: How we can reach our goals.* New York: Penguin.

Haidt, J. (2003). The moral emotions. In R. J. Davidson, K. R. Scherer, & H. H. Goldsmith

    (Eds.), *Handbook of affective sciences* (pp. 852-870). Oxford, UK: Oxford University

    Press.

Heath, C. & Heath. D. (2010). *Switch: How to change things when change is hard.* New York:

    Random House.

Jackson, P.Z., McKergow, M. (2002). *The solution focus: The simple way to positive change.*

    London, UK; Nicholas Brealey International.

James, W. (1890). *Principles of psychology.* Vol.1. New York: Holt.

Jordan, S. S., Froerer, A. S., & Bavelas, J. B. (2013). Microanalysis of positive and negative

    content in solution-focused brief therapy and cognitive behavioral therapy expert

    sessions. *Journal of Systemic Therapies*, *32*(3), 46-59.

Kahneman, D. (2011). *Thinking fast and slow.* New York: Farrar, Straus and Giroux.

Kelly, M.S. (2009). Working on what works (WOWW): Coaching teachers to do more of

    what's working. *Children and Schools, 31*(1), 35-38.

Kim, J.S., Smock, S.A., Trepper, T.S., McCollum, E.E., & Franklin, C. (2010). Is solution-focused

    brief therapy evidence-based? *Families in Society: The Journal of Contemporary*

    Social Sciences, 91, 300-306.

Kirk, D., Oettingen, G., & Gollwitzer, P. M. (2012). *Promoting integrative bargaining: Mental Contrasting with Implementation Intentions*. New York: New York University, Psychology Department.

Knapp, L. G., & Kelly-Reid, J. E. (2007). *Enrollment in postsecondary institutions, fall 2005; graduation rates, 1999 and 2002 cohorts; and financial statistics, fiscal year 2005 first look*. Washington, DC: National Center for Education Statistics, US Department of Education.

Kosovich, J.J., Hulleman, C.S., Barron, K.E., & Getty, S. (2013). Developing a practical measure of motivation: Expectancy-Value-Cost in middle school science and mathematics. Manuscript submitted for publication.

Latham, G. P., & Locke, E. A. (1991). Self-regulation through goal setting. *Organizational Behavior and Human Decision Processes*, *50*(2), 212-247.

Locke, E. A., Latham, G. P., & Erez, M. (1988). The determinants of goal commitment. *Academy of Management Review*, *13*(1), 23-39.

Locke, E. A., & Latham, G. P. (1990). *A theory of goal setting and task performance*. Englewood Cliffs, NJ: Prentice-Hall.

Littrell, J. M., Malia, J. A., & Wood, M. (1995). Single-session brief counseling in a high school. *Journal of Counseling & Development*, *73*(4), 451-458.

Macdonald, A. J. (2007). *Solution-focused therapy: Theory, research and practice*. London, UK: Sage.

Måhlberg, K., Sjöblom, M., & McKergow, M. (2004). *Solution-focused education*. Stockholm: Måhlberg & Sjöblom.

Mazzocco, M.M., & Kover, S.T. (2007). A longitudinal assessment of executive function skills

  and their association with math performance. *Child Neuropsychology, 13,* 18-45.

McAdams, D.P. (1994). *The stories we live by: Personal myths and the making of the self.* New

  York: Morrow.

McCrae, R. R., & Costa, P. T. Jr. (1990). *Personality in adulthood*. New York: Guilford.

McGee, D., Del Vento, A., & Bavelas, J.B. (2005). An interactional model of questions as

  therapeutic interventions. *Journal of Marital and Family Therapy, 31,* 371-384.

McGonigal, K. (2012). *The willpower instinct: How self-control works. Why it matters, and

  what you can do to get more of it.* New York: Penguin.

McKergow, M. (2013). Fifty years of the interactional view: An interview with Janet

  Bavelas. *InterAction. The Journal of Solution Focus in Organisations, 5,* 2, 92-116.

McKergow, M. & Korman, H. (2009). Inbetween — neither inside nor outside: The radical

  simplicity of solution-focused brief therapy. *Journal of Systemic Therapies, 28*(2), 34-

  49.

