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How Want vs Need Self-Talk Facilitates Goal-Directed Behavior

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How *Want* vs *Need S*elf-Talk Facilitates Goal-Directed Behavior

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Abstract

Exercising self-control can be a challenge, whether it involves avoiding temptations or striving toward long-term goals. When attempting to exert self-control, the way people address themselves (e.g., self-talk) is important. This study examined how self-talk strategies *want* and *need* affected behavioral self-control outcomes in a temptation situation using a 2 (self-talk strategy: *want* vs *need*) x 2 (goal emphasis: temptation vs long term goal) factorial design. Participants' own cell phones served as the temptation and a computer task designed to portray a career-relevant emotional intelligence training served as the long-term goal. Participants were randomly assigned toward either the long-term goal or the temptation, and primed with either *want* or *need* self-talk, via a handwriting task. Participants then had the opportunity to spend 20 minutes however they chose (emotional intelligence training, cell phone use, doing nothing, any combination of activities); this segment of the experimental session was video recorded to determine the amount of time participants dedicated to each task. Results revealed that neither goal emphasis nor self-talk strategy significantly affected the amount of time participants spent engaged in the long-term goal task or the temptation task. Additionally, there was no interaction between goal emphasis and self-talk strategy. Interestingly, for participants in the *need* self-talk condition, those oriented toward the temptation thought they spent substantially more time engaged in the long-term goal task than participants who were actually oriented toward the long-term goal. Finally, self-control predicted less desire to engage in the temptation for participants who *want*ed /*need*ed the temptation, and participants who *want*ed the long-term goal; but for participants who *need*ed the long-term goal, self-control predicted greater desire for the temptation.

Keywords: self-talk, self-regulation, long-term goal, temptation

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Regardless of how conscientiousness a person may be, mustering up the strength to exert self-control in the face of temptations--desires that conflict with self-regulatory goals (Hofmann, Kotabe, & Luhmann, 2013)--and in the pursuit of long-term goals, can be a challenge. Self-control can be defined as the capacity to bring your actions into line with your intentions in the face of competing motivation (Henden, 2008). Harnessing the skills that enable a person to rein in their desires, and make more favorable decisions, has been the crux of most self-control research. Oftentimes, long-term goals are abruptly abandoned when people are faced with temptation. For example, consider two people, "Pepe" and "Johnathan" who both formulate a long-term goal to become, and remain, abstinent from methamphetamine. Abstinence is their long-term goal and methamphetamine is their temptation. For Jonathan, simply seeing friends use methamphetamine disrupts his long-term goal, and he gives into the temptation to use. On the other hand, some people find the strength to persevere and continue in their course of action, ultimately managing to reach "worth-it" long-term goals. For Pepe, seeing friends use also prompts his temptation to use, but somehow, he manages to resist and adheres to his goal of remaining abstinent.

Self-talk, the verbalizations or statements people use when addressing themselves (Hardy, 2006), contributes to the decision to give in to temptation or persevere toward a long-term goal. When confronted with the opportunity to use methamphetamine, Pepe might engage in an inner dialogue that looks like any of the following: "I really want to get high," "I promised myself I'd stay sober this time," or "I'm not going to do this." The language that Pepe adopts while engaging in self-talk is likely to serve as a feedback mechanism and influence the effectiveness with which he pursues his goals (Patrick & Hagtvedt, 2011).

Acquiring Self-Talk

Vygotsky's (1987) theory of cognitive development identifies the process of acquiring inner speech as the mechanism that allows for children to use language to regulate their behavior. Vygotsky (1987) recognized the phenomenon of inner speech as a transitional stage that children experience during the process of evolving from interpersonal dialogues to intrapersonal ones. The process of internalization occurs as the child migrates from facilitated interactions with an external figure to internal dialogue with the self. Take for example, four-year-old Kaitlyn, who interacts with her mother aloud while learning to tie her shoes. Soon Kaitlyn will privately walk herself through these instructions aloud, in what is called private speech, instructing herself to "first make a knot, and then a loop." Next, Kaitlyn will transition from audible private speech to silent inner speech, mentally walking herself through the process of tying her shoe, rather than talking herself through the process aloud. Research has shown that self-talk persists after the process of internalization that Vygotsky (1987) described, and that linguistic framing--the way a person frames the language they engage in during self-talk--serves as a behavioral feedback mechanism (Alderson-Day & Fernyhough, 2015; Hardy, 2006; Patrick & Hagtvedt, 2011; Puchalska-Wasyl, 2014).

Types of Self-Talk

Four different forms of self-talk have been studied regarding how they influence goal-directed behavior. First, people can choose to phrase their goals in terms of statements or questions. Second, people can alter how they refer to themselves (the actor) in their self-talk by changing personal pronouns. Third, people can shift the content of the self-talk they use when considering long term goals. Finally, fourth, people can shift the specific verbs they use to alter motivational meaning. A review of the extant research on each of these areas, and the findings related to how self-talk influences both motivation and behavior, is detailed below.

Questions versus Statements. Introspective self-talk can be linguistically framed in a variety of ways that either improve or inhibit goal-directed behavior. The interrogative form (*will I?*) of simple future-tense statements has demonstrated production of goal-directed behavior via the development of intrinsic reasons for motivation (Senay, Albarracin, & Noguchi, 2010). Framing introspective self-talk as a question (*will I*?) as opposed to a declaration (*I will*) results in better self-control, as indicated by better performance on an anagram tasks, as well as greater intentions to exercise (Senay et al., 2010). This effect, however, failed to be replicated in a study in which task performance was only better among those who positively answered a self-posed question regarding future behavior (*Will I? I will;* Puchalska-Wasyl, 2014). The linguistic framing of self-talk in question vs statement forms has also been explored in the persuasion literature. Product evaluation tends to be influenced by questions, rather than statements, when participants are under low arousal, but by statements when participants are under high arousal (Hagtvedt, 2015).

Personal pronouns. Recent research supports the notion that language used to refer to the self is related to the ability to self-regulate. Self-talk has been demonstrated to serve as a regulatory mechanism when referring to the self using second-person pronouns, such as *you*, or using one's own name (Kross et al., 2014). For example, Pepe might think "I really want to get high" (first person), or say to himself "You really want to get high" (second person), or "Pepe really wants to get high" (third person). Consistent with construal-level theory (Trope & Liberman, 2010), when using non-first-person pronouns, self-talk facilitates psychological distancing—perceiving oneself as looking in from the outside--and is shown to increase one's ability to regulate thoughts, feelings, and behavior under social stress (Kross et al., 2014). Referring to the self with non-first-person pronouns allows individuals to assess social-anxiety-

provoking situations as more challenging and less threatening, thereby increasing the ability to self-regulate and perform better on tasks than those who use first-person self-referrals (Kross et al., 2014).

In line with this notion, using the second-person pronoun (*you*), when giving self-advice regarding a social situation yields better performance on anagram tasks than using the first-person pronoun (Dolcos & Albarracin, 2014). This effect is present when using self-talk in preparation for tasks, in reporting intentions to exercise, and is mediated by attitude toward tasks. Further, when commanding the self in situations that require self-guidance, using the second-person pronoun (*you*), demonstrates greater effectiveness in response to negative events (e.g., being insulted), rather than positive ones (e.g., winning a contest; Zell, Warriner, & Albarracin, 2012). Moreover, the use of *you* is intensified when choices are autonomous rather than externally constrained, and the use of *you* is more frequent during activity than during behavior planning (Zell et al., 2012).

Instructional versus Motivational. Performance has also been found to be influenced by the type of message being conveyed in self-talk. A comparison of instructional versus motivational self-talk revealed that instructional self-talk (*I see the target; I see the net*) is more effective than motivational self-talk (*Do your best; I can*) in improving performance on various fine motor performance tasks; however, when the task requires strength and endurance, both instructional and motivational self-talk are more effective in improving performance, compared to no self-talk (Theodorakis, Weinberg, Natsis, Douma, & Kazakas, 2000). Contributing to these findings, athletes who use instructional self-talk have been found to perform more consistently than those using positive, negative, or no self-talk (Harvey, Raalte, & Brewer, 2002). This, however, has been recently challenged with findings that motivational, rather than instructional,

self-talk leads to better performance among athletes who use their dominant foot in shooting accuracy tasks (Hardy, Begley, & Blanchfield, 2015).

Verb Choice. Refusal strategies, such as *I don't* and *I can't* have also been investigated in the context of goal-directed behavior (Patrick & Hagtvedt, 2011). *I don't* refusal-framing, which denotes an empowered refusal, has been shown to demonstrate higher effectiveness for persisting in goal-directed behavior, and for promoting more goal-directed behavior, especially when the source of the goal is internal (Patrick and Hagtvedt, 2011).

The way messages are framed appear to foster an important context that prescribes the persuasive influence of what is said (Mayer & Tormala, 2010). *I think* framing has shown to be more highly persuasive for recipients who are cognitively oriented, while *I feel* framing has been shown to be more persuasive for those who are more affectively oriented (Mayer & Tormala, 2010). *Want* and *should* conflicts--feeling that one wants to do something else, or should be doing something else despite the current activity--have also been explored (Grund, Grunschel, Bruhn & Fries, 2015). Both *want* and *should* conflicts have been related to wellbeing, but have their distinctions; while *want* conflicts demonstrate greater importance with respect to affective wellbeing, *should* conflicts demonstrate greater importance with respect to cognitive wellbeing (Grund, Grunschel, Bruhn & Fries, 2015). In a comparison of w*ant-to* and *have-to* goal motivation, *want-to* goal motivation was found to predict fewer experiences of conflicting desires, weaker temptations, and a stronger resistance to temptations, while *have-to* goal motivation was related to more conflicting desires and stronger experiences of temptation (Milyavskaya, Inzlicht, Hope, & Koestner, 2015). *Want-to* goal motivation is suggested to be intrinsically pleasurable, therefore offering protection against the influence of temptation, and enhancing self-regulation (Milyavskaya st al., 2015).

In sum, the linguistic processes people enlist when engaging in self-talk demonstrate substantial effects on goal-directed behavior and performance. The importance of content in self-talk is evident in its ability to activate psychological mechanisms that facilitate self-regulation and the development of intrinsic reasons for behavior. The current literature indicates that some processes are better than others when it comes to how people talk to themselves while engaging in self-talk across a variety of situations. Research shows considerable evidence for the importance of word-choice in self-talk on goal-directed behavior. The words people choose to address themselves with during self-talk have the power to influence self-regulation, decrease the perception of goal threatening influences, and increase wellbeing.

Despite the many advances in understanding self-talk, there are framing strategies that have yet to be explored. When thinking or talking about long-term goals and temptations, people sometimes use the word "need." For example, when Jonathan happened upon a group of his friends using methamphetamine, he might have thought to himself, "I need to get high," or "I need to hit that pipe." On the other hand, in encountering the same tempting situation, Pepe might have thought to himself, "I need to stay away from this stuff," or "I need stay clean." These framing strategies clearly align with the growing body of research on self-talk, and to the extent of my knowledge, have yet to be investigated in terms of how *need* framing influences self-control outcomes.

