Determinants of Implementation Intentions

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Previous research has demonstrated that forming an implementation intention increases intention-behavior consistency. Two studies tested a proposed structural model specifying determinants of the formation of an implementation intention. A proximal determinant is degree of planning which in turn is influenced by the strength of a goal intention (goal attractiveness) and perceived behavioral control. In Study 1 a sample of 36 undergraduates were presented descriptions of 16 situations in which they had decided to perform a behavior. Attractiveness of the behavior, perceived behavioral control, and whether the behavior was positively or negatively motivated were varied in an orthogonal factorial design. For each description subjects indicated the likelihood that they would perform a number of planning acts. Consistent with the structural model, planning increased with attractiveness of the behavior and decreased with perceived behavioral control. In Study 2 another 44 undergraduates were presented with descriptions with low perceived behavioral control. In half the cases additional instructions were given that they had performed the planning acts subjects in the first study indicated were the most likely ones. To investigate the hypothesis that planning is part of the formation of an implementation intention, a measure was obtained of the strength of an implementation intention. The results failed however to fully support the hypothesis since planning had only a weak effect on intention strength. A revised structural model was therefore proposed in which both strength of an implementation intention and planning are causally related to attractiveness and perceived behavioral control. However, whereas planning increases the likelihood of the behavior because it increases actual behavioral control, implementation intention is correlated with but not causally related to the behavior. In the model behavior is still causally related to goal intention which is one determinant of planning. Perceived behavioral control is another determinant.

Key words: Intention, planning, behavior.

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The degree to which attitudes are related to behavior, or attitude-behavior consistency, has been the focus of much research (Dawes & Smith, 1985). As noted by Zanna and Fazio (1982), the first generation of this research investigated whether such a relation exists. Since the relation did not prove to be straightforward, the focus changed to the investigation of possible moderating factors (see, for example, Ajzen & Fishbein, 1973; Borgida & Campbell, 1982; Davidson & Jaccard, 1979; Wicker, 1969). More recently the focus has again changed to how intentions are implemented in behavior, or intention-behavior consistency (Karoly, 1992; Brandstätter & Gollwitzer, 1994).

One of the most influential theories of the attitude-behavior relationship is the theory of reasoned action (TRA) (Fishbein & Ajzen, 1975; see also Ajzen & Fishbein, 1977, 1980). In this theory it is assumed that an intention to perform a behavior is related to the attitude towards performing the behavior and the subjective norm concerning its performance. Attitude and subjective norm are similarly defined as beliefs about the consequences of performing the behavior, in the former case beliefs about how positively the outcomes are judged and in the latter case beliefs about the degree of approval from important others. The single most important implication of the theory is that intention will predict behavior better than will attitude. In particular this would be true if intention is measured so that it corresponds to the behavioral criterion with regard to action, target, context, and time (see, e.g., Eagly & Chaiken, 1993).

TRA has over the years received strong empirical support (Sheppard, Hartwick, & Warshaw, 1988). Nevertheless, several attempts have been made to increase its predictive power, either by adding new variables or by making changes to its internal structure (Bagozzi, 1992). In the former category falls Ajzen’s theory of planned behavior (TPB), which includes perceived behavioral control as a measure of people’s confidence in their ability to perform the behavior.

By measuring perceived behavioral control it is possible to extend the boundary conditions of TRA to behaviors that are not under complete volitional control. Empirically it has been shown that measures of perceived behavioral control improve predictions of intention from attitude and subjective norm as well as predictions of behavior from intention (Ajzen 1991; Gärling, 1992; Netemeyer, Burton, & Johnston, 1991; Schifter & Ajzen, 1985). However, it is important to note that perceived behavioral control only has a direct influence on intention, whereas an influence on behavior stems from the actual control a person exerts (Ajzen, 1985). If perceived behavioral control improves the prediction of behavior, this implies that perceived and actual behavioral control are correlated. Such a correlation may exist if, for instance, a low degree of perceived behavioral control motivates successful attempts at increasing actual behavioral control. An important research task is to clarify the means by which actual control over behavior is increased.

A limitation of attitude theories such as TRA and TPB is that they do not specify the relation between intention and behavior. Since only a moderate correlation exists between the strength of people’s intentions and their actual behavior (Sheppard et al., 1988), attention needs to be given to identifying factors that influence the intention-behavior relation. TRA and TPB do not include such factors. In these theories intention strength is the only direct predictor of behavior.
Gollwitzer (1993) recently distinguished between a goal intention and an implementation intention. The formation of a goal intention is characterized by deliberating desires which may be in conflict with each other. This type of intention specifies a desired end state or goal to which a person commits himself or herself. Hence, possible obstacles to implementation are not taken into account. The amount of commitment associated with the goal intention is furthermore assumed to be related to how attractive or important the goal is.

An implementation intention is formed after resolving the conflict between different means of achieving the desired goal specified by the goal intention. The implementation may entail both the course of the subsequent goal pursuit as well as when, where, and how the goal-directed actions are to be enacted.

Planning should be an important determinant of the formation of an implementation intention (Gollwitzer, 1996). Under different definitions planning has been the focus of research in many subfields of psychology, such as cognitive psychology (e.g., Hayes-Roth & Hayes-Roth, 1979; Miller, Galanter, & Pribram, 1960), social psychology (e.g., Schank & Abelson, 1977), and environmental psychology (e.g., Gärling, Böök, & Lindberg, 1984). An acceptable general definition of planning may be “the predetermination of a course of action aimed at achieving some goal” (Hayes-Roth & Hayes-Roth, 1979, p. 275-276). A more specific definition needs to specify the psychological factors controlling the decisions about the course of action such as memory retrieval, problem solving, and commitment or motivation.

Gollwitzer and Brandstätter (1997) report several studies investigating the effect of forming an implementation intention on the performance of a behavior. In one study undergraduates were asked to write an essay about their Christmas break within two days after Christmas and mail it back to the experimenter. Half of the subjects formed an implementation intention by specifying time and place for writing the essay, while the other half of the subjects did not. The results showed that more than twice as many subjects in the former group than in the latter group returned the written essays. Thus, the results clearly supported the hypothesis that forming an implementation intention increases the likelihood that a goal intention will be implemented. Almost identical results were obtained by Orbell, Hodgkins, and Sheeran (1997) in an experimental field study of women’s breast self-examinations.

Gollwitzer and Brandstätter’s results were recently also replicated in a series of experimental studies reported in Gillholm, Erdeus, and Gärling (1996a) and Gillholm, Ettema, Selart, and Gärling (1996b). In some of the experiments, undergraduates were requested to read an excerpt from a novel and to fill out and mail back a mood adjective checklist. In other experiments subjects were asked to write an essay. In line with the findings of Gollwitzer and Brandstätter (1997) and Orbell et al. (1997), subjects who were instructed to form an implementation intention (e.g., requested to indicate time and place) were more likely to perform the task.

A conclusion which appears warranted is that forming an implementation intention increases the intention-behavior consistency. However, the studies demonstrating this have instructed subjects to form an implementation intention. Therefore, they have not addressed the question of what factors cause subjects to form such an intention. Gollwitzer and Brandstätter (1997) note that people may form implementation intentions when they anticipate difficulties in implementing a goal intention. We assume in a similar vein that perceived
control over a behavior is one determinant of the formation of an implementation intention. In addition, we believe that the attractiveness or importance of the goal is another determinant.