Merton, R. K. (1968). The Matthew effect in science. *Science*, *159*(3810), 56-63.

Messer, S. B., & Wampold, B. E. (2002). Let's face facts: Common factors are more potent

  than specific therapy ingredients. *Clinical Psychology: Science and Practice*, *9*(1), 21-

  25.

Metcalf, L. (2003). *Teaching toward solutions: A solution-focused guide to improving student

  behavior, grades, parental support and staff morale.* London, UK: Crown House.

Miller, G., & de Shazer, S. (1991). Beyond complaints: A foundation for brief therapy. In

  Steiner, L. and Ahlers, C. (Eds.), *Systemic thinking and therapeutic process* (pp. 117-

  135). Heidelberg: Springer-Verlag.

Miller, G., & McKergow, M. (2012). From Wittgenstein, complexity and narrative

emergence: Discourse and solution-focused brief therapy. In Lock, A. and Strong, T.

(Eds.), *Discursive perspectives in therapeutic practice* (pp. 163-183). Oxford, UK:

Oxford University Press.

Mischel, W. (1974). *Processes in delay of gratification*. New York: Academic Press.

Mischel, W., & Patterson, C.J. (1976). Substantive and structural elements of effective plans

for self-control. *Journal of Personality and Social Psychology, 34,* 942-950.

Mischel, W., Shoda, Y., & Peake, P. K. (1988). The nature of adolescent competencies

predicted by preschool delay of gratification. *Journal of Personality and Social

Psychology*, *54*(4), 687-696.

Mischel, W., Shoda, Y., & Rodriguez, M. I. (1989). Delay of gratification in

children. *Science*, *244*(4907), 933-938.

Mitsopoulou, O. (2010, September 30). How solution-focus coaching works. [Video file].

Retrieved from https://www.youtube.com/watch?v=JX2FnFUqLMo.

Moffitt, T. E., Arseneault, L., Belsky, D., Dickson, N., Hancox, R. J., Harrington, H., ... & Caspi, A.

(2011). A gradient of childhood self-control predicts health, wealth, and public

safety. *Proceedings of the National Academy of Sciences*, *108*(7), 2693-2698.

Morisano, D., Hirsh, J. B., Peterson, J. B., Pihl, R. O., & Shore, B. M. (2010). Setting,

elaborating, and reflecting on personal goals improves academic

performance. *Journal of Applied Psychology*, *95*(2), 255-264.

Morrison, F.J., Ponitz, C.C., & McClelland, M.M. (2010). Self-regulation and academic

achievement in the transition to school. In S. D. Calkins & M.A. Bell (Eds.), *Child*

development at the intersection of emotion and cognition (pp. 203-224)*.* Washington,

DC: American Psychological Association.

Murphy, J. J. (1997). *Solution-focused counseling in middle and high schools*. Alexandria, VA:

American Counseling Association.

Mrazek, M. D., Phillips, D. T., Franklin, M. S., Broadway, J. M., & Schooler, J. W. (2013). Young

and restless: Validation of the Mind-Wandering Questionnaire (MWQ) reveals

disruptive impact of mind-wandering for youth. *Frontiers in Psychology*, *4* (560), 1-7.

Newman, J.P., & Wallace, J.F. (1993). Divergent pathways to deficient self-regulation:

Implications for disinhibitory psychopathology in children. *Clinical Psychology*

Review, 13, 699-720.

Newport, C. C. (2012). *So good they can't ignore you; Why skills trump passion in the quest*

for work you love. New York: Business Plus.

Newsome, W. S. (2004). Solution-focused brief therapy groupwork with at-risk junior high

school students: Enhancing the bottom line. *Research on Social Work Practice*, *14*(5),

336-343.

Nunes, J.C., Dreze, X. (2006). The endowed progress effect: How artificial advancement

increases effort. *Journal of Consumer Research, 32,* 504-512.

Oettingen, G. (1999). Free fantasies about the future and the emergence of developmental

goals. In J. Brandtstaedter & R.M. Lerner (Eds.), *Action and self-development: Theory*

and research through the life span (pp. 315- 342). Thousand Oaks, CA: Sage.