Theoretical Framework

Self-Determination Theory. Self-determination theory (SDT) provides a framework for understanding how *need* self-talk might facilitate motivation for both intrinsic and extrinsic goals. According to SDT, humans are generally equipped with tendencies that favor intrinsic motivation, the inherent tendency to seek out novelty and challenges, to exercise exploring and

learning capacities (Ryan & Deci, 2000). Cognitive evaluation theory, a subtheory within SDT, states contextual events that advance feelings of competency can also increase intrinsic motivation (Deci & Ryan, 1985). Further, for intrinsic motivation to be present, a sense of autonomy and the belief that one's behavior is self-determined is required (Ryan & Deci, 2000). These perceptions might be evoked and enhanced using self-talk that identifies a person's sense of agency and commitment (i.e., using "*I need*" when engaging in self-talk). Further, for a salient sense of autonomy and self-determination to manifest, either immediate contextual support for both, or persistent inner resources must be present (Reeve, 1996). It seems reasonable to suggest that *need*-based self-talk might provide such contextual support and inner resources, as it available at all times and likely strengthens the perceived sense of agency and importance of action when pursuing a goal.

Sometimes the goals people set for themselves are not intrinsically motivated, but rather, aimed at attaining outcomes for reasons other than inherent satisfaction. Such extrinsically motivated goals still involve intentional behavior (Ryan & Deci, 2000) and can be just as important as intrinsic goals. Due to the lack of inherent satisfaction in extrinsic goals, they may be more difficult to attain than their intrinsic counterparts. SDT cites internalization (the adoption of a value or regulation) and integration (making a value or regulation one's own) as processes through which perseverance toward extrinsically motivated goals is fostered (Ryan & Deci, 2000). Self-talk likely plays a role in the perseverance of extrinsically motivated goals via the facilitation of internalization and integration. The language people use in self-talk likely influences autonomous forms of extrinsic motivation, such as identification, in which a person values and accepts a goal as personally important, and integrated regulation, in which goals are fully assimilated to the self and brought into line with one's values and needs (e.g., "*I need*

to…"). Increased autonomy to act on goals is experienced as people internalize goals and assimilate them to the self (Ryan & Deci, 2000), which is a process that is likely enhanced by self-talk.

Goal-Setting Theory. Goal-setting theory asserts the basic premise that conscious goals affect action (Ryan, 1970), and provides support for the idea that self-talk increases action toward goals by enhancing their conscious presence. Goals serve directive functions, and goals themselves direct attention toward goal-directed behavior and away from activities that are irrelevant to the goal (Locke & Latham, 2002). It is likely that self-talk increases the effect of this mechanism by heightening the intensity of attention directed toward the goal of interest and decreasing attention toward behaviors that might interfere with goal-directed behavior. In addition, the strongest performance in goal-directed behavior is observed when people are committed to their goals, and this is facilitated by the importance of the goal and resulting outcomes (Locke & Latham, 2002). Self-talk that addresses goal importance (i.e., "I *need*") and possible outcomes (e.g., "I need to work 3 extra hours tonight *so that I pass my class*") likely facilitates goal commitment, and therefore strengthens performance for goal-directed behavior. Research has demonstrated that people high in need for the achievement of their goals experience greater commitment to them in comparison to people with lower need to obtain their goals, and this is even more pronounced when people set their own goals (Hollenbeck, Williams, & Klein, 1989). Through facilitating the perception of autonomy and self-determination, self-talk that emphasizes a sense of agency (i.e., "*I*") and a sense of importance (i.e., "*need*") might be instrumental in the development of goal commitment and goal-directed behavior.

When Temptations Get in the Way

Battling temptation when attempting to adhere to long-term goals, particularly goals regarding quitting or cutting down on problem behaviors, is a challenge for many people. For example, a cigarette entices someone who is trying to reduce smoking behavior; a huge slice of chocolate cake seduces someone who is attempting to diet; a cold glass of beer provokes someone recovering from alcohol abuse. However, studying some of these behaviors in the laboratory is difficult because many temptations are not only problematic at the individual level, but they are also public health hazards, and even illegal. For instance, bringing Pepe or Jonathan (who are actively trying to abstain from methamphetamine) into the laboratory and offering them methamphetamine would be illegal and could give rise to a variety of problems (e.g., interpersonal, medical, psychological, legal) in their personal lives. Even without offering substances, exposing people to cues of substances when they might be trying to quit or cut down is also ethically problematic. Issues with ethical implications, such as those described above, lend importance to the development of analogues that can be easily studied in the laboratory. Analogues allow for approximations that mimic the lures of addictive behaviors, temptations that are ethically feasible to provide access to, and motivation that can be manipulated (via self-talk) toward or away from an analogue temptation.

A new brand of temptation that has recently made its way to the foreground, and is now considered by some to be an "addiction," is cell phone use (Sapaca, Rockman, & Clark, 2016; Roberts, Petnji Yaya, Manolis, 2014). Students spend time engaged in a variety of activities on their cell phones. One study reported the top five cell phone activities that students spend the most time on are texting, emails, Facebook, internet, and phone calls, respectively (Roberts, Petnji Yaya, & Manolis, 2014). McAllister (as cited in Roberts, Petnji Yaya, & Manolis, 2014)

found that 60 percent of college students admit thinking they might be addicted to their cell phones. Another study found that 10.4% of college students actually meet criteria for pathological cell phone use and that their use is associated with clinical symptoms such as anxiety and insomnia (Jenaro, Flores, Gomez-Vela, Gonzalez-Gil, & Caballo, 2007).

Behavioral addiction, like substance addiction, can be described as a habitual drive or compulsion to continue behaving in a manner that negatively affects one's wellbeing (Roberts & Pirog, 2012), and features the core components of addiction (salience, euphoria, tolerance, withdrawal symptoms, conflict and relapse; Griffiths, 2000). With college students spending nearly nine hours per day on cell phones, these devices have recently become the latest behavioral and technological addiction (Roberts, Petnji Yaya, & Manolis, 2014). Given the ubiquitous nature of cell phone use in college populations, and the features of addiction its overuse shares with other behavioral and substance addictions, cell phone use seems like a reasonable analog for studying temptation related behaviors in laboratory settings.

The Current Study

The current study evaluated the effect of *want* vs *need* linguistic self-talk strategies on temptation situations. This research proposed that the linguistic self-talk strategies people used would evoke and enhance the perception of autonomy and competence (Ryan & Deci, 2000), and provide the persistent inner resources (Reeve, 1996) necessary to persevere in goal-directed behavior in the face of temptation. Furthermore, this research sought to demonstrate that the linguistic self-talk strategies people used would enhance the perseverance of extrinsically motivated goals by facilitating internalization and integration, therefore increasing autonomy and goal-directed behavior (Ryan & Deci, 2000). This study also proposed that addressing the importance and possible outcomes of goal-directed behavior in self-talk would facilitate goal

commitment, and therefore increase the likelihood of engaging in goal-directed behavior, rather than temptation-related behavior (Hollenbeck, Williams, & Klein, 1989; Locke & Latham, 2002).

This research contributed to the understanding of motivation and self-regulation, in the context of both everyday temptations and addictive behaviors, by attempting to assess processes relevant to those experienced when people are faced with temptation and long-term goal situations. To demonstrate how such processes might play out in both everyday temptation situations and among individuals suffering from addiction, we revisit Kaitlyn and Pepe. Kaitlyn is now grown up and in graduate school. She has established the long-term goal of finishing her assignments at a reasonable hour the night before they are due, but often faces the temptation of passing time on her cell phone instead. In such an instance, Kaitlyn must decide whether to get to work and give herself a reasonable amount of time to complete her assignment (adhere to her long-term goal) or watch cute puppy videos and scroll through Pinterest on her iPhone (give in to her temptation). Pepe is addicted to methamphetamine, but has decided that it is time to quit and remain abstinent. Pepe's long-term goal has been established, but he encounters a situation in which he must decide whether to take a hit from the methamphetamine pipe that was handed to him (give in to his temptation), or refuse the pipe (adhere to his long-term goal). Although Pepe's situation is quite different from Kaitlyn's, the same processes are at work (Kopetz, Lejuez, Wiers, & Kruglanski, 2013). This study proposed that the outcome of such situations is influenced using linguistic self-talk strategies.

It was hypothesized that the linguistic self-talk strategy *need* would facilitate long-term goal striving to a greater degree than *want*, through the facilitation of self-regulation. When focused on a long-term goal, *need* self-talk should facilitate the devotion of more time to that

particular goal, in comparison to *want* self-talk. For example, when Kaitlyn uses *need* self-talk (e.g., "I *need* to finish my assignment") she is likely to devote more time to her assignment than if she were to use *want* self-talk (e.g., "I *want* to get that assignment done"). On the other hand, it was predicted that *need* self-talk, compared to *want* self-talk, would disrupt self-regulation when focused on a temptation by increasing engagement with that particular temptation. For example, when Kaitlyn uses *need* self-talk (e.g., "I *need* to look for something on Pinterest"), she is more likely to devote her time to cell phone use than if she were to use *want* self-talk (e.g., "I *want* to check something on Pinterest").

Method

Power Analysis

Using G*Power software, a power analysis was conducted to estimate the sample size necessary for testing the hypotheses of this 2 x 2 factorial design. Effect size was estimated using research conducted by Senay, Albarracin, and Noguchi (2010) in which a 2 x 2 design was used to investigate the effects of interrogative and declarative forms of self-talk (*Will I?* vs *I will)* on intentions to exercise. The study conducted by Senay and colleagues (2010) yielded an effect size of $\eta^2 = .09$ ($f = .3145$). Using the input parameters, Power $(1 - \beta) = .95$ and $\alpha = .05$, and the effect size found by Senay et al. (2010), the software recommended a sample size of $N = 134$.

Participants

Introductory psychology students ($N = 198$) were recruited for this study through the subject pool at a large Southern University. Participants were required to own an Apple or Android smartphone to participate in this study, and upon signup were instructed to bring their cell phone to the experimental session. One course credit was granted in exchange for participation.

Measures

Brief Self-Control Scale. The Brief Self-Control Scale (Tangney, Baumeister, & Boone, 2004) assesses habits related to self-control behavior and perceptions of trait self-control. This 13-item scale is relatively brief and easily administered, with each item rated on a 5-point Likert-type scale from 1 (*not at all like me*) to 5 (*very much like me*). This measure was used to determine if participants' perception of perceived self-control was related to the amount of time devoted to their condition's task after engaging in self-talk. Internal consistency for this study was good ($\alpha = .82$).

Behavioral Inhibition and Behavioral Activation Scale. The Behavioral Inhibition and Behavioral Activation Scale (BIS/BAS; Carver & White, 1994) is a 20-item measure designed to assess two general motivational systems (i.e., behavioral approach toward something desired, behavioral avoidance of something unpleasant) theorized to underlie an individual's behavior and affect. Behavioral inhibition is represented as a unitary dimension, whereas there are three broad dimensions of behavioral activation, which include reward sensitivity, drive, and fun-seeking behavior. These items are rated on a four-point Likert-type scale from 1 (*very true of me*) to 4 (*very untrue of me*). This measure was used to determine whether motivational style (approach toward or avoidance of something desired or unpleasant), reward-sensitivity, drive, and fun-seeking behavior were related to the amount of time spent on the condition's task after engaging in self-talk. Internal consistency was good for the behavioral inhibition scale ($\alpha = .82$), the reward sensitivity scale ($\alpha = .87$), and the drive scale ($\alpha = .79$); internal consistency was inadequate for the fun-seeking scale ($\alpha = .61$).

