# Motivating Goal-Directed Behavior through Introspective Self-Talk:

# The Role of the Interrogative Form of Simple Future Tense

Ibrahim Senay & Dolores Albarracin

University of Illinois at Urbana-Champaign

Kenji Noguchi

University of Southern Mississippi

## Abstract

Although essential for psychology, introspective self-talk has rarely been studied with respect to its effects on behavior. Nevertheless, the interrogative compared to the declarative form of introspective talk may elicit more intrinsically motivated reasons for action resulting in goal-directed behavior. In Experiment 1, participants were more likely to solve anagrams if they prepared for the task by asking themselves whether they would work on anagrams as opposed to declaring that they would. In the following three experiments, merely writing *Will I* as opposed to *I will* as part of an ostensibly unrelated hand-writing task produced better anagram-solving performance and stronger intentions to exercise, suggesting that priming the interrogative structure of self-talk is enough to motivate goal-directed behavior. This effect was found to be mediated by the intrinsic motivation for action and moderated by the salience of the word order of the primes.

# Motivating Goal-Directed Behavior through Introspective Self-Talk: The Role of the Interrogative Form of Simple Future Tense

How does the way in which you talk to yourself shape your future actions? What if asking yourself a question about your potential behavior increased the likelihood of that behavior? These questions come at a time when introspection is not only a valuable psychological method (Locke, 2009) but also a subject matter in and of itself (Albarracín, Hart & McCulloch, 2006; Albarracín, Noguchi & Earl, 2006). Despite the popularity of self-report and thought protocols as methods to understand behavior (Ericsson & Simon, 1980; Locke, 2009), how the form of our thoughts influences actions has been rarely the focus of contemporary psychological investigation (for notable exceptions, see e.g., Delaney, Ericsson, & Knowles, 2004; Dulany, 1991; Fischer & Zwaan, 2008). This paper concerns how the declarative and interrogative form of thoughts can shape intentions and future behaviors in domains from intellectual performance to health. These processes are likely important to researchers in cognitive, social, clinical, health, and developmental psychology, as well as practitioners in clinical, educational, and work settings (see e.g., Hettema, Steele, & Miller, 2005).

As introspection often takes the form of self-talk (a conversation with oneself), the language used in this self-talk is likely to affect how the mental contents of the talk are represented. The role of linguistic categories and structures in shaping the way people construct mental representations of events (i.e., situation model) is well-known (Zwaan & Radvansky, 1998). For example, reading sentences with the perfective as opposed to the imperfective verb

aspect (e.g., “The boy WALKED to the store” as opposed to “The boy WAS WALKING to the store”) leads to choosing pictures that show completed as opposed to ongoing events (Madden & Zwaan, 2003). Also, describing one’s past actions in the imperfective as opposed to the perfective verb aspect (e.g., “I WAS SOLVING anagrams” as opposed to “I SOLVED anagrams”) activates detailed action-relevant knowledge, which in turn increases the likelihood of repeating the action in a new context (Hart & Albarracin, 2009). Therefore, the linguistic structure of self-talk should be equally likely to elicit thoughts that can influence the formation of intentions to perform a certain behavior.

What grammatical categories or structures can bring intentions to mind? Several independent lines of research and practice suggest that engaging in interrogative as opposed to declarative talk (e.g., *Will I* vs. *I will*) may lead to increased intrinsic motivation. For example, open-ended questions are often used in *motivational interviewing* in psychotherapy settings. The idea is to generate thoughts about accomplishing a goal without these thoughts being imposed by the therapist (Sheldon, Williams, & Joiner, 2003). Furthermore, rhetorical questions within a message have been shown to increase the persuasion of strong messages by inducing thoughts about the arguments contained in these messages (Burnkrant & Howard, 1984). Such rhetorical questions also increase the perception of the message source as less pressuring and therefore less threatening to the autonomy of the message recipient (Ahluwalia & Burnkrant, 2004). More generally, the question form compared to the direct form of requests (e.g., *Can you pass the salt?* vs. *Pass the salt*) is universally perceived to be more respectful of the addressees’ autonomy (Hotgraves & Yang, 1990).