Oettingen, G. (2000). Expectancy effects on behavior depend on self-regulatory thought.

Social Cognition, 18, 101–129.

Oettingen, G. (2012). Future thought and behaviour change. *European Review of Social Psychology, 23*, 1–63.

Oettingen, G., & Gollwitzer, P.M. (2001). Goal setting and goal striving. In A. Tesser & N. Schwarz (Eds.), *Intraindividual processes: Volume 1 of the Blackwell handbook in social psychology* (pp. 329- 347). Oxford, UK: Blackwell.

Oettingen, G., Hönig, G., & Gollwitzer, P. M. (2000). Effective self-regulation of goal attainment. *International Journal of Educational Research*, *33*(7), 705-732.

Oettingen, G., Marquardt, M. K., & Gollwitzer, P. M. (2012). Mental contrasting turns positive feedback on creative potential into successful performance. *Journal of Experimental Social Psychology, 48*, 990–996.

Oettingen, G., Mayer, D., & Thorpe, J. (2010). Self-regulation of commitment to reduce cigarette consumption: Mental contrasting of future with reality. *Psychology and Health, 25*, 961–977.

Oettingen, G., Mayer, D., Thorpe, J. S., Janetzke, H., & Lorenz, S. (2005). Turning fantasies about positive and negative futures into self-improvement goals. *Motivation and Emotion*, *29*(4), 236-266.

Oettingen, G., Mayer, D., Sevincer, A.T., Stephens, E.J., Pak, H., & Hagenah, M. (2009). Mental contrasting and goal commitment: The mediating role of energization. *Personality and Social Psychology Bulletin, 35*, 608-622.

Oettingen, G., Pak, H. J., & Schnetter, K. (2001). Self-regulation of goal-setting: Turning free fantasies about the future into binding goals. *Journal of Personality and Social Psychology, 80*, 736–753.

Oettingen, G., Stephens, E. J., Mayer, D., & Brinkmann, B. (2010). Mental contrasting and the self-regulation of helping relations. *Social Cognition*, *28*(4), 490-508.

Pennebaker, J. W. (1997). Writing about emotional experiences as a therapeutic process. *Psychological Science*, *8*(3), 162-166.

Pierce, J. L., Kostova, T., & Dirks, K. T. (2003). The state of psychological ownership: Integrating and extending a century of research. *Review of General Psychology*, *7*(1), 84-107.

Rosen, L. D., Mark Carrier, L., & Cheever, N. A. (2013). Facebook and texting made me do it: Media-induced task-switching while studying. *Computers in Human Behavior*, *29*(3), 948-958.

Rozin, P., & Rozyman, E.B. (2001). Negativity bias, negativity dominance, and contagion. *Personality and Social Psychology Review, 5,* 296-320.

Seligman, M. E., Railton, P., Baumeister, R. F., & Sripada, C. (2013). Navigating into the future or driven by the past. *Perspectives on Psychological Science*, *8*(2), 119-141.

Shah, J.Y., & Kruglanski, A.W. (2002). Priming against your will: How accessible alternatives affect goal pursuit. *Journal of Experimental Social Psychology, 38*(4), 368- 383.

Sheeran, P., Webb, T.L., & Gollwitzer, P.M. (2005). The interplay between goal intentions and implementation intentions. *Personality and Social Psychology Bulletin, 31*, 87-98.

Shoda, Y., Mischel, W., & Peake, P. K. (1990). Predicting adolescent cognitive and self-regulatory competencies from preschool delay of gratification: Identifying diagnostic conditions. *Developmental Psychology*, *26*(6), 978-986.

Siev, J., Huppert, J. D., & Chambless, D. L. (2009). The Dodo bird, treatment technique, and disseminating empirically supported treatments. *The Behavior Therapist, 32*(4), 71-76.

Skues, J. L., Williams, B., & Wise, L. (2012). The effects of personality traits, self-esteem, loneliness, and narcissism on Facebook use among university students. *Computers in Human Behavior*, *28*(6), 2414-2419.

Stadler, G., Oettingen, G., & Gollwitzer, P. M. (2009). Physical activity in women: Effects of a self-regulation intervention. *American Journal of Preventive Medicine*, *36*(1), 29-34.