Monetary Choice Questionnaire. The Monetary Choice Questionnaire (MCQ; Kirby, Petry, & Bickel, 199) is a 27-item measure that assesses delay discounting, or the reduction in

the present value of a future reward as the delay for that reward increases. Higher discounting rates indicate lower present values of future rewards, and represent more impulsive choosing. Items are presented as fixed choices between smaller, more immediate rewards and larger, delayed rewards. This measure was used to determine whether the rate of participants' impulsive choosing was related to the amount of time they devoted to their condition's task after engaging in self-talk. Internal consistency for this study was good ($\alpha = .90$).

Trait Meta-Mood Scale. The Trait Meta-Mood Scale (Salovey, Goldman, Turvey, & Palfai, 1995) is a 30-item self-report scale that measures attention to mood, clarity of mood, and efforts to repair negative mood states. Items are rated on a 5-point Likert-type scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The measure has three subscales: (1) Attention to Feelings, which measures the degree to which individuals notice and think about their feelings, (2) Clarity of Feelings, which measures the ability to understand one's mood, (3) Mood Repair, which measures attempts to repair unpleasant moods or maintain pleasant ones. This emotional intelligence questionnaire served to support the cover story that this study was attempting to identify predictors of emotional intelligence, and to assess whether people's tendencies to attend to their mood and emotions, and their ability to discriminate and regulate them, are related to the effect of self-talk on time devoted to either the temptation or long-term goal task. Internal consistency in this study was good for the overall scale ($\alpha = .86$), and at least acceptable for each subscale (Attention to Feelings, $\alpha = .83$; Clarity of Feelings, $\alpha = .85$; Mood Repair, $\alpha = .77$)

Grit Scale. The Grit Scale (Duckworth, Peterson, Matthews & Kelly, 2007) is a 12-item Likert-type scale meant to measure perseverance and the ability to accomplish long-term goals. Items are rated on a 5-point Likert-type scale, ranging from 1 (*not like me at all*) to 5 (*very much*

like me). This measure assessed participants' perseverance and passion for long-term goals to determine whether relationships existed between this construct and the amount of time participants devoted to their condition's task after engaging in self-talk. Internal consistency for this study was good (α = .79).

Problematic Use of Mobile Phones Scale. The Problematic Use of Mobile Phones Scale (PUMP; Merlo, Stone, & Bibbey, 2013) is a unidimensional 20-item measure assessing problematic mobile phone use, or "cell phone addiction." Items regarding personal mobile phone use are rated on a five-point Likert-type scale from 1 (*strongly disagree*) to 5 (*strongly agree*). The Problematic Use of Mobile Phones Scale was used to assess pathological levels of cell phone use among participants, and whether problematic phone use related to the amount of time participants devoted to study tasks after engaging in self-talk. Internal consistency for this study was excellent (α = .90).

Procedure

Upon arrival at the lab, participants were told a cover story that they would be participating in a study about the relationships between handwriting, creative drawing style, cell phone use, and emotional intelligence. Deception was used to ensure that personal beliefs or experiences regarding the true purpose of the study would not influence participants' natural responses to study procedures, specifically how time was utilized during "task time." Participants were asked to read, review, and sign informed consent forms, which included consent for video recording.

Participants were then randomized into self-talk (*want* vs *need*) and goal emphasis (temptation vs long-term goal) conditions, and asked to complete a brief demographics

questionnaire (Appendix A), which included a qualitative assessment of desired career after graduation.

The main study tasks were introduced to participants, masked as two studies they would have the opportunity to participate in. The long-term goal task was veiled as a computerized emotional intelligence training activity. This task was designed to appear as if it increased emotional intelligence skills in a short duration, although there is no evidence to support this—this task was designed by the researcher, specifically for the purposes of this study. To facilitate the belief that the training was personally important and relevant, participants' career of choice (which was provided by participants on the demographics questionnaire), was inserted into the script detailing the purpose and benefits of the emotional intelligence training. Participants were told that the training was particularly suited for people entering their desired career fields, as emotional intelligence skills were especially sought after in such fields. The training presented participants with a series of evocative interpersonal scenarios (drawn from the Levels of Emotional Awareness Scale; Lane, Quinlan, Schwartz, Walker, & Zeitlin, 1990; Appendix B) and asked them to respond as emotionally intelligently as possible by typing their responses in the spaces provided. Each trial consisted of five scenarios, and there were five trials total. As an effort to keep participants engaged in the training, "clues" said to help improve responding were included between each trial. Computer functionality was limited to the emotional intelligence training (i.e., window minimization was not possible) to ensure that participants could not navigate away from the emotional intelligence training, and were engaged in the training when facing the computer screen.

The temptation task was disguised as a study exploring whether cell phone use could predict emotional intelligence among college students. The researcher read aloud a brief

description of why cell phones are important (e.g., staying connected, real-time communication, not having to miss anything), and then asked participants to take out their phone, turn the volume to maximum, plug it into a provided charger, and place it in a basket that was securely positioned approximately an arm's reach away from the computer station where the emotional intelligence training was presented.

Participants oriented toward the emotional intelligence training (long-term goal) were introduced to the cell phone study (temptation) first, then introduced to the emotional intelligence training; participants oriented toward the cell phone study were introduced to the emotional intelligence training first, then introduced to the cell phone study. The organization of these introductions was intended to prime participants to the task they were randomly assigned to (the task participants were randomly assigned to was introduced last).

Next participants completed a handwriting task; they were told that a handwriting sample, written in a special format with a "special handwriting pen," was needed to test the hypothesis that handwriting predicts emotional intelligence. The real purpose of this task was to prime *want* or *need* self-talk and emphasize either the emotional intelligence training (long-term goal) or the cell phone study (temptation). Participants were instructed to write three original sentences about why they *want*ed/*need*ed (depending on self-talk assignment) to engage in the emotional intelligence training/cell phone study (depending goal emphasis assignment). Participants were asked to copy their three original sentences twice, for a total of nine sentences. To foster a sense that the task was personally relevant, participants were asked to generate personal reasons for why they *want*ed/*need*ed to engage in the emotional intelligence training/cell phone study (e.g., how the task was important for them or benefitted them personally). To increase exposure to the manipulation, and increase buy-in to the handwriting

analysis, participants were asked to review their work, once complete, to verify that their duplicated sentences were consistent with their original sentences, and hence compatible with the handwriting analysis software. The researcher then scanned the handwriting protocol document with a handheld scanning device, to foster participants' belief that the document would be analyzed by special software.

Participants were then given 20 minutes in which they could choose to work on the emotional intelligence training, engage in the cell phone study by using their own cell phone, do nothing, or any combination of activities—the instructions emphasized that it was entirely their choice. Participants were seated at the center of a long table with the emotional intelligence training activity to their left, and the basket containing their cell phone to the right. The researcher then began the video recording, stepped out of the room (to alleviate any pressure the participant might have felt to engage in a specific activity), and began a timer for 20 minutes. After 20 minutes expired, the researcher re-entered the room, instructed the participant to stop what they were doing, and stopped the video recording.

Next participants were informed that a creative drawing sample must be collected to test the hypothesis that creative drawing style predicts emotional intelligence. This task served as a "filler" task, designed to divert the participant's attention from the preceding activities, before the administration of individual difference measures. Participants were asked to draw anything of their choosing within the lines of a square printed on a sheet of paper, using a "special drawing pen." The "special drawing pen" served to enhance the cover story and, like the "special handwriting pen," was said to be compatible with the analysis software's capabilities. Once participants completed their drawings, or after five minutes (whichever came first), participants' drawings were scanned into an electronic file.

Participants then completed individual difference measures via Qualtrics. They also completed a short questionnaire that asked what they thought the experiment was about and how much they desired to engage in the emotional intelligence training and the cell phone study on a 10-item Likert scale. Participants were also asked to estimate a daily average of notifications they receive on their cell phones, and how many minutes (of the 20-minute task time) they think they spent on the emotional intelligence training, on their cell phones, and doing neither of the tasks. They were then debriefed, offered the opportunity to ask any questions they had about the study, and thanked for their participation.

Results

From the full sample (N = 198), participants were excluded whose video recordings did not have audio (n = 4), whose video recordings were incomplete or damaged due to malfunctions with recording software or computer crashes (n = 27), whose "task time" was interrupted due to emotional intelligence training software crashes (n = 5), whose cell phones had issues with volume (i.e., not turned on, not working) or power (n = 3).

Participants' adherence to the handwriting task was evaluated as a potential rationale for exclusion. The handwriting task prompted participants to generate three reasons for *want*ing/*need*ing to engage in the task they were randomly assigned to—the reasons were to reflect why engagement in the task would be personally important or beneficial to them. Answers, if written in the correct format, were intended draw participants toward the task they were randomly assigned to. Seventy-seven participants (53.5%) completed the handwriting task correctly (i.e., wrote all 3 sentences in the correct format, and provided sufficient personal reasons why they *want*ed/*need*ed to engage the task they were randomly assigned to). Sixty-seven participants completed the handwriting task incorrectly; 29 participants (20.1%) wrote one

of three sentences incorrectly, and 38 participants (26.4%) wrote two of three sentences incorrectly. Ultimately, participants were excluded who wrote zero sentences correctly (n = 5).

The final sample (n = 144) was 77.8% female, 78.5% White (10.62% of which identified as Hispanic or Latino), and ranged from 18 to 33 years in age (M = 19.45, SD = 2.26). There were no differences in proportion of males and females by condition, $\chi^2 = 5.83$, $p = .12$, proportion of people with ethnic minority status by condition, $\chi^2 = 3.59$, $p = .31$, and no age differences across conditions, $F(3, 139) = .52$, $p = .67$.

Data Preparation

Videos of allotted "task time" during experimental sessions were viewed and coded by two undergraduate research assistants to determine the amount of time each participant spent engaged in the emotional intelligence training (long-term goal) and the cell phone study (temptation). Coders were instructed to begin timing when they heard the researcher close the door on the way out of the room at the beginning of "task time," and stop timing when the researcher re-entered the room once "task time" ended. Time was recorded as spent on the long-term goal task when participants were directly engaged in the emotional intelligence training, as evidenced by participants directly facing the computer screen. Time was recorded as spent on the temptation task when participants were directly engaged with their cell phones, as evidenced by participants directly facing the screen of their phones, or in some cases, their cell wrist devices (e.g., smart watch, Apple watch). Time was recorded in minutes and seconds, separately for the emotional intelligence training and the cell phone study, and transformed into numerical variables (e.g., 18:45 = 18.75) for statistical analyses. The number of notifications participants received during the 20-minute window was also recorded.

Intraclass correlation (ICC) analyses were conducted to determine the interrater reliability between coders for amount of time recorded as spent on the emotional intelligence training (long-term goal) and the cell phone study (temptation). A high degree of reliability was found between coders for the amount of time recorded as spent on the emotional intelligence training. The average measures ICC was .997 with a 95% confidence interval from .996 to .998. A high degree of reliability was also found between coders for the amount of time recorded as spent on the cell phone study. The average measures ICC was .999 with a 95% confidence interval from .999 to 1.000. Because interrater reliability was high for each task, times recorded by coder one and coder two were averaged to form a single time variable for each task.

"Task Time" Outcomes

In addition to recording the amount of time participants spent on study tasks, participants estimations of how much time they *thought* they spent on each task (or doing neither), and how much they desired to engage in either task was recorded. Participants spent significantly more time engaged in the emotional intelligence training (long-term goal) than the cell phone study (temptation; see Table 1). The amount of time participants estimated they spent on the emotional intelligence task was significantly greater than their estimates of time spent on the cell phone study. Their desire to engage in the emotional intelligence task was also significantly greater than their desire to engage in the cell phone study.