As a theoretical point of departure for the present two studies, we propose the structural model shown in Figure 1 which specifies the determinants of the likelihood of performing a behavior. A basic tenet is that implementation intentions are always formed in conjunction with goal intentions but that they vary in strength (i.e., the degree to which the instrumental behaviors implementing the goal are specified) depending on several other factors. One such factor is the degree of planning which in turn is positively related to the strength of the goal intention and negatively related to degree of perceived behavioral control. Planning is also assumed to increase actual control thus making it more likely that the behavior is performed (Gillholm et al., 1996a, 1996b; Gollwitzer & Brandstätter, 1997; Orbell et al., 1997). The likelihood that the behavior is performed or not also depends on the degree of behavioral control the situation actually permits. Furthermore, it is assumed that a person is able with some degree of accuracy to assess increases in actual behavioral control.

![Figure 1](image_url)

**Figure 1.** Structural model specifying the determinants of the likelihood of performing a behavior.

The aim of Studies 1 and 2 was to test different implications of the structural model in Figure 1. In both studies a scenario method was used in which subjects were asked to imagine that they had made a choice of goal which varied in attractiveness. Thus, in this way the strength of a goal intention was varied. The studies differed in that Study 1 focused on the degree to which planning is determined by goal attractiveness (strength of goal intention) and perceived behavioral control, whereas the primary focus of Study 2 was the degree to which strength of an implementation intention is determined by the degree of planning.
Studies have shown that the formation of an implementation intention increases the likelihood that a behavior is performed (Gillholm et al., 1996a, 1996b; Gollwitzer & Brandstätter, 1997; Orbell et al., 1997). Furthermore, planning has been assumed to be important for the formation of an implementation intention. However, no previous research appears to have investigated factors which increase the degree to which people plan. The aim of Study 1 was to investigate the hypothesis implied by the structural model in Figure 1 that goal attractiveness (strength of goal intention) increases and perceived behavioral control decreases the degree of planning.

**Method**

**Subjects.** Thirty-six (12 male and 24 female) undergraduates at Göteborg University participated in return for payment. Their mean age was 25.6 years (SD = 5.8 years).

**Procedure.** Subjects were recruited in classes. Immediately after class but while still in the classroom they filled out a booklet monitored by a male experimenter. This task took about 20 minutes. After having completed it, subjects were debriefed and paid.

The booklets consisted of a front page with general instructions informing subjects that they would be presented with descriptions of a number of mundane situations which frequently occur in people’s everyday lives. Subjects were further asked to imagine themselves as being the actor in the described situations, and to respond to them as if they were real. On separate pages following the front page, 16 descriptions of situations (see Appendix A) were presented according to individually randomized orders. Subjects were requested to read each description in the order it appeared and to then answer a set of questions related to it.

In each of the situations subjects knew that they had made a decision to perform a behavior. In half of them they were expected to believe that performing the behavior (e.g., "listening to a band") would lead to positive outcomes (positively motivated or approach behaviors), and in the other half that performing the behavior (e.g., "returning a book to the library") would prevent negative outcomes (negatively motivated or avoidance behaviors). For each of the descriptions of positively and negatively motivated behaviors four versions were constructed in which high or low goal attractiveness was crossed with high or low degree of perceived behavioral control. For example, in one version "having dinner at the parents’ house" was expressed as more attractive since the subject "... had not met the parents for a long time," in another version as less attractive since the subject "... most of all wanted to be alone." At the same time the behavioral control was either high (the subject knew how to get to the parents’ house by bus) or low (because of maintenance work leading to rerouting of the bus, the subject did not know how much time the trip would take). Only one of the four versions of each situation was presented to a given individual subject. Across all descriptions of situations entailing
positively and negatively motivated behaviors respectively, subjects were
presented with an equal number of each version. Across all subjects the
different versions of each description of a situation was equally frequent.

Following each description on the same page in the booklet, subjects
performed ratings on a number of scales which were intended as manipulation
checks. Four scales were supposed to measure goal attractiveness, two geared
at positively motivated behaviors ("degree of fun in doing X" and "degree of
positive/negative feeling from doing X") and another two geared at negatively
motivated behaviors ("degree of importance of doing X," and "degree of
requirement to do X"). Another four scales aimed at measuring perceived
behavioral control, two of which have been commonly used in previous research
(e.g., Sparks, 1996). One of these scales was directly phrased ("degree of control
over doing X"), the other was indirectly phrased focusing on the difficulty of
performing the behavior ("degree of difficulty in doing X"). An additional two
scales assessed subjects' perceptions of external obstacles ("degree to which
something prevents doing X" and "degree to which nothing other than changing
the decision prevents doing X"). Numerical seven-point scales were used with
appropriate end-point definitions.

An additional set of four questions (in two cases three questions) tuned to
each situation constituted the main dependent variable and were supposed to
assess the degree to which subjects were motivated to plan the behavior. Each
question referred to a "planning act," that is, a behavior which if performed
would make subjects more confident in successfully achieving the goal of
implementing the decision. Subjects rated the likelihood that they would
perform the planning acts on numerical seven-point scales ranging from -3 to
+3 with the end-point definitions "No, definitely not" and "Yes, definitely." The
midpoint was defined as equally likely to do it as not. The planning acts (see
Appendix B) were tied to the manipulation of perceived behavioral control. For
instance, if low perceived behavioral control was caused by unknown delays of
public transportation, an example of a planning act was "to call the public
transport company to find out about these delays." However, the planning acts
were phrased in a way making it conceivable that subjects would perform them
even when perceived behavioral control was high. Thus, for instance, they
could still call the bus company for delay information without having been told
about any reasons for expecting delays. Obviously, delays may nevertheless
occur. The planning questions were answered last. For each description
different subjects received the planning acts in different orders.

Results and Discussion

Manipulation Checks. Reliability analyses showed that for averages across
the four scales measuring goal attractiveness, Cronbach's alpha was on average
.86 and varied from .71 to .94 across situations involving positively motivated
behaviors. For situations involving negatively motivated behaviors Cronbach's
alpha was on average lower (M=.66) and varied between .49 and .81.
Nevertheless, averages were computed across all scales for both positive and
negatively motivated behaviors (Mean Cronbach's alpha = .76). For averages
across the four rating scales measuring perceived behavioral control,
Cronbach’s alpha was on average .66 and varied across situations between .35 and .81. The scale “degree to which nothing other than changing the decision prevents doing X” was however removed since this increased Cronbach’s alpha to $M=.71$ (varying from .55 to .86 across situations).

The mean ratings are given in Table 1. As can be seen, the manipulations appeared to have been successful. On average goal attractiveness was rated to be higher for situations with high goal attractiveness than for situations with low goal attractiveness ($M=4.57$ vs. 3.51). This was confirmed by a 2 (goal attractiveness: low vs. high) by 2 (perceived behavioral control: low vs. high) by 2 (type of motivation: negative vs. positive) repeated-measures analysis of variance (ANOVA) yielding a highly significant main effect of goal attractiveness, $F(1, 35) = 148.02, p<.001$. Likewise, perceived behavioral control was on average rated to be higher for situations with high perceived behavioral control than for situations with low perceived behavioral control ($M=5.57$ vs. 5.05). A parallel repeated-measures ANOVA showed that also this main effect was highly significant, $F(1, 35) = 34.86, p<.001$. In the ANOVA on the ratings of goal attractiveness, the main effect of perceived behavioral control was not significant ($F<1$). However, situations involving negatively motivated behaviors were rated as slightly lower on goal attractiveness than situations involving positively motivated behaviors ($M=3.94$ vs. 4.14), as substantiated by a marginally significant main effect, $F(1, 35) = 4.33, p=.05$. Furthermore, the interaction between goal attractiveness and type of motivation was significant, $F(1, 35) = 19.56, p<.001$. Probably as a result of unintended content differences in the descriptions of the situations, the effect of goal attractiveness was weaker for negatively motivated behaviors. However, separate post hoc $t$-tests at $p=.05$ nevertheless showed that the differences between low and high goal attractiveness were reliable for both positively and negatively motivated behaviors. Also, both for high and low goal attractiveness the differences between positively and negatively motivated behaviors were significant.