In sum, as illustrated in Figure 1 self-posed questions about a future behavior may inspire thoughts about autonomous or intrinsically motivated reasons to pursue a goal, leading to

forming corresponding intentions and ultimately performing the behavior. In fact, people are more likely to engage in a behavior when they have intrinsic motivation (i.e., when they feel personally responsible for their action) than when they have extrinsic motivation (i.e., when they feel external factors such as other people are responsible for their action; Deci & Ryan, 2000) in diverse domains from education to medical treatment to addiction recovery to task performance (see e.g., Hettema, et al., 2005; Reeve & Deci, 1996; Vansteenkiste, Simons, Lens, Sheldon, & Deci, 2004; Williams, Grow, Freedman, Ryan, & Deci, 1996).

In the present study, a series of four experiments tested whether the behaviors and intentions following interrogative self-talk differ from those following declarative self-talk. Experiment 1 and 2 tested the effect of self-talk directly on behavior, and Experiments 3 and 4, on intentions. We expected that thinking "whether one would work on a task" (as opposed to thinking "that one would;" Experiment 1) would lead to a better task performance. Also, given the often automatic influence of grammatical forms on thought (Zwaan & Radvansky, 1998), being exposed to the word sequence *Will I* (as opposed to *I will*) may be enough to implicitly lead to the organization of thoughts in an interrogative form and corresponding behaviors (Experiment 2) and intentions (Experiments 3 and 4). Experiments 3 and 4 further investigated how this effect is moderated by the salience of the word order and mediated by intrinsic motivation.

## Experiment 1

### Method

#### *Participants and Design*

Fifty-three introductory psychology students in this experiment as well as the participants in other experiments enrolled in the study in exchange for course credit. The design in

Experiment 1 included two cells (question vs. assertion thought) and the outcome measure was the number of correctly solved anagrams in an anagram-solving task.

*Procedure*

Participants were instructed to prepare for an anagram-solving task by taking one minute to think either whether they would work on anagrams or that they would work on anagrams. Immediately after this thinking task, participants proceeded to work on 10 anagrams such as *when/hewn, cause/sauce* and *itch/chit* simultaneously presented on the computer screen. They were given 10 minutes to complete the task by typing their answers.

## Results and Discussion

None of the participants guessed the purpose of the study either in this or subsequent experiments. The participants solved significantly more anagrams when they were told to think *whether* they would do anagrams than when they were told to think that they would do anagrams ($M$ = 1.84, $SD$ = 1.42 *vs.* $M$ = 2.6, $SD$ = 1.72), $t(49) = 2.11$, $p = .04$, $g = 0.6$. Nonetheless, these results were obtained with explicit instructions. The following experiment was an attempt to examine whether the interrogative form (i.e., Verb and then Subject) to which participants are incidentally exposed can produce the same effect.

## Experiment 2

### Method

*Participants and Design*

Participants were 50 introductory psychology students. The experimental design included four cells (word primes: *Will I, I Will, I,* and *Will*). The number of correctly solved anagrams was the dependent measure.

*Procedure*

We told participants that we were interested in people's handwriting practices. With this pretense, participants were given a sheet of paper with space to write down twenty times one of the following words or word pairs: *Will I, I will, I,* or *Will*. Then, they were asked to work on a series of ten anagrams in the same way participants in Experiment 1 did.

## Results and Discussion

The priming manipulation had a significant effect, $F(3, 46) = 3.13$, $p = .035$, $\eta^2 = .2$. As shown in Figure 2, the *Will I* prime produced better performance than any other prime, $t(46) = 3.1$, $p = .003$, $g = 1.03$. In contrast, there were no significant differences across the *I will, I,* and *Will* primes, $t(49) < 1$, *ns* in all cases. The results suggest that the same effect of self-talk occurs when the participants are only exposed to the interrogative form of the self-talk. Moreover, the presence of our single-word controls ensured that the effect was due to the pairing of words, not the recency of *I* vs. *Will*.

In the next two experiments, we tested the effect of the interrogative form on intentions. In Experiment 3, we also wanted to confirm that the effect of the interrogative form depends on parsing the two word primes as a meaningful sequence. Based on research showing that performing a behavior leads to applying the same behavior in a subsequent context (Gollwitzer, Heckhausen & Steller, 1990; Xu & Wyer, 2008), we predicted that writing random as opposed to meaningfully sequenced numbers would reduce the perception of the word sequence as meaningful and hence diminish its effect.

## Experiment 3

### Method

*Participants and Procedure*

Participants were 46 introductory psychology students. The procedure was the same as in the previous experiment except that before the priming manipulation, which included only *Will I* and *I will* primes, participants were asked to write down either a patterned (i.e., 2 4 16 64 2 4 16 64) or a random sequence (i.e., 2 5 4 1 8 3 9 2) of 24 numbers to ostensibly clear their mind for the next hand-writing task (i.e., writing *Will I* vs. *I will*). After the word primes, participants reported their intentions to exercise by writing the physical activities they planned and the number of hours they planned to devote to each during the next week.