Discrepancies between the time participants actually spent on each task and the time they thought they spent on each task were also compared (means in Table 1). The percentage of time participants reported thinking they spent on the emotional intelligence training was significantly less than the percentage of time they actually spent on the task, $t(142) = -5.75$, $p < .001$. On average, participants underestimated the percentage of time they spent on the emotional

intelligence training by 14.04% (*SD* = 29.19). To determine whether self-talk or goal emphasis condition had effects on the discrepancy between time actually spent, and time thought spent, on the emotional intelligence training, a 3-way mixed design ANOVA was used with the time variables as the within-subjects variables, and the conditions as the between subjects variables. The discrepancies between percentage of time participants thought they spent, and percentage of time they actually spent, on the task did not differ by either goal emphasis or self-talk conditions.

The amount of time participants thought they spent on the cell phone study was significantly greater than the amount of time they actually did spend on the cell phone study, $t(139) = 2.83$, $p = .01$. On average, participants overestimated the percentage of time they spent on their phones by 5.39% (*SD* = 22.55). To determine whether self-talk or goal emphasis condition had effects on the discrepancy between time actually spent, and time thought spent, on the cell phone study, a 3-way mixed design ANOVA was used with the time variables as the within-subjects variables, and the conditions as the between subjects variables. The discrepancies between percentage of time participants thought they spent, and percentage of time they actually spent, on the task did not differ by either goal emphasis or self-talk conditions.

Participants received an average of 1.42 notifications (*SD* = 2.21) during "task time." Participants reported thinking they spent an average of 1.64 minutes (*SD* = 3.19) doing neither task (i.e., doing anything other than the emotional intelligence training or using their cell phones).

Manipulation Check

To determine whether the handwriting task manipulated participants' desire to engage in the task they were primed toward (i.e., the task they wrote about), a 2 x 2 mixed design ANOVA on desire to engage in study tasks was conducted, with goal emphasis (long-term goal/emotional intelligence training; temptation/cell phone study) as the between-subjects factor, and study task

(emotional intelligence training; cell phone study) as the within-subjects factor. Consistent with the *t*-test for desire outcomes reported in Table 1, there was a statistically significant main effect for study task, $F(1, 137) = 67.71$, $p < .001$, partial $\eta^2 = .33$. The main effect for goal emphasis was not statistically significant, $F(1, 137) = 1.69$, $p = .20$. The goal emphasis by study task interaction was also not significant, Greenhouse-Geisser adjusted $F(1, 137) = 1.29$, $p = .26$.

Primary Analysis

A two-way factorial ANOVA was conducted to explore the impact of self-talk (*want; need*) and goal emphasis (long-term goal/emotional intelligence training; temptation/cell phone study) on the percentage of time participants engaged in the long-term goal task (and reciprocally, the temptation task). The main effect for self-talk, $F(1, 140) = .67$, $p = .41$, and the main effect for goal emphasis, $F(1, 140) = .67$, $p = .42$, did not reach statistical significance. The interaction effect between self-talk and goal emphasis was also not statistically significant, $F(1, 140) = .23$, $p = .63$[1].

Secondary Analyses

As the primary hypotheses were not supported, additional secondary analyses were conducted to explore the data. The influence of condition on desire to engage in study tasks, as well as participants' perceptions of how much time they dedicated to each task were explored.

To determine whether percentage of time participants thought they spent on the emotional intelligence training (long-term goal) depended on condition, a two-way between groups ANOVA was conducted with the percentage of time participants thought they spent on the emotional intelligence training as the dependent variable, and self-talk (*want*; *need*) and goal emphasis

[1] Two-way between groups ANOVAS were also conducted separately for groups that made zero, one, two, or any errors on the handwriting task. None of these analyses reached statistical significance, therefore the entire sample was included in the primary analysis reported.

(emotional intelligence training/long-term goal; cell phone study/temptation) as the independent variables. Results indicated that main effects for self-talk, $F(1, 139) = .27$, $p = .60$, and for goal emphasis, $F(1, 139) = .49$, $p = .49$ were not statistically significant. However, the self-talk by goal emphasis interaction was statistically significant, $F(1, 139) = 4.27$, $p = .04$, partial $\eta 2 = .03$ (see Figure 1). For *want* self-talk, there was not a significant difference between percentage of time participants thought they spent on the emotional intelligence task between the emotional intelligence training/long-term goal emphasis ($M = 81.71$, $SD = 23.85$) and cell phone study/temptation emphasis ($M = 76.14$, $SD = 23.95$); $F(1, 139) = .92$, $p = .34$. For *need* self-talk, the difference in percentage of time participants thought they spent on the emotional intelligence training between goal emphases was significant, such that participants primed toward the cell phone study/temptation ($M = 82.44$, $SD = 19.76$) thought they spent a substantially greater percentage of time engaged in the emotional intelligence training than did participants primed toward the emotional intelligence training/long-term goal ($M = 71.18$, $SD = 29.36$), $F(1, 139) = 3.90$, $p = .05$.

To determine whether the percentage of time participants thought they spent on the cell phone study (temptation) depended on condition, a two-way between groups ANOVA was conducted with the percentage of time participants thought they spent on the cell phone study as the dependent variable, and self-talk (*want*; *need*) and goal emphasis (emotional intelligence training/long-term goal; cell phone study/temptation) as the independent variables. It is important to note that this analysis is not redundant with the two-way between groups ANOVA conducted on the amount of time participants thought they spent on the long-term goal task--participants responded to prompts regarding how they thought they spent their time in a mutually exclusive fashion (e.g., a response of 50% to one prompt did not necessitate a response of 50% to the other).

Results indicated no statistically significant main effects for self-talk, $F(1, 136) = 1.80$, $p = .18$, nor goal emphasis, $F(1, 139) = .001$, $p = .97$. The self-talk by goal emphasis interaction was also not statistically significant, $F(1, 136) = 1.99$, $p = .16$.

Correlational analyses were also conducted to determine whether "task time" outcomes (i.e., time spent on each task, time participants thought they spent on each task, and desire to engage in each task) were associated with one another, and whether individual differences were associated with "task time" outcomes (see Table 2 and Table 3). Greater percentage of time thought spent on the emotional intelligence training (long-term goal) was significantly associated with lower percentage of time thought spent on the cell phone study (temptation), lower percentage thought spent doing nothing, greater desire to engage with the emotional intelligence training, and less desire to engage with the cell phone study. Greater percentage of time thought spent on the cell phone study was significantly associated with greater desire to engage with the cell phone study and less desire to engage with the emotional intelligence training. Finally, greater desire to engage in the cell phone study was significantly associated with less desire to engage in the emotional intelligence training.

Greater percentage of time thought spent on the emotional intelligence training (long-term goal) was associated with greater behavioral inhibition, or reaction to anticipation of punishment (BIS/BAS). Greater percentage of time thought spent on the cell phone study (temptation) was significantly associated with less behavioral inhibition, and less fun-seeking behavior (BIS/BAS). Greater percentage of time thought spent doing neither task was significantly associated with lower ratios of delayed reward choices (MCQ), or greater impulsivity. Greater desire to engage with the emotional intelligence training was significantly associated with greater behavioral inhibition (BIS/BAS), greater approach for reward

(BIS/BAS), and greater fun seeking behavior (BIS/BAS). Greater desire to engage with the cell phone study was significantly associated with less self-control and greater problematic phone use.

Moderating Effect of Self-Control on the Relationship Between Condition and Task Time Variables. Moderated regression analyses (PROCESS model 3; Hayes, 2013) were conducted to determine if the effects of self-talk and goal emphasis on "task time" variables (i.e., percentage of time spent on the emotional intelligence training [long-term goal], percentage of time thought spent on study tasks and doing nothing, and desire to engage in study tasks) were moderated by self-control. "Task time" variables were entered as the outcome measure (Y) for each analysis. For ease of interpretation, self-control was entered as the independent variable (X), self-talk (*want, need*) condition as one dichotomous moderator variable (M), and goal emphasis (emotional intelligence training/long-term goal, cell phone study/temptation) condition as another dichotomous moderator variable (W).

Desire to Engage in the Cell Phone Study. The relationship between self-control, self-talk condition, and goal emphasis condition predicted desire to engage in the cell phone study. The model accounted for 17.32% of variability in desire to engage in the cell phone study (temptation), $F(7, 131) = 3.92$, $p < .001$. Main effects of self-talk, goal emphasis, and self-control, as well as interactions between self-talk and self-control, goal emphasis and self-control, and self-talk and goal emphasis were statistically significant (see Table 4), but were all qualified by the significant three-way interaction. For participants oriented toward the emotional intelligence training (long-term goal), the interaction between self-talk and self-control was statistically significant (Effect = -.29, SE = .08, $p < .001$); for participants who used *need* self-talk, greater self-control significantly predicted greater desire to engage in the cell phone study

(Effect = .17, SE = .06, p < .01), while for those who used *want* self-talk, greater self-control predicted less desire to engage in the cell phone study (Effect = -.12, *SE* = .05, *p* = .01; Figure 2). On the other hand, for participants oriented toward the cell phone study, the interaction between self-talk and self-control was not statistically significant (Effect = .04, *SE* = .07, *p* = .53; Figure 2). In sum, greater self-control predicted less desire to engage in the cell phone study for participants who *want*ed or *need*ed the cell phone study, and for participants who *want*ed the emotional intelligence training; but for participants who *need*ed the emotional intelligence training, greater self-control predicted greater desire for the cell phone study.

Discussion

The purpose of the current study was to explore the differential effects of *want* vs *need* self-talk strategies in temptation situations. Results did not support the hypotheses that participants who used *need* self-talk, rather than *want* self-talk, would spend more time engaged in the task they were randomly assigned to. Neither self-talk strategy appeared to facilitate self-regulation toward long-term goal striving, nor did either strategy appear to disrupt self-regulation and lead to engagement with the temptation. Contrary to the prediction that participants would spend more time engaged with the task they were randomly assigned to (i.e., the task they were oriented toward via the handwriting task), across conditions, participants spent significantly more time engaged with the long-term goal task. This finding served as an indication that the effect of the handwriting task manipulation on amount of time dedicated to study tasks was not sufficient to prime participants toward particular tasks.

The handwriting task's lack of effect on manipulating participants to spend time engaged with the task they were randomly assigned to might be explained by a variety of reasons. First, many participants did not follow the instructions of the handwriting task, which asked them to

write about why they *want*ed/*need*ed to engage in either task (why it would be important to them, how it would benefit them personally). Rather than providing such reasons (e.g., I *want* to participate in the cell phone study because I could really use this time to respond to my text messages), many participants described why they *want*ed/*need*ed to participate in the study altogether (e.g., I *need* to do the emotional intelligence training because I need credit to pass my class; I *want* to do the cell phone study because I want to help the researcher/I'm interested in the study). Despite concerted efforts to provide participants with clear instructions, this task might have been completed incorrectly because participants felt overloaded with information (i.e., description of study tasks, why emotional intelligence and cell phone use are important), which likely would have diminished their capacity to remain engaged in the handwriting task. Alternatively, participants might not have understood the instructions for the handwriting task, or the necessary information provided beforehand. Although examples were provided to participants, and undergraduate researchers were instructed to check for understanding (i.e., ask participants to reiterate their understanding of the instructions) before letting them begin, undergraduate researchers might have let participants begin the handwriting task without having demonstrated sufficient understanding of the instructions. Although training and practice was provided for undergraduate researchers, perhaps they themselves could not fully distinguish between a sufficient and an insufficient answer; perhaps vague verbal affirmations of understanding (e.g., "I'm supposed to write about the cell phone study") seemed sufficient to let participants continue. It is also possible that efforts to keep undergraduate researchers as blind as possible to the true purpose of the study affected their ability to distinguish between a correct and incorrect sentence, or whether the content of the sentence was specific enough.