On the ratings of perceived behavioral control, the main effects of goal attractiveness and type of motivation were significant, $F(1, 35) = 5.48, p<.05$, and $F(1, 35) = 7.70, p<.01$, respectively. Possibly reflecting an optimism bias (Zakay, 1983), situations with high goal attractiveness were rated as slightly higher in perceived behavioral control than situations with low goal attractiveness ($M=5.23$ vs. 5.02). Again most likely due to unintended content differences in the descriptions, situations involving negatively motivated behaviors were rated as higher in perceived behavioral control than situations involving positively motivated behaviors ($M=5.27$ vs. 4.99).

**Degree of Planning.** Averages were computed across the likelihood ratings of each of the planning acts. The observed low Cronbach’s alpha ($M = 0.47$) was anticipated since the planning acts were selected so that the number of them rated to be likely would increase with increasing motivation to plan. Thus, as verified by the mean ratings reported in Appendix B, the planning acts were assumed to be ordered along a continuum from low to high likelihood of planning rather than being replicates of each other.
Table 1

<table>
<thead>
<tr>
<th>Goal Attractiveness</th>
<th>Perceived Behavioral Control</th>
<th>Low goal attractiveness</th>
<th>High goal attractiveness</th>
<th>Low goal attractiveness</th>
<th>High goal attractiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negatively motivated behaviors</td>
<td></td>
<td>M (SD)</td>
<td>M (SD)</td>
<td>M (SD)</td>
<td>M (SD)</td>
</tr>
<tr>
<td>Low perceived behavioral control</td>
<td>3.97 (1.28)</td>
<td>4.46 (1.21)</td>
<td>2.98 (1.31)</td>
<td>4.86 (0.85)</td>
<td></td>
</tr>
<tr>
<td>High perceived behavioral control</td>
<td>3.87 (1.51)</td>
<td>4.27 (1.33)</td>
<td>3.23 (1.33)</td>
<td>4.70 (1.16)</td>
<td></td>
</tr>
</tbody>
</table>

Table 2 shows that rated likelihood of planning as expected increases with goal attractiveness and decreases with perceived behavioral control. In a 2 (goal attractiveness: low vs. high) by 2 (perceived behavioral control: low vs. high) by 2 (type of motivation: negative vs. positive) repeated-measures ANOVA, both main effects of goal attractiveness ($M = -0.41$ for low vs. $M = -0.13$ for high goal attractiveness) and perceived behavioral control ($M = 0.44$ for low vs. $M = 0.16$ for high perceived behavioral control) were significant, $F(1, 35) = 15.63$, $p < .001$, and $F(1, 35) = 17.29$, $p < .001$. Rated likelihood of planning was also higher for negatively motivated behaviors than for positively motivated behaviors ($M = 0.46$ vs. $-0.18$), confirmed by a reliable main effect of type of motivation, $F(1, 35) = 33.17$, $p < .001$.

A problem with interpreting the results is due to the fact that the manipulation checks showed that varying goal attractiveness not only affected perceived goal attractiveness but also to some extent perceived behavioral control. Thus, it may be asked whether the effect of goal attractiveness on the ratings of likelihood of planning is accounted for by differences in perceived behavioral control. Refuting this possibility, a 2 (goal attractiveness: low vs. high) by 2 (perceived behavioral control: low vs. high) by 2 (type of motivation: negative vs. positive) repeated-measures analysis of covariance (ANCOVA) with perceived behavioral control as covariate yielded an effect of goal attractiveness which was still highly significant, $F(1, 34) = 12.40$, $p < .001$. Thus,
the conclusion is warranted that likelihood of planning increases with goal attractiveness independently of perceived behavioral control.

Table 2

<table>
<thead>
<tr>
<th></th>
<th>Negatively motivated behaviors</th>
<th>Positively motivated behaviors</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Low goal attractiveness</td>
<td>High goal attractiveness</td>
</tr>
<tr>
<td>M (SD)</td>
<td>M (SD)</td>
<td>M (SD)</td>
</tr>
<tr>
<td>High perceived</td>
<td>0.07 (1.39)</td>
<td>0.31 (1.57)</td>
</tr>
<tr>
<td>behavioral control</td>
<td>-0.86 (1.46)</td>
<td>-0.14 (1.57)</td>
</tr>
<tr>
<td>Low perceived</td>
<td>0.41 (1.48)</td>
<td>1.05 (1.19)</td>
</tr>
<tr>
<td>behavioral control</td>
<td>-0.12 (1.48)</td>
<td>0.40 (1.49)</td>
</tr>
</tbody>
</table>

An unexpected finding was that likelihood of planning was higher for negatively than for positively motivated behaviors. Since the manipulation checks also indicated that situations involving positively motivated behaviors differed from situations involving negatively motivated behaviors, the question is raised whether these differences in goal attractiveness and perceived behavioral control were capable of accounting for the differences in likelihood of planning. However, also in this case the significant effect of type of motivation remained in an ANCOVA with both the ratings of goal attractiveness and perceived behavioral control as covariates, $F(1, 33) = 24.20, p<.001$. Thus, it appears that avoiding something negative induces more planning than would be expected from the attractiveness of the goal and the degree of perceived behavioral control.

Study 2

Whereas Study 1 provided clear support for the hypothesis that the degree of planning for a behavior is directly related to the attractiveness of the behavior and inversely related to the perceived degree of control over the behavior, the aim of Study 2 was to extend the test of the structural model in Figure 1 to the link from planning to implementation intention. Rating scales supposed to measure strength of implementation intention (e.g., "degree of likelihood of implementing the decision to do X") were devised. Planning was manipulated by adding to the descriptions of the situations one of the planning acts which subjects rated in Study 1. A main effect of degree of planning manipulated in this way was expected on the ratings of intention strength.
Another prediction from the structural model is that the effect of goal attractiveness would be reduced when subjects imagined that they performed the planning acts as compared to when they did not. Thus, an interaction effect between planning and goal attractiveness was expected on the ratings of intention strength.

**Method**

_Subjects._ Nineteen male and 25 female undergraduates at Göteborg University participated in return for payment. Their mean age was 23.7 years (SD=5.4 years).

_Procedure._ Subjects were asked to remain in their classroom after a class. They were then given a booklet which they filled out while being monitored by a male experimenter. After completing the task, which took approximately 20 minutes, subjects were debriefed and paid.

The booklet which subjects filled out contained descriptions of the same 16 situations which were employed in Study 1. They differed from those in Study 1 in that the degree of planning instead of perceived behavioral control was manipulated. All situations were those with low perceived behavioral control. For half of the descriptions of positively and negatively motivated behaviors subjects were told that they had performed one of the planning acts. For each situation the planning act selected was that which the results of Study 1 indicated was the one most likely to be performed (listed as the first ones in Appendix B). Situations in which subjects planned or did not plan were for each subject crossed against low and high attractiveness. Across subjects all situations were equally frequent in each of the eight subgroups defined by crossing negatively vs. positively motivated behaviors, low vs. high attractiveness, and no planning vs. planning. The orders of presentation in the booklet were individually randomized.