### Results and Discussion

Total hours of intended exercise were analyzed as a function of 2 (parsing prime: pattern vs. random) x 2 (word prime: *Will I* vs. *I will*) design. We expected that incidental exposure to a random as opposed to an ordered sequence of numbers will decrease the participants' perception of the word order as a meaningful sequence, hence, weakening the effect of the interrogative form. The analysis of variance revealed a significant interaction between the two study factors, $F(1, 42) = 4.14$, $p = .048$, $\eta^2 = .09$. As shown in Figure 3, participants previously primed with patterned sequences had stronger intentions to exercise in the *Will I* as compared to the *I will* condition, $t(42) = 7.45$, $p < .001$, $g = 3.05$. As expected, however, this effect actually disappeared when participants previously wrote random sequences $t(42) = 1.06$, *ns*.

The results from Experiment 3 are important in establishing that perceiving the primes as a meaningful pattern of words is necessary for the effects of word order to emerge and that the

interrogative form can influence intentions. Nonetheless, the experiments so far did not show that the interrogative form facilitates intrinsic motivation. This assumption was tested in Experiment 4.

## Experiment 4

### Method

*Participants and Procedure*

Participants were 56 introductory psychology students. The procedure was the same as in the previous experiment with three exceptions. First, there was no priming of random/pattern parsing. Second, the intention question asked how much the participants intended to either start exercising regularly or continue to do so on a scale ranging from 1 (*not at all*) to 7 (*very much*). Third, after reporting their intentions to exercise, participants rated how much each of twelve possible reasons for exercising, which were adapted from a previously validated self-regulation scale (Williams, Grow, Freedman, Ryan, & Deci, 1996), was true for them. For each reason participants provided their response on a scale from 1 (*not at all*) to 7 (*very much*). Six of these reasons reflected intrinsic motivation to exercise (e.g., “Because I feel that I want to take responsibility for my own health”), whereas the other six reflected extrinsic motivation to exercise (e.g., “Because I would feel guilty or ashamed of myself if I did not”).

### Results and Discussion

Intrinsic motivation, extrinsic motivation, and exercise intention were analyzed in a multivariate ANOVA with prime (*Will I* vs. *I will*) as the independent variable. The overall effect of the prime was significant, $F(3, 49) = 2.82$, $p = .048$, which was due to the significant effect of the prime on intrinsic motivation, $F(1, 51) = 5.71$, $p = .021$, $\eta^2 = .05$ (*I will*, $M = 5.1$, $SD = 1.4$; *Will I*, $M = 5.8$, $SD = 0.9$), and intention, $F(1, 51) = 4.06$, $p = .049$, $\eta^2 = .04$ (*I will*, $M = 5.1$, $SD =$

1.7; *Will I*, $M = 5.8$, $SD = 1.5$). The effect of the prime on extrinsic motivation was not significant, $F(1, 51) = .36$, *ns* (*Will I*, $M = 3.1$, $SD = 1.1$; *I will*, $M = 3.4$, $SD = 1.6$).

A mediation analysis was then conducted to determine if the effect of the prime on the intention was mediated by intrinsic motivation. As shown in Figure 3, intrinsic motivation and the *Will I* as opposed to *I will* prime alone predicted the intention to exercise, and the prime alone predicted the level of intrinsic motivation. However, when both the prime and intrinsic motivation were introduced in the model, only the effect of intrinsic motivation on intention remained significant. These results along with a significant Sobel test ($z = 2.03$, $p = .043$, $R^2 = .06$) confirmed the intrinsic motivation's role as a mediator of the effect of the prime on the exercise intention.

## General Discussion

Our findings identified interrogative self-talk as an important motivator of goal-directed behavior. We uncovered that the interrogative form used in self-talk can lead to goal-directed behavior just as the interrogative form used in behavior change counseling, persuasive messages, and behavioral requests (Ahluwalia & Burnkrant, 2004; Burnkrant & Howard, 1984; Hotgraves & Yang, 1990; Sheldon, et al., 2003).

Moreover, although people can engage in self-talk voluntarily, our results showed that the grammatical structure of self-talk can also be activated implicitly. This finding of subtle effects implies that merely seeing another person use interrogative self-talk may be enough to produce the similar effect of the interrogative self-talk itself. For example, in psychotherapy, clients may be encouraged to engage in interrogative self-talk about adaptive and healthy behaviors in addition to the therapist being the one who poses the questions.