Second, the handwriting task asked participants to list *personal* reasons why they *want*ed/*need*ed to participate in their randomly assigned task. These reasons were supposed to reflect why participating in the task would be personally beneficial or important to participants. This degree of personal buy-in was required to ensure the manipulation was personally salient for each participant—that the emotional intelligence training actually reflected a long-term goal, and the cell phone study actually reflected a temptation. Perhaps many participants did not complete the handwriting task correctly because they did not have personally relevant reasons for *want*ing or *need*ing to engage in either task, and therefore could not provide responses that met the handwriting task's requirements. Perhaps the requirement of three reasons seemed excessive (many participants wrote one or two sentences correctly). Many participants provided reasons that were likely genuine (e.g., to receive participation credit, to help the researchers, interest in the outcome of the study), but not in line with the requirements of the task (i.e., generation of personally relevant reasons that extended beyond the context of being a participant in the study).

Finally, some reasons given on the task were reasonable (e.g., "I *want* to use my cell phone because it's where I keep my schedule," "I *need* to use my cell phone to stay in contact with friends from high school"), but did not reflect an immediate (i.e., during the 20-minute "task time") desire to engage in either task. This temporal aspect of the manipulation was likely critical. Such general reasons might not have sufficiently primed participants to engage in tasks *during the 20-minute "task time"*—perhaps participants thought their desires could wait.

Certain methodological modifications might have rectified these issues of misunderstanding surrounding the handwriting task instructions. First, emphasis should have been placed on the expectation that reasons reflect why participants *want*/*need* to engage in *their*

particular study task (e.g., I *want* to engage in the cell phone study so I can text my boyfriend back), rather than the *overall study* (e.g., I *need* to participate in the emotional intelligence training because I need credit for my class). Second, the importance of providing reasons that reflect participating in study tasks *now* (e.g., I *need* to use my cell phone now to purchase that Groupon that is about to expire), rather than some other time (e.g., I *need* to engage in the cell phone study because I like to listen to music on my way to class), should have been highlighted. This could have been accomplished by revising instructions to include the word "now" (e.g., "Why would doing this task *now* benefit you personally?" or "How would engaging in the emotional intelligence training *now* benefit your future?"). Third, the information provided before the handwriting task could have been simplified by reducing the amount dialogue provided by the researcher (e.g., reducing the amount of words spoken), or certain bits of information could have presented in a different format to keep participants engaged (e.g., explanation for why the emotional intelligence training/cell phone use is important could have been presented, by people other than the researcher, in video format). Fourth, research assistants could have been trained more extensively to recognize sentence content that was and was not specific enough to align with the goals of the manipulation—this might have necessitated sharing more information about the true purpose of the study with the researchers running participants.

Alternatively, reducing the amount of reasons participants were required to provide for the handwriting task (e.g., provide one reason and copy it ten times) might have increased the likelihood of it being completed correctly. Researchers could have also facilitated a conversation with participants to assist them in generating sufficient reasons for the handwriting task before writing them down on paper (or amending their reasons until sufficient). The implementation of an explicit manipulation check to assess whether participants' reasons for *want*ing/*need*ing to

engage in study tasks were genuine, rather than merely made up for the study, would have been an important addition.

Secondary Analyses

Although primary predictions were not supported, secondary analyses revealed several significant findings. Results revealed that, across conditions, participants' desire to engage in the long-term goal task was significantly greater than their desire to engage in the temptation task. Regardless of their reasons for *want*ing or *need*ing to engage in the temptation task (cell phone study), participants likely considered their ability to engage in cell phone activity after the study. The limited availability of the emotional intelligence training, compared to the virtually limitless availability of cell phones, might have affected participants' desires and behaviors regarding the long-term goal task (emotional intelligence training). Participants might have believed that the emotional intelligence training could have actually benefitted them, or perhaps they were merely curious because the task was novel. Another explanation might be that, given the context of the experimental session, they perceived that they were supposed to engage in the emotional intelligence training, rather than cell phone use (which is a normal, everyday activity for most people). Additionally, it is possible that participants' buy-in to the deception exceeded the researcher's expectations, such that that the emotional intelligence training was remarkably relevant for participants, given the emphasis that it would benefit their future careers. If this is the case, it makes sense that participants' desires to engage in the emotional intelligence training far exceeded their desires to engage with their cell phones. It would have been beneficial to seek clarification in these areas—manipulation check questions assessing why participants desired one task over the other, and whether they believed in the nature and importance of the study

tasks (as set forth by the researcher) could have easily been added to the existing questionnaire taken at the end of the study.

Interestingly, participants who *need*ed the temptation (cell phone study) thought they spent more time engaged in the long-term goal (emotional intelligence training) than those who *need*ed the long-term goal, those who *want*ed the long-term goal, and those who *want*ed the temptation. These participants, despite being oriented toward the temptation, reported a greater desire to engage in the long-term goal task. It is possible that the effect of *need* self-talk extended beyond the intended designation (i.e., temptation/cell phone study) and instead was directed toward the object of participants' desires—the long-term goal. If it can be assumed that participants' desire for the long-term goal was intrinsic in nature, it is possible that *need* self-talk fostered natural exploring and learning tendencies, which motivate the seeking of novelty and challenge (SDT; Ryan & Deci, 2000). Since intrinsic/self-directed motivation, rather than have-to motivation, is associated with fewer conflicting desires, weaker temptations, and stronger desire to resist them (Milyavskaya et al., 2015), it could be assumed that, despite the salience of the temptation, participants' desires for the long-term goal took precedence. In fact, since the mere presence of a temptation can foster a stronger desire to resist it (Milyavskaya et al., 2015), it makes sense that it might also foster greater desire, or striving, toward a long-term goal. Therefore, the mere presence of the temptation (participants' cell phones) likely facilitated their desires and actions toward the long-term goal (emotional intelligence training), which reflects in how participants thought they spent their time. In sum, participants oriented toward the temptation who used *need* self-talk might have applied this this self-talk strategy toward the task they actually desired to engage in--the long-term goal task. Since their desire for the long-term goal task could be considered intrinsic (was self-generated--not primed), it would be fair to

assume that both *need* self-talk, and the mere presence of a temptation, facilitated participants' motivation to engage in the long-term goal, and hence, the amount of time they thought they spent engaged in it.

Several significant correlations between individual differences and "task time" outcomes were found. Participants who reported thinking they spent greater percentages of time doing nothing also reported lower ratios of delayed reward choices, or greater impulsivity. This association might reflect that doing nothing could be considered a temptation for some participants. Significant associations were also found between greater desire to engage in the long-term goal task, greater behavioral inhibition, approach for reward, and fun seeking behavior. These associations might be explained by the novel, and possibly fun, nature of the long-term goal (emotional intelligence training), and the possibility that it was viewed as the activity participants were expected to, or supposed to, engage in. Further, participants who reported greater percentages of time thought spent on the temptation task reported less fun seeking behavior and less behavioral inhibition, while participants higher in behavioral inhibition thought they spent more time on the long-term goal. These associations might reflect that participants who were not concerned with what they thought they were supposed to do, nor with seeking entertainment, were also not concerned with monitoring and/or reporting (or even over-reporting) time they thought they spent on the temptation task; contrarily, participants concerned with spending, or reporting, more time on the long-term goal likely experience sensitivity to the anticipation of punishment Not surprisingly (if cell phones do indeed serve as temptations), greater problematic phone use and less self-control were significantly associated with greater desire to engage in the temptation task.

The relationship between self-control and desire to engage in the temptation task was further explored, using moderated regression analysis, and revealed interesting results. For participants who *need*ed to engage in the long-term goal task, greater self-control predicted greater desire to engage with the temptation. Perhaps it is easier for people with salient intrinsic long-term goals, and the high levels of self-control required for goal-directed behavior, to acknowledge their competing desires. It might also be that, for such people, acknowledging temptations has an empowering effect on goal-directed behavior (Milyavskaya et al., 2015).

Additional Considerations

Overall, participants spent a greater percentage of time on the long-term goal task (emotional intelligence training) than they thought they did. Conversely, participants thought they spent a greater percentage of time engaged with the temptation (cell phone study) than they actually did. Approximately 35% of participants also reported that they thought they spent some amount of time doing nothing. Although time spent doing nothing was not coded by the researchers, videos were reviewed for participants who reported thinking they spent time doing nothing. Interestingly, what participants considered "doing nothing" was largely undetectable to the researcher. In other words, overwhelmingly, participants appeared to be engaged in either the long-term goal or temptation task during the entirety of "task time."

Limitations

The present study has several limitations. Although participants were randomly assigned, it cannot be assumed that the manipulation was received similarly by participants in the same condition. It also cannot be assumed that the meaning participants assigned to their self-talk strategy was any different than it might be for any other strategy. In other words, because *want* and *need* are often used interchangeably, perhaps the meaning attached to each word is

synonymous for many people--perhaps there is no difference between *want* and *need*. Or perhaps there is only a difference when these words are considered comparatively. Because self-talk strategies were not compared within participants, one can only speculate.

It is also possible that participants came in with preconceived meanings assigned to the words *want* and *need*. Perhaps for some people, *need* does evoke and enhance perceptions of autonomy and competence that facilitate intrinsic goal striving; perhaps *need* also facilitates internalization and integration of extrinsic goals, which enhances goal-directed behavior (SDT; Ryan & Deci, 2000). For others, *need* might embody external pressure. If a goal is not intrinsic, and the word *need* represents the sense that one has to do something, *need* might embody confrontation and even evoke resistance (Miller & Rollnick, 2012). On the other hand, what would happen if an intrinsic goal was paired with a self-talk strategy that represents external pressure and confrontation? Such a strategy would not be likely to enhance motivation.

It is likely that people who perceive *want* and *need* self-talk strategies differently are also similar in other ways (i.e., individual differences). Although this study did assess a number of individual differences, the lack of information pertaining to participants' preconceived meanings of *want* and *need* does not allow any inferences to be made regarding this notion.

For most people, it is likely that successfully entering one's desired career field can be considered a long-term goal. Likewise, cell phone use can probably be considered a temptation for most people. For some people, however, this might not have been the case. This study sampled a population of undergraduate college students, some of which might be unsure—or have no clue—regarding which career field they intend to enter. Likely, many participants did feel sure. Perhaps, though, successfully entering one's desired career field was not the most salient or appropriate long-term goal to draw upon for this study. Similarly, cell phone use may

or may not have been a salient or appropriate choice of temptation. Further, perhaps participants did not interpret cell phone use as a conflicting temptation that interfered with the long-term goal. Perhaps in this particular situation, in the context of participating in this research study, the long-term goal and temptation selected were not relevant. For self-talk to have enhanced or impeded self-regulatory behavior to approach/avoid long-term goals and temptations, such goals and temptations would have to be genuine and personally relevant for the situation.