Subjects made ratings on a number of scales for each description. The same scales as in Study 1 were used to measure goal attractiveness. The ratings of perceived behavioral control were made on the three scales which in Study 1 showed internal consistency, excluding the scale "degree to which nothing else than changing the decision prevents doing X." In addition the following three scales were included to measure strength of implementation intention: "likelihood of changing the decision to do X," "determination to implement the decision to do X," and "likelihood of implementing the decision to do X." Numerical seven-point scales were used with appropriate end-point definitions. The intention-strength scales were checked last.

**Results and Discussion**

_Perceived Behavioral Control._ Ratings of perceived behavioral control were averaged across the three scales (Mean Cronbach’s alpha = .71, varying from .66 to .88 across situations). The means are given in Table 3. As may be seen, perceived behavioral control increases as expected when subjects imagine that they plan. A 2 (goal attractiveness: low vs. high) by 2 (planning: no vs. yes) by 2
(type of motivation: negative vs. positive) repeated-measures ANOVA yielded a highly significant main effect of planning, $F(1, 43) = 16.12, p<.001$.

There was also a highly significant main effect of goal attractiveness, $F(1,45) = 30.16, p<.001$. This effect may as in Study 1 reflect an optimism bias (Zakay, 1983). Furthermore, a weak although significant main effect of type of motivation was observed, $F(1, 43) = 6.58, p<.05$. Negatively motivated behaviors were rated slightly higher in perceived behavioral control than positively motivated behaviors ($M = 5.07$ vs. 4.81). Finally, the interaction between type of motivation and goal attractiveness also proved to be significant, $F(1, 43) = 5.14, p<.05$. A ceiling effect may possibly account for this interaction. Separate post hoc $t$-tests at $p=.05$ showed that for positively motivated behaviors, but not for negatively motivated behaviors, the effect of goal attractiveness was reliable ($M = 5.23$ vs. 4.43). Furthermore, perceived behavioral control was reliably higher for negatively motivated behaviors than for positively motivated behaviors ($M = 4.92$ vs. 4.43) only when goal attractiveness was low.

**Goal attractiveness.** The ratings of goal attractiveness were averaged across the scales (Mean Cronbach's alpha = .78, varying from .66 to .88 across situations involving positively motivated behaviors and from .31 to .81 across situations involving negatively motivated behaviors). The mean ratings are given in Table 4. A 2 (goal attractiveness: low vs. high) by 2 (planning: no vs. yes) by 2 (type of motivation: negative vs. positive) repeated-measures ANOVA yielded a highly significant main effect of goal attractiveness, $F(1, 43) = 1681.98, p<.001$, in the expected direction. Ruling out that the effect was accounted for by differences in perceived behavioral control, an ANCOVA with the ratings of perceived behavioral control as covariate yielded a weaker although still highly significant effect, $F(1, 42) = 78.81, p<.001$. Consistent with the structural model, the main effect of planning failed to reach significance, $F(1, 43) <1$.

<table>
<thead>
<tr>
<th>Table 3</th>
<th>Mean Ratings of Perceived Behavioral Control</th>
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<tr>
<td></td>
<td>Negatively motivated behaviors</td>
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<tr>
<td></td>
<td>Low goal attractiveness</td>
</tr>
<tr>
<td>No planning</td>
<td>M (SD)</td>
</tr>
<tr>
<td>Planning</td>
<td>4.81 (1.37)</td>
</tr>
<tr>
<td></td>
<td>5.03 (1.30)</td>
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</table>

There was also a significant interaction between goal attractiveness and type of motivation, $F(1, 43) = 28.51, p<.001$. Separate post hoc $t$-tests at $p=.05$ showed that the ratings of goal attractiveness were reliably larger for high than for low goal attractiveness both when the situations involved positively
motivated behaviors and negatively motivated behaviors. Goal attractiveness was rated as reliably larger for positively motivated behaviors than for negatively motivated behaviors when goal attraction was high whereas the reverse was true when goal attraction was low.

Table 4

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<tr>
<th></th>
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<th>Positively motivated behaviors</th>
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<tr>
<td></td>
<td>Low goal attractiveness</td>
<td>High goal attractiveness</td>
</tr>
<tr>
<td></td>
<td>M (SD)</td>
<td>M (SD)</td>
</tr>
<tr>
<td>No planning</td>
<td>3.68 (1.17)</td>
<td>4.34 (1.14)</td>
</tr>
<tr>
<td>Planning</td>
<td>3.72 (1.33)</td>
<td>4.32 (.91)</td>
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</table>

**Strength of implementation intention.** Averages were computed across the scales measuring strength of implementation intention (Mean Cronbach’s alpha = .91, varying from .78 to .96 across situations). The means are displayed in Table 5. In line with the structural model, both goal attractiveness and planning increase intention strength. In a 2 (goal attractiveness: low vs. high) by 2 (planning: no vs. yes) by 2 (type of motivation: negative vs. positive) repeated-measures ANOVA, the main effect of goal attractiveness was significant, \( F(1, 43) = 149.87, p < .001 \). However, the main effect of planning was not significant, \( F(1, 43) = 1.06, p > .25 \). Furthermore, planning did not seem to reduce the effect of goal attractiveness, \( F(1, 43) < 1 \), corresponding to the interaction between planning and goal attractiveness. An ANCOVA with perceived behavioral control as covariate showed that the main effect of goal attractiveness was weaker but still highly significant, \( F(1, 43) = 66.21, p < .001 \). The interaction between planning and goal attractiveness remained non-significant, \( F(1, 43) < 1 \).

The main effect of type of motivation also reached significance, \( F(1, 43) = 7.64, p < .01 \), although it was modified by a reliable interaction with goal attractiveness, \( F(1, 43) = 14.42, p < .01 \). Perhaps again reflecting a ceiling effect, separate post hoc t-tests showed that intention strength was reliably larger for negatively motivated behaviors when goal attractiveness was low but not when it was high. The differences between low and high goal attractiveness were reliable for both positively and negatively motivated behaviors.
Table 5
*Ratings of Strength of Implementation Intention*

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<tr>
<th></th>
<th>Negatively motivated behaviors</th>
<th>Positively motivated behaviors</th>
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<tbody>
<tr>
<td></td>
<td>Low goal attractiveness M</td>
<td>High goal attractiveness M</td>
</tr>
<tr>
<td></td>
<td>(SD)</td>
<td>(SD)</td>
</tr>
<tr>
<td>No planning</td>
<td>4.93 (1.64)</td>
<td>5.63 (1.29)</td>
</tr>
<tr>
<td>Planning</td>
<td>5.06 (1.51)</td>
<td>5.79 (1.26)</td>
</tr>
<tr>
<td></td>
<td>4.27 (1.58)</td>
<td>5.77 (1.27)</td>
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<td></td>
<td>4.44 (1.73)</td>
<td>5.73 (1.05)</td>
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General Discussion

The present results provide partial support for the proposed structural model (Figure 1). Specifically, in Study 1 both goal attractiveness and perceived behavioral control showed the expected effects on degree of planning. Although problems were encountered in that the experimental manipulation of goal attractiveness caused differences in perceived behavioral control (but not the reverse), statistical control ruled out the possible confounding of the effects. Thus, the links in Figure 1 between goal intention (attractiveness) and planning and between perceived behavioral control and planning were supported. In Study 2 the evidence supporting the structural model was that goal attractiveness influenced the strength of the implementation intention. In addition the experimental manipulation of degree of planning did not affect the ratings of goal attractiveness. However, although the planning manipulation as expected increased perceived behavioral control, there was only a weak nonsignificant effect on intention strength. Furthermore, the expected interaction between planning and goal attractiveness was absent.