Although there is a strong connection between intention and behavior (Albarracín, Johnson, Fishbein & Muellerleile, 2001; Glasman & Albarracín, 2006), our studies did not specifically show that the performance of a goal-directed behavior is determined by intentions to perform this behavior, which could have been partially under the control of processes beside intention. Despite this limitation, the present results are clear in showing that the general forms of thought implicitly elicited through the grammatical structure of self-talk are capable of motivating and altering behavior. Previous studies have documented the role of linguistic forms in influencing the interpretation of linguistic meaning that will ultimately influence the way people think about a situation (i.e., situation model), and in making certain past intentions available in mind (Hart & Albarracin, 2009; Madden & Zwaan, 2003). The present study shows that the effect of grammatical categories can go beyond those prior findings and directly motivate behavior and intentions. Future research may investigate whether the interrogative forms of other verbs (e.g., can, should, would) and other grammatical structures (e.g., passive vs. active voice) can produce similar effects on behavior. Given the identified effects of even very subtle introspective talk on behavior, further work is warranted to explore the important but long-overlooked effects of the shape of introspection and its effects on behavior.

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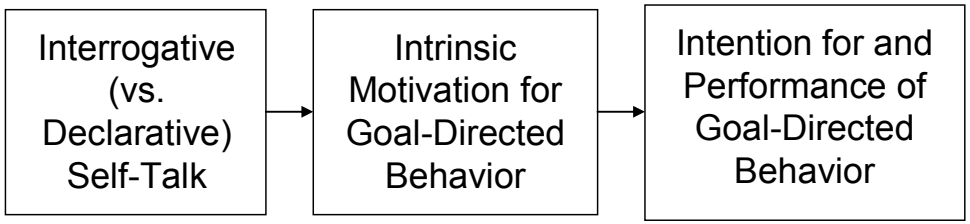
Figure Captions

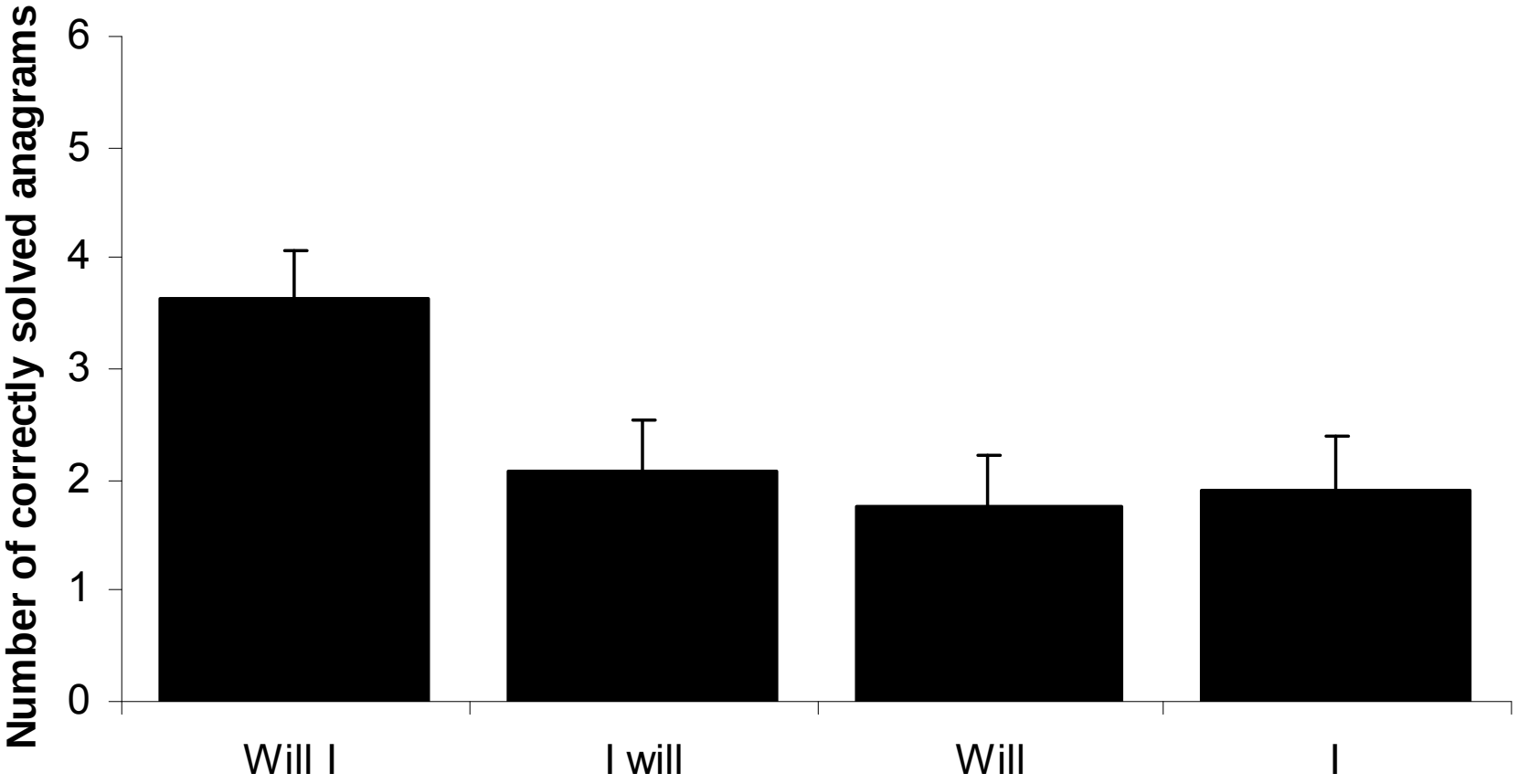
Figure 1. *Motivation of Goal-directed Behavior through Interrogative Self-talk*