Strengths and Future Directions

This novel laboratory study contributes to a small area of research on self-talk that extends beyond goal pursuit, and into the arena of temptations. Understanding how self-talk influences goal-directed behavior is an important and worthwhile pursuit, but is severely lacking without consideration of what gets in the way of accomplishing goals. The incorporation of temptation into the context long-term goal striving is a strength of this study. The exploration of *need* self-talk also contributes to this study's strengths and novelty—the word *need* is used largely, and interchangeably, with other words used to express desires. Since self-talk serves as a behavioral feedback mechanism, it is important to consider the implications of different self-talk strategies on goal-related behaviors, especially in temptation situations. Another strength of this study is the use of participants' actual behavior as an outcome measure, rather than self-reported intentions or predictions of behavior. It could also be considered a strength that this study attempted to analogue addictive/temptation behavior via cell phone use among college students (a population for which cell phone addiction is problematic)--exploring addictive behavior as a barrier/temptation to long-term goal achievement in a laboratory setting is novel.

It is unwise to conclude, based on the results of this single study, that *want* and *need* self-talk do not differentially promote self-regulatory behaviors and motivations. It is probable that

want and *need* self-talk *are* different from one another and important in facilitating goal-directed behavior in the face of temptations. Future work might consider establishing differentiation between self-talk strategies prior to manipulation to ensure that participants are considering specific terms (i.e., *want, need*) in and of themselves, rather than viewing them as synonyms of an overarching concept (e.g., desire).

Future work might consider people's preconceived meanings of *want* and *need* and their current patterns of self-talk. It could be important to understand how people talk to themselves already--how they articulate their desires to themselves, how they address intrinsic versus extrinsic desires, how they conceive of their temptations. It would also be helpful to assess, or screen for, participants' long-term goals and temptations *a priori*. Understanding what participants consider to be intrinsic versus extrinsic goals and temptations (and which temptations they consider standing in the way of which goals) would assist in designing study tasks that genuinely reflect participants' experiences of goal pursuit.

Taken together, this information would shed light on whether self-talk strategies should be matched by goal type (intrinsic versus extrinsic) and preconceived meaning of words used in self-talk. For instance, if a person has an intrinsic goal, and considers the word *need* to reflect external pressure, using *need* self-talk might not facilitate self-regulation toward the intrinsic goal; rather, it might promote conflict and resistance, and impede action altogether. But perhaps this same strategy might be useful for goals that really are extrinsic. Future work should explore whether the facilitation of self-regulation depends on the matching of personally meaningful self-talk strategies and goal type.

It would also be important to take individual differences into account in determining which self-talk strategies are most effective in different self-regulatory situations. It might be

that specific self-talk strategies are only effective for people high/low in a certain trait or state, in a specific situation.

Conclusion

Although results did not support the primary hypotheses set forth in this study, definitive conclusions should not be drawn regarding the differential effects, or lack thereof, of *want* and *need* self-talk on goal-directed behavior. *Need* self-talk did not seem to facilitate long-term goal striving, nor the disruption of self-regulation, as participants overwhelmingly spent most of their time engaged in the long-term goal task, regardless of condition; however, *need* self-talk seems to play a role in perceptions of time dedicated to goal-related behavior in the presence of a temptation. *Need* self-talk might also play a role in how temptations function in the presence of salient long-term goals for people with high self-control.

References

Alderson-Day, B., & Fernyhough, C. (2015). Inner speech: Development, cognitive functions, phenomenology, and neurobiology. *Psychological Bulletin, 141*, 931–965. doi:10.1037/bul0000021

Carver, C. S., & White, T. L. (1994). Behavioral inhibition, behavioral activation, and affective responses to impending reward and punishment: The BIS/BAS scales. *Journal of Personality and Social Psychology, 67,* 319-333. doi:0022-3514/94

Dolcos, S., & Albarracin, D. (2014). The inner speech of behavioral regulation: Intentions and task performance strengthen when you talk to yourself as a you. *European Journal of Social Psychology, 44,* 636-642. doi:10.1002/ejsp.2048

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York, NY: Plenum.

Duckworth, A.L., Peterson, C., Matthews, M.D., & Kelly, D.R. (2007). Grit: Perseverance and passion for long-term goals. *Journal of Personality and Social Psychology, 9*, 1087-1101. doi:10.1037/0022-3514.92.6.1087

Golden, C. J., & Freshwater, S. M. (2002). *Stroop Color and Word Test – A manual for clinical and experimental uses.* Wood Dale, IL: Stoelting Co.

Griffiths, M. (2000). Does Internet and Computer "Addiction" Exist? Some Case Study Evidence. *Cyberpsychology & Behavior, 3,* 211-218. doi:10.1089/109493100316067

Grund, A., Grunschel, C., Bruhn, D., & Fries, S. (2015). Torn between want and should: An experience-sampling study on motivational conflict, well-being, self-control, and mindfulness. *Motivation and Emotion, 39,* 506-520. doi:10.1007/s11031-015-9476-z

Guise, B. J., Thompson, M. D., Greve, K. W., Bianchini, K. J., & West, L. (2014). Assessment of performance validity in the Stroop Color and Word Test in mild traumatic brain injury patients: A criterion-groups validation design. *Journal of Neuropsychology, 8,* 20–33. doi:10.1111/jnp.12002

Hagtvedt, H. (2015). Promotional phrases as questions versus statements: An influence of phrase style on product evaluation. *Journal of Consumer Psychology, 25,* 635-641. doi:10.1016/j.jcps.2014.12.005

Hardy, J. (2006). Speaking clearly: A critical review of the self-talk literature. *Psychology of Sport and Exercise, 7*, 81–97. doi:10.1016/j.psychsport.2005.04.002

Hardy, J., Begley, K., & Blanchfield, A. W. (2015). It's good but it's not right : Instructional self-talk and skilled performance. *Journal of Applied Sport Psychology, 27,* 132-139. doi:10.1080/10413200.2014.959624

Harvey, D. T., Van Raalte, J. L., & Brewer, B. W. (2002). Relationship between self-talk and golf performance. *International Sports Journal, 6*(1), 84-91.

Hayes, A. F. (2013). *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach.* New York, NY: Guilford

Henden, E. (2008). What is self-control? *Philosophical Psychology, 21*, 69-90. doi:10.1080/09515080701874092

Hofmann, W., Kotabe, H., & Luhmann, M. (2013). The spoiled pleasure of giving in to temptation. *Motivation & Emotion, 37,* 733-742. doi:10.1007/s11031-013-9355-4

Hollenbeck, J. R., Williams, C. R., & Klein, H. J. (1989). An empirical examination of the antecedents of commitment to difficult goals. *Journal of Applied Psychology, 74*(1), 18-23.

Inzlicht, M., Schmeichel, B. J., & Macrae, C. N. (2014). Why self-control seems (but may not be) limited. *Trends in Cognitive Sciences, 18*, 127-133. http://dx.doi.org/10.1016/j.tics.2013.12.009

Jenaro, C., Flores, N., Gomez-Vela, M., Gonzalez-Gil, F., & Caballo, C. (2007). Problematic internet and cell-phone use: Psychological, behavioral, and health correlates. *Addiction Research and Theory, 15,* 309-320. doi:10.1080/16066350701350247

Jones, P. E. (2009). From 'external speech' to 'inner speech' in Vygotsky: A critical approach and fresh perspectives. *Language & Communication, 29,* 166-181. doi:10.1016/j.langcom.2008.12.003

Kopetz, C. E., Lejuez, C. W., Wiers, R. W., & Kruglanski, A. W. (2013). Motivation and self-regulation in addiction: A call for convergence. *Perspectives on Psychological Science, 8,* 3-24. doi:10.1177/1745691612457575

Kross, E., Bruehlman-Senecal, E., Park, J., Burson, A., Dougherty, A., Shablack, H., … Ayduk, O. (2014). Self-talk as a regulatory mechanism: How you do it matters. *Journal of Personality and Social Psychology*, *106*, 304–324. doi:10.1037/a0035173

Lane, R. D., Quinlan, D. M., Schwartz, G. E., Walker, P. A., & Zeitlin, S. B. (1990). The Levels of Emotional Awareness Scale: A cognitive-developmental measure of emotion. *Journal of Personality Assessment, 55*(1/2), 124-134.

Locke, E. A. & Latham, G. P. (2002). Building a practically useful theory of goal setting and task motivation. *American Psychologist, 57.* doi:10.1037/0003-066X.57.9.705

Mayer, N. D., & Tormala, Z. L. (2010). "Think" versus "feel" framing effects in persuasion. *Personality and Social Psychology Bulletin*, *36*, 443–454. doi:10.1177/0146167210362981

Merlo, L. J., Stone, A. M., & Bibbey, A. (2013). Measuring problematic mobile phone use: development and preliminary psychometric properties of the PUMP scale. *Journal of Addiction, 2013,* doi:10.1155/2013/912807

Miller, W. R., & Rollnick, S. (2012). Motivational interviewing: Helping people change. Guilford press.

Milyavskaya, M., Inzlicht, M., Hope, N., & Koestner, R. (2015) Saying "no" to temptation: *Want-to* motivation improves self-regulation by reducing temptation rather than by increasing self-control. *Journal of Personality and Social Psychology, 109,* 677-693. doi:10.1037/pspp0000045

Patrick, V. M., & Hagtvedt, H. (2012). "I don't" versus "I can't": When empowered refusal motivates goal-directed behavior. *Journal of Consumer Research, 39,* 371–381. doi:10.1086/663212

Puchalska-wasyl, M. M. (2014). When interrogative self-talk improves task performance : The role of answers to self-posed questions, *381*, 374–381. doi:10.1002/acp.3007

Reeve, J. (1996). *Motivating others: Nurturing inner motivational resources*. Needham Heights, MA: Allyn & Bacon.

Roberts, J. A., Petnji Yaya, L. H., & Manolis, C. (2014). The invisible addiction: Cell-phone activities and addiction among male and female college students. *Journal of Behavioral Addictions, 3,* 254-265. doi:10.1556/JBA.3.2014.015

Roberts, J. A., & Pirog, S. I. (2013). A preliminary investigation of materialism and impulsiveness as predictors of technological addictions among young adults. *Journal Of Behavioral Addictions*, *2*(1), 56-62. doi:10.1556/JBA.1.2012.011

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, *55*, 68-78. doi:10.1037/0003-066X.55.1.68

Ryan, T. A. (1970). *Intentional behavior: An approach to human motivation*. Oxford, England: Ronald Press.

Salovey, P., Mayer, J. D., Goldman, S. L., Turvey, C., & Palfai, T. P. (1995). Emotional attention, clarity, and repair: Exploring emotional intelligence using the Trait Meta-Mood Scale. In J. W. Pennebaker (Ed.), *Emotion, disclosure, & health* (pp. 125–154). Washington, DC: American Psychological Association. doi:10.1037/10182-006

Sapacz, M., Rockman, G., & Clark, J. (2016). Are we addicted to our cell phones? *Computers in Human Behavior, 57,* 153-159. doi:10.1016/j.chb.2015.12.004

Senay, I., Albarracin, D., & Noguchi, K. (2010). Motivating goal-directed behavior through introspective self-talk: The role of the interrogative form of simple future tense. *Psychological Science, 21,* 499–504. doi:10.1177/0956797610364751

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,* 271-324. doi:10.1111/j.0022-3506.2004.00263.x

Theodorakis, Y., Weinberg, R., Natsis, P., Douma, I., & Kazakas, P. (2000). The effects of motivational versus instructional self-talk on improving motor performance. *The Sport Psychologist, 14*(3), 253-272.

Trope, Y., & Liberman, N. (2010). Construal-level theory of psychological distance. *Psychological Review, 117,* 440-463. doi:10.1037/a0018963

Vygotsky, L. S. (1987). *Thinking and speech: The collected works of Lev Vygotsky*. New York, NY: Plenum Press.