Szabó, P. & Meier, D. (2009). *Coaching plain and simple.* New York: Norton.

Tangney, J. P., Baumeister, R. F., & Boone, A. L. (2004). High self-control predicts good adjustment, less pathology, better grades, and interpersonal success. *Journal of Personality*, *72*(2), 271-324.

Taylor, P., Fry, R., & Oates, R. (2014, February 11). The rising cost of not going to college. In Pew Research Center. Retrieved from http://www.pewsocialtrends.org/files/2014/02/SDT-higher-ed-FINAL-02-11-2014.pdf.

Taylor, S. E., Pham, L. B., Rivkin, I. D., & Armor, D. A. (1998). Harnessing the imagination: Mental simulation, self-regulation, and coping. *American Psychologist, 53*, 429–439.

Terni, P. (2014, February 6). Goal setting. [Video file]. Retrieved from https://www.youtube.com/watch?v=NQ3APgLb4bw.

Theeboom, T., Beersma, B., & van Vianen, A. E. (2014). Does coaching work? A meta-analysis on the effects of coaching on individual level outcomes in an organizational context. *The Journal of Positive Psychology*, *9*(1), 1-18.

Tsukayama, E., Duckworth, A. L., & Kim, B. (2012). Resisting everything except temptation: Evidence and an explanation for domain-specific impulsivity. *European Journal of Personality*, *26*, 318-334.

Tsukayama, E., Duckworth, A. L., & Kim, B. E. (2013). Domain-specific impulsivity in school-age children. *Developmental Science, 16*, 879-893.

Tsukayama, E., Toomey, S. L., Faith, M., & Duckworth, A. L. (2010). Self-control as a protective factor against overweight status in the transition to adolescence. *Archives of Pediatrics and Adolescent Medicine, 164*(7), 631-635*.*

Tversky, A., & Kahneman, D. (1973). Availability: A heuristic for judging frequency and probability. *Cognitive Psychology*, *5*(2), 207-232.

Valiente, C., Lemery-Chalfant, K., Swanson, J., & Reiser, M. (2008). Prediction of children's academic competence from their effortful control, relationships, and classroom participation. *Journal of Educational Psychology, 100*, 67–77.

Warner, R. A. (2013). *Solution-focused interviewing. Applying positive psychology: A manual for practitioners.* Toronto, Canada: University of Toronto Press.

Weizenbaum, J. (1966). ELIZA—A computer program for the study of natural language communication between man and machine. *Communications of the ACM*, *9*(1), 36-45.

Whiteside, S. P., & Lynam, D. R. (2001). The five factor model and impulsivity: Using a structural model of personality to understand impulsivity. *Personality and Individual Differences*, *30*(4), 669-689.

Wilson, T. D. (2002). *Strangers to ourselves: Discovering the adaptive unconscious.* Cambridge, MA: Harvard University Press.

Wilson, T.D. (2011). *Redirect: The surprising new science of psychological change.* New York:

  Little, Brown and Company.

Wilson, T. D., & Brekke, N. (1994). Mental contamination and mental correction: Unwanted

  influences on judgments and evaluations. *Psychological Bulletin*, *116*(1), 117-142.

Zuckerman, M., Kuhlman, D. M., Joireman, J., Teta, P., & Kraft, M. (1993). A comparison of

  three structural models of personality: The big three, the big five, and the alternative

  five. *Journal of Personality and Social Psychology*, *65*, 757-768.

Table 1

Descriptive Measures for SFII and Essay-writing Conditions

Measures	SFII		Essay writing			
	M	*SD*	*M*	*SD*	*d*	*p*
Self-efficacy	5.64	1.02	5.53	0.95	0.11	.452
Self-control	3.33	0.67	3.35	0.68	0.03	.868
Mind-wandering	2.95	0.78	3.04	0.85	0.11	.466
School interest	12.87	0.72	12.86	0.70	0.01	.943
Goal relevance	5.61	0.96	5.42	0.93	0.20	.194
Baseline studying[a]	3.34	1.54	3.82	1.71	0.29	.056
Cumulative college GPA	3.43	0.53	3.52	0.38	0.20	.295

Note. $N = 170$ equally split between the two conditions, $n = 85$. For consistency reasons I did not include in the table Pearson's chi-square statistics for *year in college*, which is as follows: $\chi^2 (3) = 5.50$, Cramer's $V = .180$, $p = .138$.
[a]Hours per day.