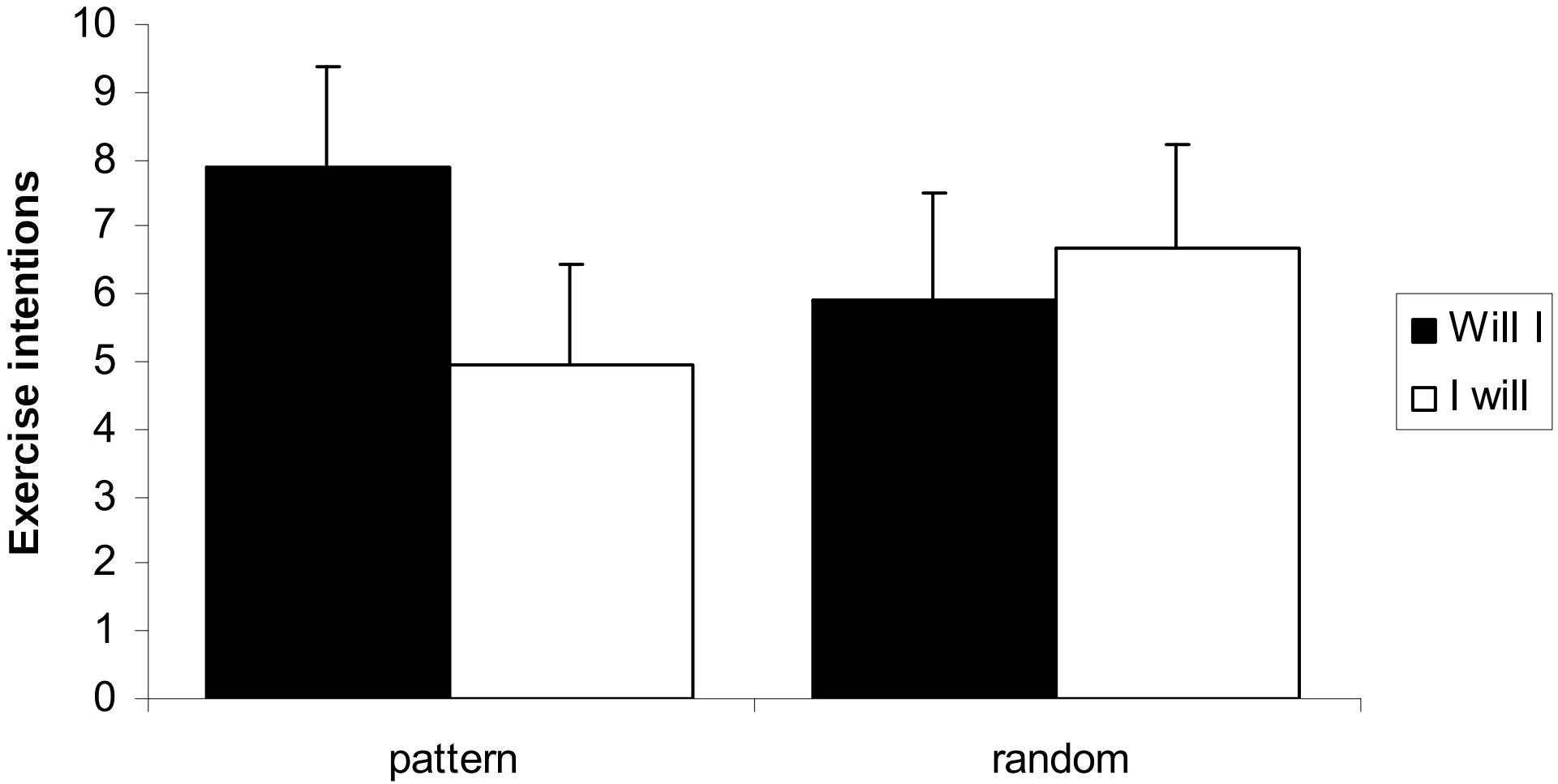
Figure 2. *Mean number of correctly solved anagrams with SE bars as a function of the primes in Experiment 2 (i.e., "Will I," "I will," "Will," "I")*