Zell, E., Warriner, A. B., & Albarracin, D. (2012). Splitting of the mind: When the you I talk to is me and needs commands. *Social Psychological and Personality Science, 3,* 549–555. doi:10.1177/1948550611430164

Table 1

Actual Time Spent on Tasks, Time Thought Spent on Tasks, Desire to Engage with Tasks

	Long-Term Goal Task	Temptation Task	*t*-test
Actual Time Spent on Task (Minutes and Percentage)	18.29 (3.50) 92.13% (15.73%)	1.54 (3.12) 7.87% (15.73%)	32.15*
Time Thought Spent on Task (Minutes and Percentage)	15.61 (4.90) 78.04% (24.48%)	2.67 (3.25) 13.36% (16.27)	20.74*
Desire to Engage in Task (on 10-point scale)	6.88 (2.06)	4.38 (2.55)	-8.31*

Note. * $p < .001$

Table 2

Correlations Between "Task Time" Outcomes

		1	2	3	4	5	6
1.	% of time spent on EI	-					
2.	% of time thought spent on EI	-.01	-				
3.	% of time thought spent on cell phone	-.02	-.71**	-			
4.	% of time thought spent doing nothing	.001	-.71**	.05	-		
5.	Desire to engage with EI	-.06	.29**	-.33**	-.01	-	
6.	Desire to engage with cell phone	-.01	-.21*	.35**	-.06	-.18*	-
7.	# of notifications received during "task "time	-.16	.12	-.01	-.15	.02	.01

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

Table 3

Correlations Between "Task Time" Outcomes, Individual Difference Measures, and Notifications Received During "Task Time"

	% of time spent on EI	% of time thought spent on EI	% of time thought spent on cell phone	% of time thought spent doing nothing	Desire to engage with EI	Desire to engage with cell phone
BSCS	.10	.04	.05	-.01	.07	-.19*
TMMS Attention to feelings	.12	.11	-.02	-.001	.07	.07
TMMS Clarity of Feelings	.04	.04	.06	-.05	-.04	-.16
TMMS Mood Repair	.14	.10	-.07	.01	.13	-.06
TMMS Total	.13	.11	.003	-.02	.06	-.06
Grit	.11	.003	.10	-.11	.05	-.07
BIS	.01	.21*	-.18*	-.02	.20*	.12
BAS Reward	.03	.11	-.09	.02	.17*	-.05
BAS Drive	-.08	-.11	.11	.11	-.10	.16
BAS Fun seeking	.01	.12	-.25**	.07	.18*	.02
PUMP	.04	-.08	.16	-.03	-.04	.46**
MCQ	-.06	.13	.05	-.27**	-.03	.01

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

BSCS = Brief Self-Control Scale; TMMS = Trait Meta-Mood Scale; BIS = Behavioral Inhibition Scale BAS = Behavioral Activation Scale; PUMP = Problematic Use of Mobile Phones Scale; MCQ = Monetary Choice Questionnaire

Table 4.

Moderated Regression Model Predicting Desire to Engage in Cell Phone Study (N = 139)

	B	*SE*	*t*	*p*	95% Confidence Interval	
					Lower Bound	Upper Bound
Self-Control	.17	.06	2.93	<.01	.06	.29
Self-Talk	12.24	3.25	3.77	<.001	5.81	18.67
Goal Emphasis	11.68	3.28	3.56	<.001	5.20	18.17
Self-Control * Self-Talk	-.29	.08	-3.83	<.001	-.45	-.14
Self-Control * Goal Emphasis	-.30	.08	-3.86	<.001	-.45	-.15
Self-Talk * Goal Emphasis	-13.88	4.34	-3.20	<.01	-22.47	-5.29
Self-Control * Self-Talk * Goal Emphasis	.34	.10	3.29	<.01	.13	.54

Note. Moderated regression analysis conducted using PROCESS model 3 (Hayes, 2013)

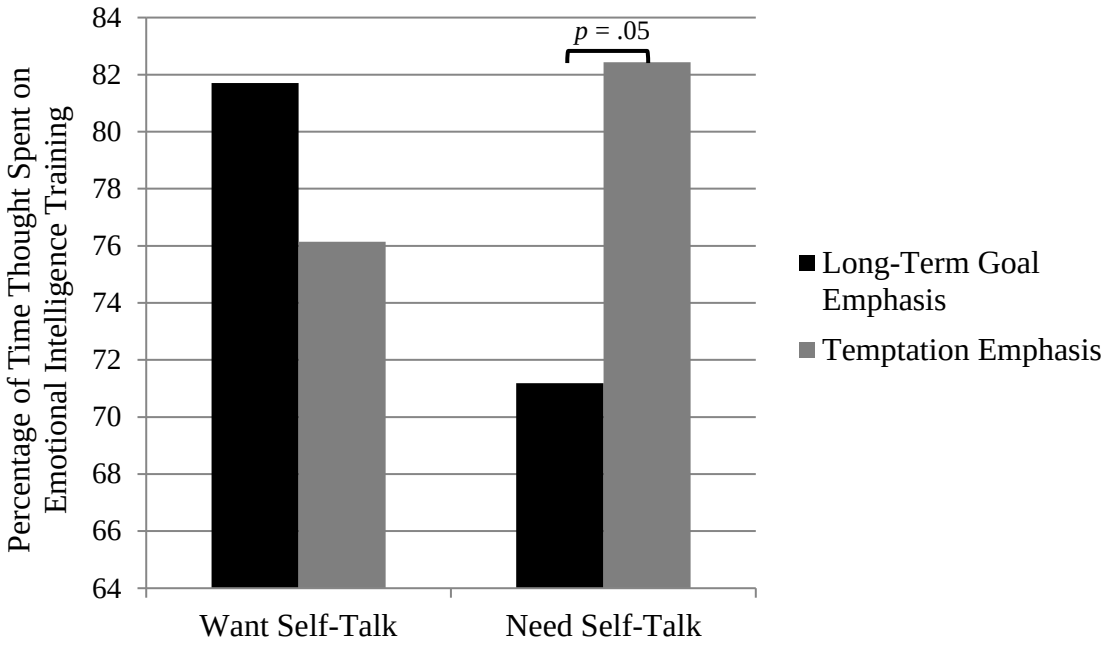

Figure 1. Self-talk by goal emphasis interaction for percentage of time participants thought they spent on the emotional intelligence training.

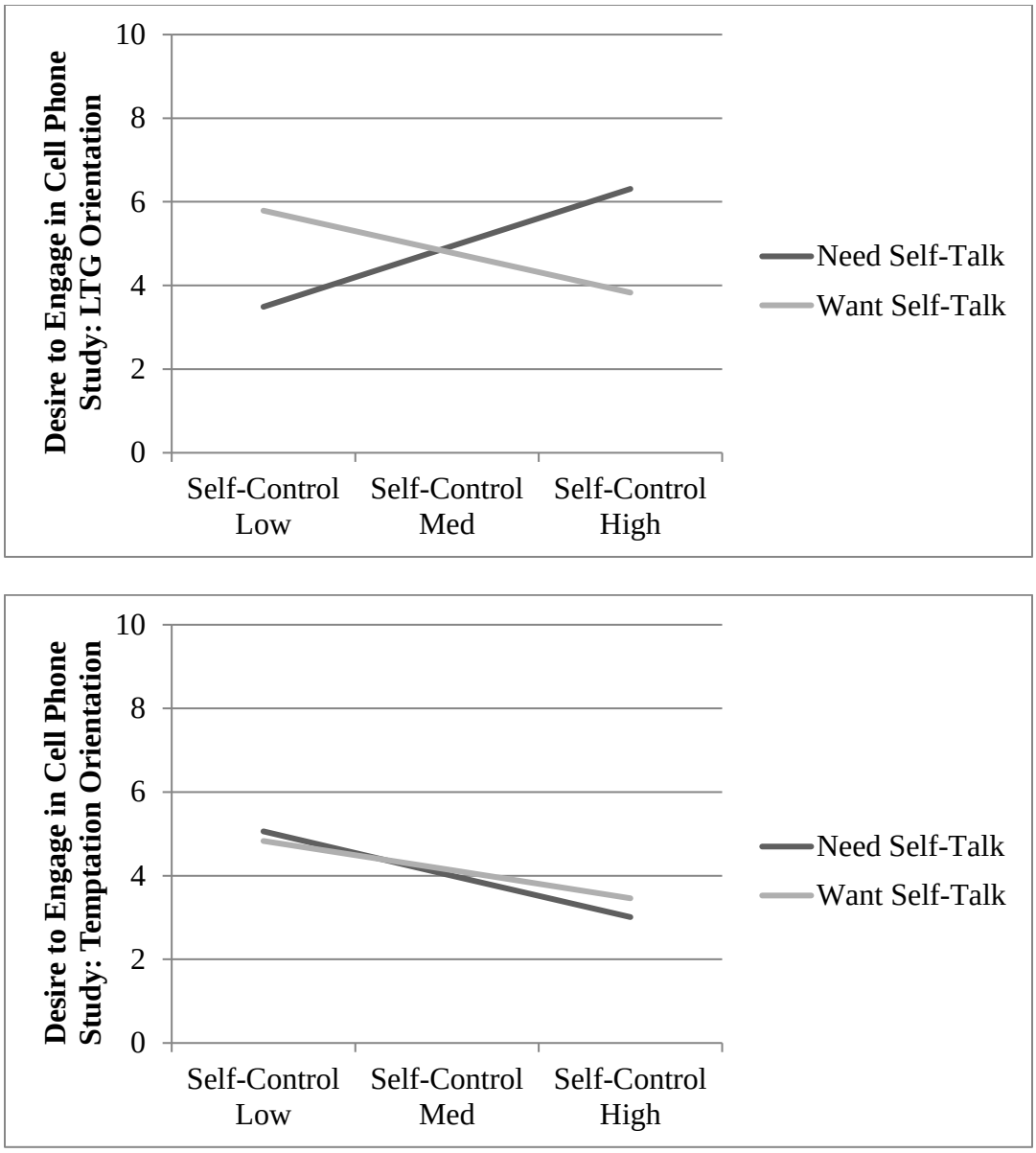

Figure 2. Slopes of *want* vs *need* self-talk and self-control predicting desire to engage in the cell phone study for participants oriented toward the long-term goal and the temptation.

Appendix A

Demographics Questionnaire

Demographics

1. Age: _____

2. Please indicate which gender you most identify with:

   - Male
   - Female
   - Other
   - I choose not to respond

3. What is your marital status?

   - Single, never married
   - Married
   - Separated
   - Divorced
   - Widowed

4. Are you Hispanic or Latino?

   - Non-Hispanic or Latino
   - Hispanic or Latino

5. Please endorse your race:

   - White
   - African-American or Black
   - Asian or Pacific Islander
   - Native American/Alaskan Native
   - Middle Eastern
   - Mixed Race
   - Other: _____

6. What is your intended major? _____

7. What is your intended career choice? _____

8. Are you presently employed?

   - Unemployed
   - Employed 1-20 hours per week
   - Employed 20-30 hours per week
   - Employed full time

Appendix B

Levels of Emotional Awareness Scale Used for Emotional Intelligence Training

Levels of Emotional Awareness Scale

1. A neighbor asks you to repair a piece of furniture. As the neighbor looks on, you begin hammering the nail but then miss the nail and hit your finger. How would you feel? How would the neighbor feel?