Table 2

Descriptive Measures for SFII With and Without Follow Through

Measures	SFII with follow through		SFII with no follow through			
	M	*SD*	*M*	*SD*	*d*	*p*
Time to complete SFII[a]	243.28	187.13	189.21	91.03	0.37	.078
Baseline studying[b]	3.51	1.65	2.92	1.18	0.41	.069
Goal achievement	4.28	1.43	3.29	2.09	0.55	.042
Rated usefulness	4.08	1.16	3.29	1.08	0.70	.005
Self-control	3.46	0.64	2.99	0.64	0.73	.003

Note. Table reporting measures with $p < .10$. SFII with follow through, $n = 61$. SFII with no follow through, $n = 24$.
[a]Time in seconds. The measure does not include the goal setting stage, the same across conditions. [b]Hours per day.

Table 3

Summary of Covariance Model Predicting Goal Achievement

Covariates	Goal Achievement		
	df	*F*	η^2
Three-way condition	2	1.47	.017
Baseline studying[a]	1	17.34***	.095
Self-control	1	4.33*	.026

Note. The three conditions are the following: SFII with follow through, *n* = 61; SFII with no follow through, *n* = 24; essay writing, *n* = 85.

[a]Hours per day.

* *p* < .05. *** *p* < .001.

Table 4

Self-control at Time One as Predictor of Goal Achievement Score

	b	*SE B*	β	*p*
Self-control	0.76	0.20	.28	$p < .001$
Self-control	0.49	0.20	.18	$p = .016$
Baseline studying[a]	0.34	0.08	.31	$p < .001$

Note. R^2 = .08 for step 1, $p < .001$; R^2 =. 17 for step 2, $p < .001$.
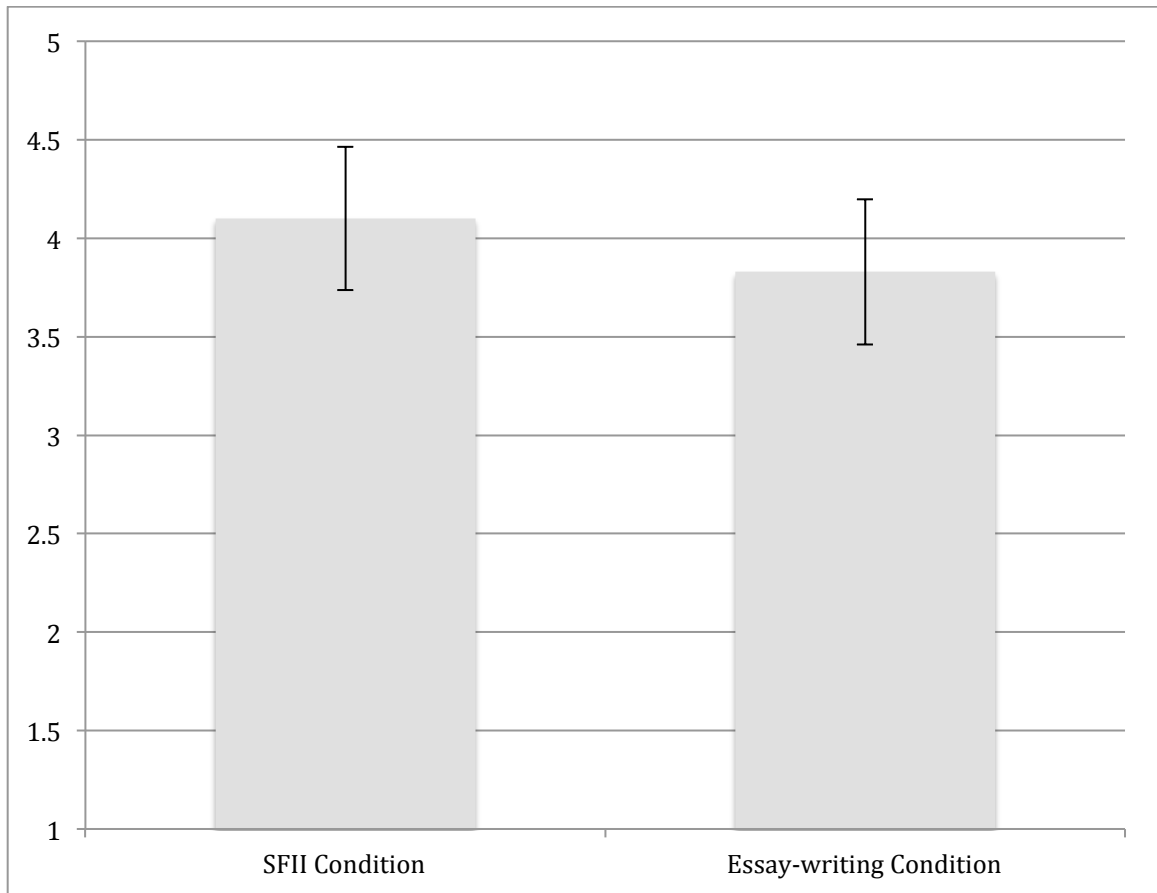[a]Hours per day