Although the present results shed light on when subjects plan, they also raise some questions which remain to be answered. One such question is how an implementation intention is related to planning since this is where the proposed structural model fails. Although Gollwitzer (1993) does not explicitly assume so, it does not seem to be inconsistent with his view that people may feel that they know how to implement a goal intention. In the present study we assumed that this feeling is expressed in ratings of the strength of an implementation intention. Although acceptable reliability was achieved for the ratings, it is of course possible that they do not measure what they are supposed to.

According to Gollwitzer’s (1993) definition of implementation intention, strength of the intention should be directly related to the degree to which the behavior becomes associated with a situation. However, on the face of it, the kind of planning subjects were asked to do in the present studies may not accomplish such an association. While Gollwitzer mainly refers to planning as consisting of making commitments to time and place, the present definition entails reduction of uncertainty about the implementation of the goal intention.
This appears to be a more general definition subsuming Gollwitzer’s definition. Planning acts could then take the form of information acquisition aimed at reducing uncertainty about the implementation, including decisions about time and place. On the other hand, reduction of uncertainty may not in general have the same advantage as decisions about time and place have on, for instance, prospective memory. Thus, if subjects in accordance with Gollwitzer (1993) based their ratings of the strength of an implementation intention on a more limited definition which was different from that motivating the planning manipulation, this would in the present study have reduced the relationship between intention strength and planning.

Another possibility is that intention strength is related to planning in some other way. Consistent with TPB (Ajzen, 1991, 1996), perceived behavioral control may have a direct effect on intention strength (Figure 2). In Study 2 only a weak effect of the planning manipulation was observed on intention strength. However, there was a correlation \( r = 0.58 \) between intention strength and perceived behavioral control. Since perceived behavioral control is related to actual behavioral control which is affected by the degree of planning, intention strength is still assumed to be influenced by planning although indirectly. As a result there is a correlation instead of a causal link between intention strength and the likelihood of performing the behavior. Of course, the role of actual behavioral control and the relationships to behavior are not addressed by the present data. Therefore, this part of the structural model must remain speculative.

The hypotheses entailed by the revised structural model are bold in the sense that they treat intention strength as an epiphenomenon, being correlated with rather than causally related to performance of the behavior. Note however that this applies to an implementation intention as measured in the present studies. Strength of the goal intention still has a causal link to planning which is the major causal factor. These implications do not seem to be opposed to a basic tenet of Gollwitzer’s (1993) theory: An implementation intention is a cognitive

![Figure 2. Revised structural model specifying the determinants of the likelihood of performing a behavior.](image)
representation of a plan of action (in its simplest case situation-behavior associations). It is the realism of this plan (i.e., actual behavioral control) rather than its "strength" which is important for whether the behavior is performed. To some degree perceived behavioral control informs the individual about the realism of the plan.

A second question raised by the present results concerns how to account for the effect of type of motivation on planning in Study 1 and on intention strength in Study 2. These effects were not accounted for by differences in perceived behavioral control or goal attractiveness. A possibility is however that there were differences in goal attractiveness which the summary measure did not detect. For instance, a scale such as "importance" may be more highly correlated with planning than others (e.g., "fun"). Another possibility is that positively motivated behaviors are planned less than negatively motivated behaviors because the attractiveness of the goal (seeking a positive outcome such as "having fun") is somewhat antithetical to planning which therefore reduces its attractiveness. Exactly the reverse may be true of an important goal (avoiding a negative outcome such as "dullness"). Further research is under way to follow up on these suggestions as well as to test the revised structural model.

References


Appendix A

Positively motivated behaviors

Description #1 (low attractiveness/low perceived control)
Your mother calls and asks if you would like to have dinner with she and your father at 7 pm the following evening. You would rather be alone, but you say yes anyway. Your mother says that you should be on time so that the food does not become cold. Your parents live about 12 miles from your house and you usually take the bus there. You believe that there is a bus going there every 15 minutes. The trip usually takes 30 minutes. One problem is that there is roadwork underway along the route that the bus follows. Your mother has said that the usual bus may therefore not come all the way to their home, and you may eventually need to change to another bus. You do not have access to a time table.

Description #1 (low attractiveness/high perceived control)
Your mother calls and asks if you would like to have dinner with she and your father at 7 pm the following evening. You would rather be alone, but you say yes anyway. Your mother says that you should be on time so that the food does not become cold. Your parents live about 12 miles from your house and you usually take the bus there. You believe that there is a bus going there every 15 minutes. The trip usually takes 30 minutes. You do not have access to a time table.

Description #1 (high attractiveness/low perceived control)
Your mother calls and asks if you would like to have dinner with she and your father at 7 pm the following evening. Since you are low on food money you say yes. Furthermore, you haven’t met with your parents in a while. Your mother says that you should be on time so that the food does not become cold. Your parents live about 12 miles from your house and you usually take the bus there. You believe that there is a bus going there every 15 minutes. The trip usually takes 30 minutes. One problem is that there is roadwork underway along the route that the bus follows. Your mother has said that the usual bus may therefore not come all the way to their house, and you may eventually need to change to another bus. You do not have access to a time table.

Description #1 (high attractiveness/high perceived control)
Your mother calls and asks if you would like to have dinner with she and your father at 7 pm the following evening. Since you are low on food money you say yes. Furthermore, you haven’t met with your parents in a while. Your mother says that you should be on time so that the food does not become cold. Your parents live about 12 miles from your house and you usually take the bus there. You believe that there is a bus going there every 15 minutes. The trip usually takes 30 minutes. You do not have access to a time table.
Description #2 (low attractiveness/low perceived control)

You have lived two years in a sublet apartment. Your name isn’t on the door, but the neighbors know that it is you who lives there. Tomorrow, which is a Friday, you will have four classmates over for dinner. These classmates are not among your closest friends. They have never been over to visit you before.

Description #2 (low attractiveness/high perceived control)

You have lived two years in a sublet apartment. Your name isn’t on the door, but the neighbors know that it is you who lives there. Tomorrow, which is a Friday, you will have four classmates over for dinner. These classmates are not among your closest friends. They have however been over to visit you several times before.

Description #2 (high attractiveness/low perceived control)

You have lived two years in a sublet apartment. Your name isn’t on the door, but the neighbors know that it is you who lives there. Tomorrow, which is a Friday, you will have four classmates over for dinner. These classmates are the kind that you gladly socialize with. They have never been over to visit you before.

Description #2 (high attractiveness/high perceived control)

You have lived two years in a sublet apartment. Your name isn’t on the door, but the neighbors know that it is you who lives there. Tomorrow, which is a Friday, you will have four classmates over for dinner. These classmates are the kind that you gladly socialize with. They have been over to visit you several times before.

Description #3 (low attractiveness/low perceived control)

This evening you’ve decided that together with some friends you’ll go and see a band that plays in town at 9 o’clock. It isn’t actually your favorite band, but you believe that it can be a good time anyway. There aren’t any tickets to buy in advance. You don’t know if the show will be sold out.

Description #3 (low attractiveness/high perceived control)

This evening you’ve decided that together with some friends you’ll go and see a band that plays in town at 9 o’clock. It isn’t actually your favorite band, but you believe that it can be a good time anyway. There aren’t any tickets to buy in advance. You don’t believe that the show will be sold out.