2. You are walking through the desert with a guide. You ran out of water hours ago. The nearest well is two miles away according to the guide's map. How would you feel? How would the guide feel?

3. A loved one gives you a back rub after you return from a hard day's work. How would you feel? How would your partner feel?

4. You are running in a race with a friend with whom you have trained for some time. As you near the finish line, you twist your ankle, fall to the ground, and are unable to continue. How would you feel? How would your friend feel?

5. You are traveling in a foreign country. An acquaintance makes derogatory remarks about your native country. How would you feel? How would your acquaintance feel?

6. As you drive over a suspension bridge you see a person standing on the other side of the guardrail, looking down at the water. How would you feel? How would the person feel?

7. Your sweetheart has been gone for several weeks but finally comes home. As your sweetheart opens the door....how would you feel? How would your sweetheart feel?

8. Your boss tells you that your work has been unacceptable and needs to be improved. How would you feel? How would your boss feel?

9. You are standing in line at the bank. The person in front of you steps up to the window and begins a very complicated transaction. How would you feel? How would the person in front of you feel?

10. You and your spouse are driving home from an evening out with friends. As you turn onto your block you see fire-trucks parked near your home. How would you feel? How would your spouse feel?

11. You have been working hard on a project for several months. Several days after submitting it, your boss stops by to tell you that your work was excellent. How would you feel? How would your boss feel?

12. You receive an unexpected long-distance phone call from a doctor informing you that your mother has died. How would you feel? How would the doctor feel?

13. You tell a friend who is feeling lonely that she/he can call you whenever she/he needs to talk. One night she/he calls at 4:00 a.m. How would you feel? How would your friend feel?

14. Your dentist has told you that you have several cavities and schedules you for a return visit. How would you feel? How would the dentist feel?

15. Someone who has been critical of you in the past pays you a compliment. How would you feel? How would the other person feel?

16. Your doctor told you to avoid fatty foods. A new colleague at work calls to say that she/he is going out for pizza and invites you to go along. How would you feel? How would your colleague feel?

17. You and a friend agree to invest money together to begin a new business venture. Several days later you call the friend back only to learn that she/he changed her/his mind. How would you feel? How would your friend feel?

18. You sell a favorite possession of your own in order to buy an expensive gift for your spouse. When you give him/her the gift, he/she asks whether you sold the possession. How would you feel? How would your spouse feel?

19. You fall in love with someone who is both attractive and intelligent. Although this person is not well off financially, this doesn't matter to you -- your income is adequate. When you begin to discuss marriage, you learn that she/he is actually from an extremely wealthy family. She/he did not want that known for fear that people would only be interested in her/him for her/his money. How would you feel? How would she/he feel?

20. You and your best friend are in the same line of work. There is a prize given annually to the best performance of the year. The two of you work hard to win the prize. One night the winner is announced: your friend. How would you feel? How would your friend feel?

Appendix C

Individual Difference Measures

TRAIT META-MOOD SCALE

Please read each statement and decide whether or not you agree with it. Place a number in the blank line next to each statement using the following scale.

1	2	3	4	5
Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree

_____ 1. I try to think good thoughts no matter how badly I feel.
_____ 2. People would be better off if they felt less and thought more.
_____ 3. I don't think it's worth paying attention to your emotions or moods.
_____ 4. I don't usually care much about what I'm feeling.
_____ 5. Sometimes I can't tell what my feelings are.
_____ 6. I am rarely confused about what my feelings are.
_____ 7. Feelings give direction to life.
_____ 8. Although I am sometimes sad, I have a mostly optimistic outlook.
_____ 9. When I am upset I realize that the "good things in life" are illusions.
_____ 10. I believe in acting from the heart.
_____ 11. I can never tell how I feel.
_____ 12. The best way for me to handle my feelings is to experience them to the fullest.
_____ 13. When I become upset I remind myself of all the pleasures in life.
_____ 14. My belief and opinions always seem to change depending on how I feel.
_____ 15. I am often aware of my feelings on a matter.
_____ 16. I am usually confused about how I feel.
_____ 17. One should never be guided by emotions.
_____ 18. I never give into my emotions.
_____ 19. Although I am sometimes happy, I have a mostly pessimistic outlook.
_____ 20. I feel at ease about my emotions.
_____ 21. I pay a lot of attention to how I feel.
_____ 22. I can't make sense out of my feelings.
_____ 23. I don't pay much attention to my feelings.
_____ 24. I often think about my feelings.
_____ 25. I am usually very clear about my feelings.
_____ 26. No matter how badly I feel, I try to think about pleasant things
_____ 27. Feelings are a weakness humans have.
_____ 28. I usually know my feelings about a matter.
_____ 29. It is usually a waste of time to think about your emotions.
_____ 30. I almost always know exactly how I am feeling.

BSCS

Using the scale provided, please indicate how much each of the following statements reflects how you typically are.

1	2	3	4	5
Not At All				Very Much

____ 1. I am good at resisting temptation.
____ 2. I have a hard time breaking bad habits.
____ 3. I am lazy.
____ 4. I say inappropriate things.
____ 5. I do certain things that are bad for me, if they are fun.
____ 6. I refuse things that are bad for me.
____ 7. I wish I had more self-discipline.
____ 8. People would say that I have iron self-discipline.
____ 9. Pleasure and fun sometimes keep me from getting work done.
____ 10. I have trouble concentrating.
____ 11. I am able to work effectively toward long-term goals.
____ 12. Sometimes I can't stop myself from doing something, even if I know it is wrong.
____ 13. I often act without thinking through all the alternatives.

GRIT

Please respond to the following 12 items using the scale below. Be honest – there are no right or wrong answers!

1	2	3	4	5
Not like me at all	Not much like me	Somewhat like me	Mostly like me	Very much like me

_____ 1. I have overcome setbacks to conquer an important challenge.

_____ 2. New ideas and projects sometimes distract me from previous ones.

_____ 3. My interests change from year to year.

_____ 4. Setbacks don't discourage me.

_____ 5. I have been obsessed with a certain idea or project for a short time but later lost interest.

_____ 6. I am a hard worker.

_____ 7. I often set a goal but later choose to pursue a different one.

_____ 8. I have difficulty maintaining my focus on projects that take more than a few months to complete.

_____ 9. I finish whatever I begin.

_____ 10. I have achieved a goal that took years of work.

_____ 11. I become interested in new pursuits every few months.

_____ 12. I am diligent.

BIS/BAS

Each item of this questionnaire is a statement that a person may either agree with or disagree with. For each item, indicate how much you agree or disagree with what the item says. Please respond to all the items; do not leave any blank. Choose only one response to each statement. Please be as accurate and honest as you can be. Respond to each item as if it were the only item. That is, don't worry about being "consistent" in your responses. Choose from the following four response options:

1	2	3	4
Very True of Me	Somewhat True of Me	Somewhat untrue of Me	Very Untrue of Me

_____ 1. A person's family is the most important thing in life.

_____ 2. Even if something bad is about to happen to me, I rarely experience fear or nervousness.

_____ 3. I go out of my way to get things I want.

_____ 4. When I'm doing well at something I love to keep at it.

_____ 5. I'm always willing to try something new if I think it will be fun.

_____ 6. How I dress is important to me.

_____ 7. When I get something I want, I feel excited and energized

_____ 8. Criticism or scolding hurts me quite a bit.

_____ 9. When I want something I usually go all-out to get it.

_____ 10. I will often do things for no other reason than that they might be fun.

_____ 11. It's hard for me to find the time to do things such as get a haircut.

_____ 12. If I see a chance to get something I want I move on it right away.

_____ 13. I feel pretty worried or upset when I think or know somebody is angry at me.

_____ 14. When I see an opportunity for something I like I get excited right away.

_____ 15. I often act on the spur of the moment.

_____ 16. If I think something unpleasant is going to happen I usually get pretty "worked up."

_____ 17. I often wonder why people act the way they do.

_____ 18. When good things happen to me, it affects me strongly.

_____ 19. I feel worried when I think I have done poorly at something important.

_____ 20. I crave excitement and new sensations.

_____ 21. When I go after something I use a "no holds barred" approach.

_____ 22. I have very few fears compared to my friends.

_____ 23. It would excite me to win a contest.

_____ 24. I worry about making mistakes.

PUMP Scale

Please read each statement and decide whether or not you agree with it. Place a number in the blank line next to each statement using the following scale.

1	2	3	4	5
Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree

_____ 1. When I decrease the amount of time spent using my cell phone I feel less satisfied.

_____ 2. I need more time using my cell phone to feel satisfied than I used to need.

_____ 3. When I stop using my cell phone, I get moody and irritable.

_____ 4. It would be very difficult, emotionally, to give up my cell phone.

_____ 5. The amount of time I spend using my cell phone keeps me from doing other important work.

_____ 6. I have thought in the past that it is not normal to spend as much time using a cell phone as I do.

_____ 7. I think I might be spending too much time using my cell phone.

_____ 8. People tell me I spend too much time using my cell phone.

_____ 9. When I am not using my cell phone, I am thinking about using it or planning the next time I can use it.

_____ 10. I feel anxious if I have not received a call or message in some time.

_____ 11. I have ignored the people I'm with in order to use my cell phone.

_____ 12. I have used my cell phone when I knew I should be doing work/schoolwork.

_____ 13. I have used my cell phone when I knew I should be sleeping.

_____ 14. When I stop using my cell phone because it is interfering with my life, I usually return to it.

_____ 15. I have gotten into trouble at work or school because of my cell phone use.

_____ 16. At times, I find myself using my cell phone instead of spending time with people who are important to me and want to spend time with me.

_____ 17. I have used my cell phone when I knew it was dangerous to do so.

_____ 18. I have almost caused an accident because of my cell phone use.

_____ 19. My cell phone use has caused me problems in a relationship.

_____ 20. I have continued to use my cell phone even when someone asked me to stop.

Appendix D

Research Compliance Letter

UNIVERSITY OF ARKANSAS

Office of Research Compliance
Institutional Review Board

July 19, 2016

MEMORANDUM

TO:	Danielle Baker Kaitlyn Chamberlain Morgan Hill Jennifer Veilleux
FROM:	Ro Windwalker IRB Coordinator
RE:	New Protocol Approval
IRB Protocol #:	16-06-819
Protocol Title:	*Persistence in Engagement and Decision Making*
Review Type:	☒ EXEMPT ☐ EXPEDITED ☐ FULL IRB
Approved Project Period:	Start Date: 07/18/2016 Expiration Date: 07/17/2017

Your protocol has been approved by the IRB. Protocols are approved for a maximum period of one year. If you wish to continue the project past the approved project period (see above), you must submit a request, using the form *Continuing Review for IRB Approved Projects*, prior to the expiration date. This form is available from the IRB Coordinator or on the Research Compliance website (https://vpred.uark.edu/units/rscp/index.php). As a courtesy, you will be sent a reminder two months in advance of that date. However, failure to receive a reminder does not negate your obligation to make the request in sufficient time for review and approval. Federal regulations prohibit retroactive approval of continuation. Failure to receive approval to continue the project prior to the expiration date will result in Termination of the protocol approval. The IRB Coordinator can give you guidance on submission times.

This protocol has been approved for 320 participants. If you wish to make *any* modifications in the approved protocol, including enrolling more than this number, you must seek approval *prior to* implementing those changes. All modifications should be requested in writing (email is acceptable) and must provide sufficient detail to assess the impact of the change.

If you have questions or need any assistance from the IRB, please contact me at 109 MLKG Building, 5-2208, or irb@uark.edu.