Figure 1. ANCOVA of the effect of condition on study goal achievement. SFII, *M* =
4.10, *SE* = .184, 95% CI [3.74, 4.46]; Essay-writing condition, *M* = 3.83, *SE* = .184,
95% CI [3.46, 4.19]. Marginal estimated means for the effect of condition (SFII, *n* =
85; essay-writing condition, *n* = 85) on goal achievement, $F(2, 167) = 1.08$, partial η^2
$= .01$, $p = .301$ controlling for studying at baseline, $F(2, 167) = 27.32$, partial $\eta^2 = .14$,
$p < .001$, evaluated in the model at the following value: 3.58. Error bars represent
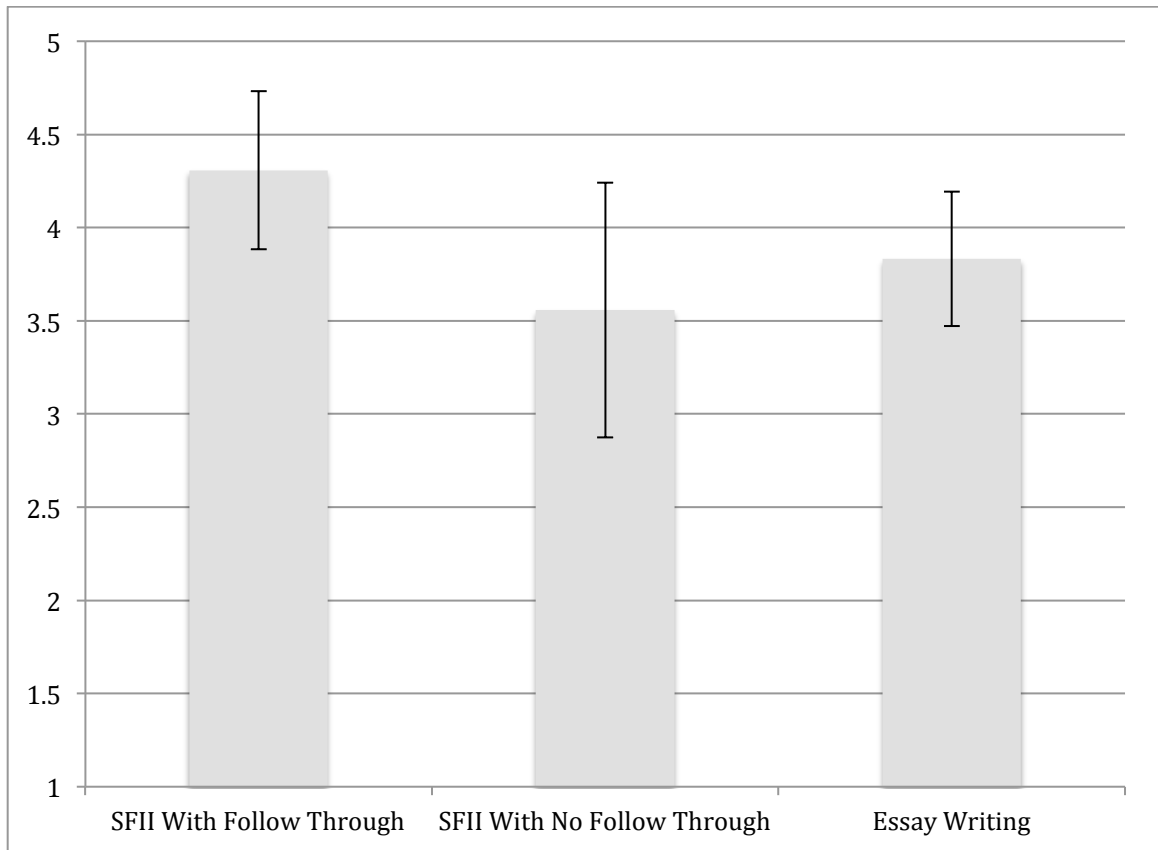the confidence intervals.