Description #3 (high attractiveness/low perceived control)

This evening you’ve decided that together with some friends you’ll go and see a band that plays in town at 9 o’clock. It is a band that you really like and you look forward to the show. There aren’t any tickets to buy in advance. You don’t know if the show will be sold out.

Description #3 (high attractiveness/high perceived control)

This evening you’ve decided that together with some friends you’ll go and see a band that plays in town at 9 o’clock. It is a band that you really like and you
look forward to the show. There aren’t any tickets to buy in advance. You don’t believe that the show will be sold out.

Description #4 (low attractiveness/low perceived control)
Tomorrow you’ll take a trip out into the countryside together with some friends. You aren’t so strongly drawn to go since you were there not so long ago, but you committed yourself to making the trip a long time back. You have borrowed a car which you have never driven before and you don’t really know in what condition it is.

Description #4 (low attractiveness/high perceived control)
Tomorrow you’ll take a trip out into the countryside together with some friends. You aren’t so strongly drawn to go since you were there not so long ago, but you committed yourself to making the trip a long time back. You have borrowed a car. You have borrowed this car before and did not then have any problems with it.

Description #4 (high attractiveness/low perceived control)
Tomorrow you’ll take a trip out into the countryside together with some friends. You look forward to this, since it is something you’ve all long talked about but have not been able to bring about. You have borrowed a car which you have never driven before and you don’t really know in what condition it is.

Description #4 (high attractiveness/high perceived control)
Tomorrow you’ll take a trip out into the countryside together with some friends. You look forward to this, since it is something you’ve all long talked about but have not been able to bring about. You have borrowed a car. You have borrowed this car before and did not then have any problems with it.

Description #5 (low attractiveness/low perceived control)
This evening, which is a Saturday evening, you’ll go out to eat at a restaurant with some old friends. It is a very long time since you have gotten together with them, and you know that you don’t have so much in common with them anymore, so you don’t think that it will be so much fun. The restaurant you have decided on is rather popular and there are usually a lot of people there. You can’t call in advance to reserve a table. You have decided to meet there at 8 pm.

Description #5 (low attractiveness/high perceived control)
This evening, which is a Saturday evening, you’ll go out to eat at a restaurant with some old friends. It is a very long time since you have gotten together with them, and you know that you don’t have so much in common with them anymore, so you don’t think that it will be so much fun. At the restaurant you have decided on you can’t call in advance to reserve a table, but there usually aren’t many people there. You have decided to meet there at 8 pm.

Description #5 (high attractiveness/low perceived control)
This evening, which is a Saturday evening, you’ll go out to eat at a restaurant with some old friends. It is a long time since you have gotten
together with them, so you look forward to it very much. The restaurant you have decided on is rather popular and there are usually a lot of people there. You can’t call in advance to reserve a table. You have decided to meet there at 8 pm.

Description #5 (high attractiveness/high perceived control)
This evening, which is a Saturday evening, you’ll go out to eat at a restaurant with some old friends. It is a long time since you have gotten together with them, so you look forward to it very much. At the restaurant you have decided on you can’t call in advance to reserve a table, but there usually aren’t many people there. You have decided to meet there at 8 pm.

Description #6 (low attractiveness/low perceived control)
You have decided to go and see a film this evening. The film has gotten bad reviews but you think it may not be so bad. It’s now showing at a theater in a part of town far from where you live and where you have almost never been. The newspaper indicates that the show starts at 7 pm. You estimate that it will take 45 minutes to travel there by a streetcar which you believe goes every 15 minutes. You have to change cars on the way.

Description #6 (low attractiveness/high perceived control)
You have decided to go and see a film this evening. The film has gotten very good reviews and you have long thought that you would like to see it. It’s now showing at a theater in a part of town far from where you live, but since it is near your school you have passed by it several times. The newspaper indicates that the show starts at 7 pm. You estimate that it will take 45 minutes to travel there by a streetcar which you believe goes every 15 minutes. You have to change cars on the way.

Description #6 (high attractiveness/low perceived control)
You have decided to go and see a film this evening. The film has gotten very good reviews and you have long thought that you would like to see it. It’s now showing at a theater in a part of town far from where you live, but since it is near your school you have passed by it several times. The newspaper indicates that the show starts at 7 pm. You estimate that it will take 45 minutes to travel there by a streetcar which you believe goes every 15 minutes. You have to change cars on the way.

Description #6 (high attractiveness/high perceived control)
You have decided to go and see a film this evening. The film has gotten very good reviews and you have long thought that you would like to see it. It’s now showing at a theater in a part of town far from where you live, but since it is near your school you have passed by it several times. The newspaper indicates that the show starts at 7 pm. You estimate that it will take 45 minutes to travel there by a streetcar which you believe goes every 15 minutes. You have to change cars on the way.

Description #7 (low attractiveness/low perceived control)
It’s Sunday morning and you will go jogging with a friend at a running course. You usually jog on Sundays, but you haven’t been to this particular course before. You don’t actually feel like jogging, so you don’t look forward to
Description #7 (low attractiveness/high perceived control)

It's Sunday morning and you will go jogging with a friend at a running course. You usually jog on Sundays, but you haven't been to this particular course before. You don't actually feel like jogging, so you don't look forward to your outing. You and your friend decided yesterday to meet at one of several nearby parking lots, since you don't know where the course begins. However, you don't remember exactly which it was.

Description #7 (high attractiveness/low perceived control)

It's Sunday morning and you will go jogging with a friend at a running course. You usually jog on Sundays, but you haven't been to this particular course before. You feel that you are in good shape and look forward to your outing. You and your friend decided yesterday to meet at one of several nearby parking lots, since you don't know where the course begins. However, you don't remember exactly which it was.

Description #7 (high attractiveness/high perceived control)

It's Sunday morning and you will go jogging with a friend at a running course. You usually jog on Sundays, but you haven't been to this particular course before. You feel that you are in good shape and look forward to your outing. You and your friend decided yesterday to meet at one of several nearby parking lots, since you don't know where the course begins. You remember almost certainly which it was.

Description #8 (low attractiveness/low perceived control)

Tomorrow you will have a job interview. It's for a job in which you would work during the evening on some weekdays. However, you aren't completely sure that you want the job, partly because it doesn't seem to be especially fun or stimulating and partly because you are getting by rather well as it is. You have received an address at which you should be present at 11 am tomorrow, but you don't know where the address is.

Description #8 (low attractiveness/high perceived control)

Tomorrow you will have a job interview. It's for a job in which you would work during the evening on some weekdays. However, you aren't completely sure that you want the job, partly because it doesn't seem to be especially fun or stimulating and partly because you are getting by rather well as it is. You have received an address at which you should be present at 11 am tomorrow. You know almost certainly where the address is.

Description #8 (high attractiveness/low perceived control)

Tomorrow you will have a job interview. It's for a job in which you would work during the evening on some weekdays. You really want to have this job, since it seems to be fun and stimulating and you need an extra source of cash.
You have received an address at which you should be present at 11 am tomorrow, but you don't know where the address is.

Description #8 (high attractiveness/high perceived control)

Tomorrow you will have a job interview. It's for a job in which you would work during the evening on some weekdays, and you really want to have this job, partly because it seems to be fun and stimulating and partly because you need an extra source of cash. You have received an address at which you should be present at 11 am tomorrow. You know almost certainly where the address is.

Negatively motivated behaviors

Description #9 (low attractiveness/low perceived control)

Tomorrow a friend is coming to visit you. Your friend is coming by train and you have decided to meet him at the station. He has in fact visited you several times before, but it isn't certain that he can find his way to your house. You know that your friend is coming with a train sometime in the afternoon tomorrow, but you don’t know the exact time. You also don’t know at what times there are streetcars going to the station.