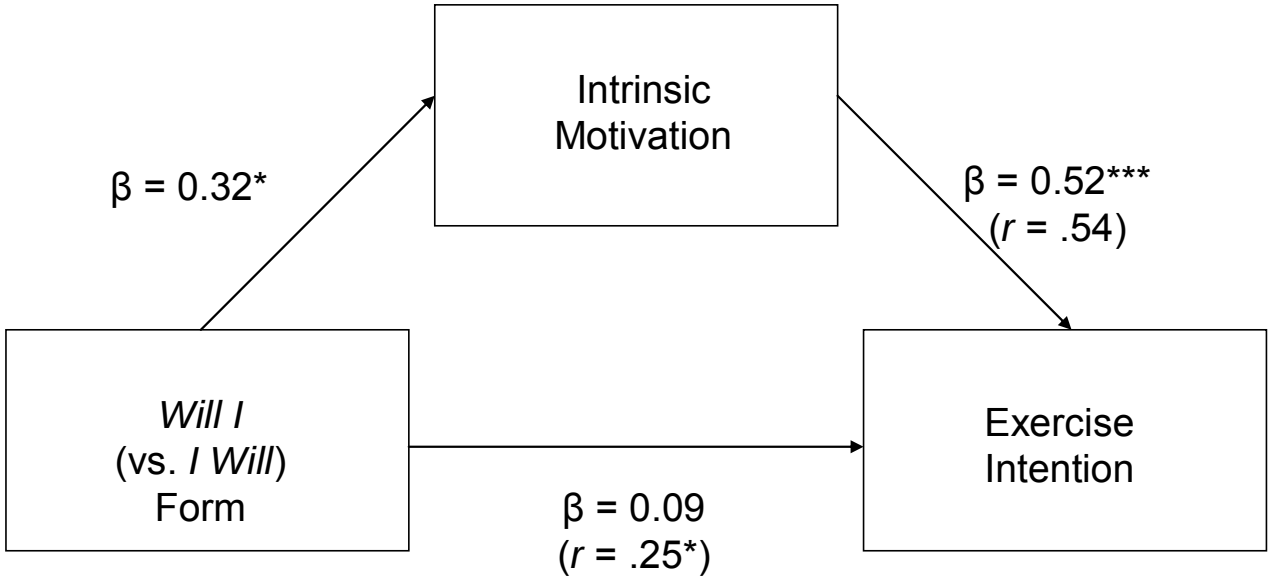
Figure 3. *Mean number of hours with SE bars for intended physical exercise within the next week, as a function of writing a patterned vs. random sequence of numbers and "Will I" vs. "I will" primes in Experiment 3*

Figure 4. *Intrinsic motivation as a mediator of the effect of the interrogative form on exercise intention in Experiment 4. Parenthetical coefficient represents the direct effect of the interrogative form before the mediator was included. *: $p < .05$. ***: $p < .001$.*


Interrogative (vs. Declarative) Self-Talk
Intrinsic Motivation for Goal-Directed Behavior
Intention for and Performance of Goal-Directed Behavior


Number of correctly solved anagrams
6
5
4
3
2
1
0
Will I
I will
Will
I


Exercise intentions
10
9
8
7
6
5
4
3
2
1
0
pattern
random
Will I
I will


Intrinsic Motivation
β = 0.32*
β = 0.52***
(r = .54)
Will I
(vs. I Will)
Form
Exercise Intention
β = 0.09
(r = .25*)