Figure 2. ANCOVA of the effect of the three conditions on study goal achievement, including studying at baseline as a covariate. SFII with follow through, M = 4.31, SE = .22, 95% CI [3.88, 4.73]; SFII with no follow through, M = 3.56, SE = .35, 95% CI [2.87, 4.24]; essay writing, M = 3.83, SE = .18, 95% CI [3.47, 4.19]. Marginal estimated means for the effect of the three conditions (SFII with follow through, n = 61; SFII with no follow through, n = 24; essay-writing condition, n = 85) on goal achievement, $F(3, 166)$ = 2.24, partial η^2 = .03, p = .110, with studying at baseline as covariate, $F(3, 166)$ = 25.15, partial η^2 = .13, $p < .001$, and evaluated in the model at the following value: 3.58. Error bars represent the confidence intervals.
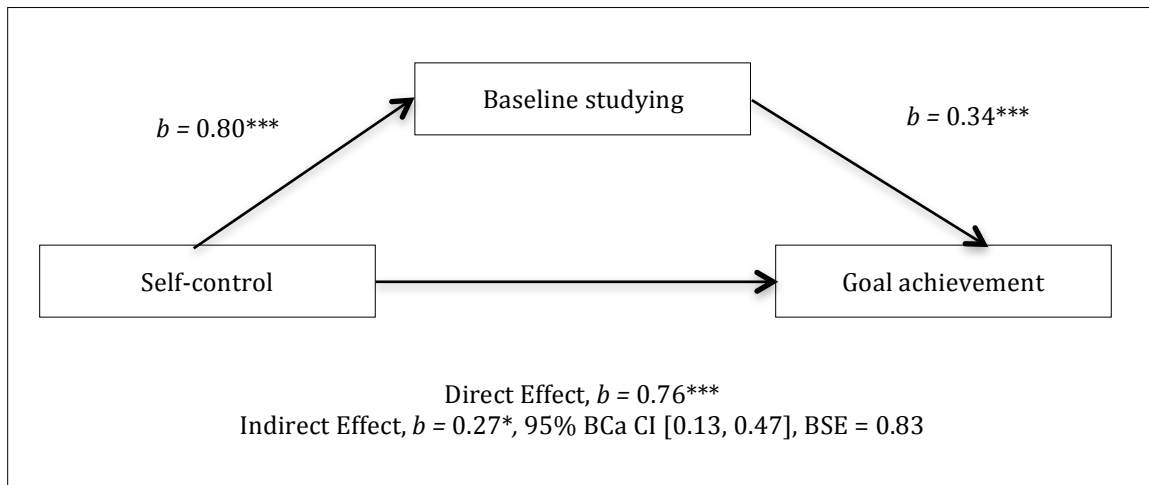
Figure 3. Mediation analysis of the direct and indirect effects of self-control at time

one on goal achievement at time two. BCa = bias-corrected and accelerated

bootstrap; BSE = bootstrapped standard error.

* *p* < .05. ***p* < .001.