Description #9 (high attractiveness/high perceived control)

Tomorrow a friend is coming to visit you. Your friend is coming by train and you have decided to meet him at the station. Since your friend has seldom visited Göteborg, he wouldn't otherwise find his way to your house. You know that your friend is coming with a train sometime in the afternoon tomorrow, but you don't know the exact time. You also don't know at what times there are streetcars going to the station.

Description #9 (high attractiveness/high perceived control)

Tomorrow a friend is coming to visit you. Your friend is coming by train and you have decided to meet him at the station. Since your friend has seldom visited Göteborg, he wouldn't otherwise find his way to your house. According to your friend the train should arrive at 1:23 pm. You believe that there is a streetcar to the station at 1 pm so you can be there at 1:10 pm.

Description #10 (low attractiveness/low perceived control)

You have just come back from a week's vacation and notice that your bicycle has been stolen. It was an old, second-hand bicycle for which you paid little, but you decide to report the theft anyway, and to see if anyone has turned it in to the police. Since you have only recently moved to the city, however, you don’t know where the nearest police station is.
Description #10 (low attractiveness/high perceived control)
You have just come back from a week’s vacation and notice that your bicycle has been stolen. It was an old, second-hand bicycle for which you paid little, but you decide to report the theft anyway, and to see if anyone has turned it in to the police. You have had bicycles stolen before and know what you should do.

Description #10 (high attractiveness/low perceived control)
You have just come back from a week’s vacation and notice that your bicycle has been stolen. This grieves you especially much since it was an expensive bicycle that you bought only a month before. You decide to report the theft of the bicycle and to see if anyone has turned it in to the police. Since you have only recently moved to the city, however, you don’t know where the nearest police station is.

Description #10 (high attractiveness/high perceived control)
You have just come back from a week’s vacation and notice that your bicycle has been stolen. This grieves you especially much since it was an expensive bicycle that you bought only a month before. You decide to report the theft of the bicycle and to see if anyone has turned it in to the police. You have had bicycles stolen before and know what you should do.

Description #11 (low attractiveness/low perceived control)
You will go on vacation out of the country in a week and have just learned that your passport has expired. You have called the passport authority and arranged a time tomorrow at 9 am to have the passport renewed. As you will be travelling so soon you will get your passport already the same day. The passport authority has its offices in a part of town to which you have never been so you don’t know where its offices are located.

Description #11 (low attractiveness/high perceived control)
You will go on vacation out of the country in a week and have just learned that your passport has expired. You have called the passport authority and arranged a time tomorrow at 9 am to have the passport renewed. As you will be travelling so soon you will get your passport already the same day. The passport authority has its offices in a part of town which you know so you know the street on which its offices are located.

Description #11 (high attractiveness/low perceived control)
You will go on vacation out of the country the day after tomorrow and have just learned that your passport has expired. You have called the passport authority and arranged a time tomorrow at 9 am to have the passport renewed. As you will be travelling so soon you will get your passport already the same day. The passport authority has its offices in a part of town to which you have never been so you don’t know where its offices are located.

Description #11 (high attractiveness/high perceived control)
You will go on vacation out of the country the day after tomorrow and have just learned that your passport has expired. You have called the passport
authority and arranged a time tomorrow at 9 am to have the passport renewed. As you will be travelling so soon you will get your passport already the same day. The passport authority has its offices in a part of town which you know so you know the street on which its offices are located.

Description #12 (low attractiveness/low perceived control)

It is the day before a holiday and you find yourself in what is for you a rather unfamiliar part of town. You have decided to go to a post office to pay your rent. Since it is the last day before the rent is due, you will otherwise get a reminder. It is lunchtime, so you are also looking for a place where you can eat.

Description #12 (low attractiveness/high perceived control)

It is the day before a holiday and you find yourself in what is for you a rather unfamiliar part of town. You have decided to go to a post office to pay your rent. Since it is the last day before the rent is due, you will otherwise get a reminder. It is lunchtime, so you are also looking for a place where you can eat.

Description #12 (high attractiveness/low perceived control)

It is the day before a holiday and you find yourself in what is for you a rather unfamiliar part of town. You have decided to go to a post office to pay your rent. Since it is the last day before the rent is due you will otherwise have to pay a late fee. It is lunchtime, so you are also looking for a place where you can eat.

Description #12 (high attractiveness/high perceived control)

It is the day before a holiday and you find yourself in what is for you a rather familiar part of town. You have decided to go to a post office to pay your rent. Since it is the last day before the rent is due you will otherwise have to pay a late fee. It is lunchtime, so you are also looking for a place where you can eat.

Description #13 (low attractiveness/low perceived control)

Today you have decided to go to a lecture for your course. There is little likelihood that things will come up which are important for the coming exam. According to a classmate the time and place for the lecture have changed in relation to the normal arrangements.

Description #13 (low attractiveness/high perceived control)

Today you have decided to go to a lecture for your course. There is little likelihood that things will come up which are important for the coming exam. According to a classmate the time and place for the lecture fall within the normal arrangements.

Description #13 (high attractiveness/low perceived control)

Today you have decided to go to a lecture for your course and it is highly likely that things will come up which are important for the coming exam. According to a classmate the time and place for the lecture have changed in relation to the normal arrangements.
Description #13 (high attractiveness/high perceived control)

Today you have decided to go to a lecture for your course and it is highly likely that things will come up which are important for the coming exam. According to a classmate the time and place for the lecture fall within the normal arrangements.

Description #14 (low attractiveness/low perceived control)

You wake up in the morning and have pain in one of your ears. You don’t believe you have a fever. You decide to go to the local medical center anyway. You have never been there before, so you don’t really know the routine.

Description #14 (low attractiveness/high perceived control)

You wake up in the morning and have pain in one of your ears. You don’t believe you have a fever. You decide to go to the local medical center anyway. You have been to this medical center several times before, so you believe you know the routine.

Description #14 (high attractiveness/low perceived control)

You wake up in the morning and have pain in one of your ears. You also feel as though you have a high fever. You decide to go to the local medical center. You have never been there before, so you don’t really know the routine.

Description #14 (high attractiveness/high perceived control)

You wake up in the morning and have pain in one of your ears. You also feel as though you have a high fever. You decide to go to the local medical center. You have been to this medical center several times before, so you believe you know the routine.

Description #15 (low attractiveness/low perceived control)

You have decided to return a book to the library. You can probably manage to get to the library before your lecture. The book is not yet overdue, but you think that it’s just as well you that turn the book in since you have read through it. You have never been to the library at this time before, so you are not certain if it is open.

Description #15 (low attractiveness/high perceived control)

You have decided to return a book to the library. You can probably manage to get to the library before your lecture. The book is certainly not yet overdue, but you think that it’s just as well that you turn the book in anyway since you have read through it. The last time you were at the library it was open by this time.

Description #15 (high attractiveness/low perceived control)

You have decided to return a book to the library. You can probably manage to get to the library before your lecture. The loan period has ended, so you run the risk of having to pay a late fee if the book isn’t returned today. You have never been to the library at this time before, so you are not certain if it is open.
Description #15 (high attractiveness/high perceived control)

You have decided to return a book to the library. You can probably manage to get to the library before your lecture. The loan period has ended, so you run the risk of having to pay a late fee if the book isn’t returned today. The last time you were at the library it was open by this time.

Description #16 (low attractiveness/low perceived control)

You have decided to go to the undergraduate counselor today to talk about your future studies. You have decided for yourself about the areas which you ought to read further into, but you want confirmation that you have chosen correctly. You haven’t made an appointment, despite the fact that the undergraduate counselor is normally very busy.

Description #16 (low attractiveness/high perceived control)

You have decided to go to the undergraduate counselor today to talk about your future studies. You have decided for yourself about the areas which you ought to read further into, but you want confirmation that you have chosen correctly. You haven’t made an appointment since the undergraduate counselor normally isn’t so busy.

Description #16 (high attractiveness/low perceived control)

You have decided to go to the undergraduate counselor today to talk about your future studies. It feels very important for you since you are having difficulty deciding about the areas which you ought to read further into. You haven’t made an appointment, despite the fact that the undergraduate counselor is normally very busy.

Description #16 (high attractiveness/high perceived control)

You have decided to go to the undergraduate counselor today to talk about your future studies. It feels very important for you since you are having difficulty deciding about the areas which you ought to read further into. You haven’t made an appointment since the undergraduate counselor normally isn’t so busy.
Appendix B

Means and Sds of the subjects’ likelihood ratings are reported for each planning act. The order in which the planning acts are presented is from the most to the least likely. In the booklet the order was varied.

Positively motivated behaviors

Description #1
A Would you call Göteborg’s transit information number to
find out if the bus is delayed? M= -0.11, SD= 2.41
B Would you take a bus which leaves at 5:45 or earlier? M= -0.14, SD= 2.31
C Would you go and buy a bus schedule? M= -1.44, SD= 1.97
D Would you take money for a taxi in case the bus doesn’t go? M= -1.75, SD= 2.03

Description #2
A Would you call each of your classmates and explain how to
get to your house? M= 0.61, SD= 2.70
B Would you meet your classmates at the door so that they
could find your apartment? M= -0.28, SD= 2.21
C Would you speak with your neighbors so that they
would know to show your classmates the way? M= -2.47, SD= 1.30
D Would you set up signs which indicate the way
to your place from the nearest bus stop? M= -2.90, SD= 0.32

Description #3
A Would you call the concert promoters to find out
if the concert has sold out? M= -0.01, SD= 2.23
B Would you call any of your friends to see if
they believe that the concert has sold out? M= -0.22, SD= 2.04
C Would you try to find out how many people came to see
the band the last time they were there and played? M= -1.89, SD= 1.63
D Would you look in the day’s newspaper to get an idea
of how much advertising has been done for the show? M= -1.94, SD= 1.49

Description #4
A Would you find out what kind of gas goes in the car? M= 1.78, SD= 1.85
B Would you ask the owner of the car if it has any
special characteristics? M= 1.75, SD= 2.11
C Would you check to see that there is enough oil
in the motor? M= -0.69, SD= 2.44
D Would you take a drive in the car to check that
the brakes work? M= -1.50, SD= 2.10
Description #5
A Would you think of an alternative to the restaurant you had decided on, looking for one that makes reservations? M= 0.03, SD= 2.20
B Would you call the restaurant to find out what time one should arrive in order to get a table? M= -0.50, SD= 2.27
C Would you arrive there long before 8 pm to be sure that you get a table? M= -1.00, SD= 2.03
D Would you find out if it was a payday? M= -2.41, SD= 1.20

Description #6
A Would you check in a time table to see how long a wait would be involved in the change between streetcars? M= 0.72, SD= 2.11
B Would you take a streetcar which goes at 5:45 or earlier? M= 0.36, SD= 2.15
C Would you call Göteborg’s transit information number to find out if there is some better way to get to the theater? M= 0.31, SD= 2.27
D Would you call the theater to find out where you should get off the streetcar? M= -1.78, SD= 1.90

Description #7
A Would you call your friend to reassure yourself about where you had decided to meet? M= 1.78, SD= 1.73
B Would you look for the notes you made at the time about which of the parking lots it was? M= 1.30, SD= 1.77
C Would you look at a map to see which of the parking places you could think it to be? M= 0.28, SD= 2.01
D Would you set out from your house earlier so that you would have time to look for the right place? M= 0.03, SD= 2.16

Description #8
A Would you look on a map to see where the address is? M= 2.56, SD= 0.97
B Would you find out which streetcars or buses stop in the vicinity of the address? M= 2.44, SD= 1.27
C Would you call to the work place and ask for more detailed instructions on how to get there? M= -0.58, SD= 2.03

Negatively motivated behaviors

Description #9
A Would you find out from a time table when there is a streetcar going to the station? M= 1.58, SD= 2.02
B Would you try to find out if the streetcar is delayed? M= -2.61, SD= 0.80
C Your friend doesn’t have a phone. Would you call his parents and ask if they know when is train arrives? M= -0.56, SD= 2.40
Description #10
A Would you look up the address to the nearest police station in the telephone book?  
M= 1.64, SD= 2.23
B Would you call the police and ask where thefts should be reported?  
M= 0.86, SD= 2.40
C Would you call and ask a friend whom you know has recently had to deal with the same thing?  
M= 0.42, SD= 2.48
D Would you find out in a time table when there is a bus or streetcar?  
M= -0.58, SD= 2.28

Description #11
A Would you look on a map for the street where the passport authority is located?  
M= 2.70, SD= 0.86
B Would you find out which buses or streetcars stop in the vicinity of the passport authority?  
M= 2.36, SD= 1.25
C Would you find out when any of these buses or streetcars is going?  
M= 1.14, SD= 2.14
D Would you call the passport authority in order to get more detailed directions?  
M= -0.14, SD= 2.09

Description #12
A Would you ask someone on the street where the nearest post office is located?  
M= 1.83, SD= 1.70
B Would you wait to eat lunch until after you had been to the post office?  
M= 1.83, SD= 2.06
C Would you look in a telephone book to find out where the nearest post office is located?  
M= -0.28, SD= 2.50
D Would you call the post office to find out when they close?  
M= -1.03, SD= 2.27

Description #13
A Would you check in your class schedule for information about possible changes of time and place for the lecture?  
M= 1.75, SD= 1.66
B Would you call another classmate to make sure about where and when the lecture should take place?  
M= 1.00, SD= 2.06
C Would you make sure to leave early enough so that you can find the place where the lecture will be given?  
M= 0.97, SD= 1.98
D Would you call the undergraduate counseling office to make sure that the lecture will take place according to the normal schedule?  
M= -0.64, SD= 2.39

Description #14
A Would you check to see that you have enough money to pay for your visit?  
M= 2.31, SD= 1.33
B Would you check to see that you have your personal identification with you  
M= 0.89, SD= 2.39
C Would you check to see that you have your health services identification card with you?  
M= 0.61, SD= 2.34
D Would you call the medical center to check and see if there
is a time available and to find out who your doctor is? M = 0.61, SD = 2.62

Description #15
A Would you find out from the telephone book when the library is open? M = 0.75, SD = 2.32
B Would you call a friend who you believe knows when the library is open? M = -0.72, SD = 2.31
C Would you call the municipality and ask when the library is open? M = -1.56, SD = 2.17
D Would you call the library and find out if it is possible to drop off a book when the library is closed? M = -1.61, SD = 2.10

Description #16
A Would you call the undergraduate counsellor and reserve a time? M = 1.56, SD = 1.86
B Would you hold open several times during the day when you could go to the undergraduate counsellor? M = 1.27, SD = 1.81
C Would you plan to go to the undergraduate counsellor first thing in the morning? M = 0.94, SD = 1.53
D Would you plan to go to the undergraduate counsellor during a lecture, when others aren’t likely to be there? M = -0.83, SD = 2.0