HABIT AS BOTH A DIRECT CAUSE OF INTENTION TO USE A CONDOM AND AS A MODERATOR OF THE ATTITUDE–INTENTION AND SUBJECTIVE NORM–INTENTION RELATIONS

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Undergraduates at an American university were asked questions about their attitudes, subjective norms, habits, and intentions towards using a condom during sexual intercourse. Consistent with previous research (Chan and Fishbein, 1993; Trafimow, 1994), intentions were well predicted by attitudes and subjective norms ($r = 0.88$ and $r = 0.73$, $p < 0.01$ in both cases). Intentions were also well predicted by habits ($r = 0.77$, $p < 0.01$). More interestingly, however, for participants who were in the habit of using condoms, attitudes and subjective norms were not significant predictors of intentions to use condoms in the future ($r = 0.18$ and $r = 0.10$, $p > 0.1$ in both cases). In contrast, attitudes and subjective norms were strong predictors for participants who were not in the habit of using condoms ($r = 0.81$ and $r = 0.61$, $p < 0.01$ in both cases). These findings were replicated in a second study.

KEY WORDS: Attitude, subjective norm, habit, behavioral intention.

HABIT AS BOTH A DIRECT CAUSE OF INTENTION TO USE A CONDOM AND AS A MODERATOR OF THE ATTITUDE–INTENTION RELATION

Much research indicates that intentions to use a condom are well predicted by attitudes and subjective norms (Chan and Fishbein, 1993; Finlay, Trafimow and Jones, 1996; Fishbein, Middlestadt and Trafimow, 1993; Fishbein, Trafimow et al., 1993; 1995; Trafimow, 1994; Trafimow and Finlay, 1996). These findings are buttressed by research on interventions, indicating that manipulations of attitudes and/or subjective norms affect actual condom use (Kelly et al., 1991; 1992; Middlestadt et al., 1995). Consequently, it is not surprising that researchers have directed their efforts towards studying these variables.

In addition, it has become clear that the attitude–intention and subjective norm–intention relations are affected by other variables. These include behavior type (Trafimow and Fishbein, 1994a; 1994b), individual differences in the extent to which people are generally under attitudinal or normative control (Finlay, Trafimow and Jones, 1997; Trafimow and Finlay, 1996), and alcohol consumption (MacDonald, Zanna and Fong, 1996). One demonstration of a moderating variable has involved people’s confidence in the accuracy of their normative perceptions (Trafimow, 1994). When highly confident individuals were included in the analysis, subjective norms strongly predicted intentions to use a condom ($r = 0.94$); but when less confident individuals were analyzed, this correlation was essentially zero. The powerful

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moderating effect of confidence on the subjective norm–intention relationship, as well as the other moderating variables that have been discovered, were the stimuli that led me to investigate the possibility of yet further moderating variables. In particular, two studies will be described that explore habit as both a direct predictor of intention to use a condom and as a moderator of the attitude–intention and subjective norm–intention relations. But first a brief description of theories by Fishbein (1967; 1980; Ajzen and Fishbein, 1980), Ajzen (1980; 1991) and Triandis (1980) is necessary.

Three Theories of Attitudes, Subjective Norms, and Intentions

The Theory of Reasoned Action. According to the theory of reasoned action (Ajzen and Fishbein, 1980; Fishbein, 1980; Fishbein and Ajzen, 1975), behaviors are directly determined by intentions to perform those behaviors. Intentions, in turn, are determined by attitudes and subjective norms. An attitude is an evaluation of the behavior and a subjective norm is a person's opinion about whether important others, in general, believe he or she should perform the behavior. Finally, attitudes are determined by beliefs about the consequences of the behavior and subjective norms are determined by beliefs about the opinions of specific others. It is worth noting that the whole process of using different types of beliefs to determine attitudes and subjective norms which, in turn, determine intentions (and ultimately behaviors) is assumed to be a reasoned process where people make decisions in a reasonable way given their underlying beliefs. (Of course, people's beliefs could be wrong, which would result in bad behavioral decisions. But the process would still be a reasoned one.)

The Theory of Planned Behavior. The theory of planned behavior (Ajzen, 1988; 1991) is similar to the theory of reasoned action, but with the addition of a variable called “perceived behavioral control,” which refers to one's perception that the behavior is easy or difficult to perform. According to Ajzen, even if a person's attitude and subjective norm are in favor of performing a particular behavior, a belief that the behavior is too difficult to perform may cause the person to intend not to perform it. In summary, then, Ajzen asserted that intentions are determined by attitudes, subjective norms, and perceived behavioral control.

The Triandis Theory. Triandis (1980) proposed a complicated theory that included the variables mentioned in the Theory of Reasoned Action as well as several others. One addition of his theory is an argument whose roots are in the literature on conditioning. More specifically, Triandis suggested that one cause of behavior is having learned it well because of repeated past performances. In other words, one cause of behavior is being in the “habit” of performing it. In support of the importance of habit, several researchers have found that previous behavior is a good predictor of intention to behave in the future (e.g., Conner and Armitage, 1998; Orbell, Hodgkins and Sheenan, 1997; see Ouelette and Wood, 1998 for a meta-analysis).

Habit as a Moderator

Interestingly, despite the intention to predict, research on behavioral and subjective norms behaviors could not explain why or how different aspects of reasoned action, and information on when behavioral and subjective norms beliefs to determine intentions (1), (2) decide how behavioral intention. Given the hypothesis that habit is a direct predictor of a condom, then when behavioral intention he wouldn't in fact is in the habit of performing a condom doing so reasoning assumed. Knippenberg, 1988 behavioral intentions, which leads to a clear hypothesis that attitudes or subjective norms or deciding on performing a behavior will be attenuated.

It was convenient to test this hypothesis. Researchers (1988) found that attitudes, subjective norms, and habit all result in a very simple decision (in press). Some researchers have found that intentions (e.g., Richardson, 1988; Fishbein, 1993), and acceptability (Boldero, Moore and Farnworth, 1993). Schneider-Jamner and Schneider (1980) principle of the optimal measure of the behavior can be measured with some retention for subjective norms and subjective norms. An optimal prediction of intentions will be accounted for by perceived behavioral control, perceived behavioral control, and use condoms.

STUDY 1: METHOD

Participants

Forty-eight sexually active, college-aged, university volunteered. Women were not extra criteria for participation, but all were over 18 years old.
Habit as a Moderator Variable

Interestingly, despite what would seem to be the obvious importance of habit in behavior prediction, researchers have tended not to consider how being in the habit of performing behaviors could reduce the importance of other variables in predicting behavior. To understand why one might hypothesize a moderator effect, consider again Fishbein's theory of reasoned action. In particular, consider the cognitive effort that is assumed to take place when behavioral decisions are made. At minimum, a person has to (1) consider some beliefs to determine an attitude, (2) consider other beliefs to determine a subjective norm, and (3) decide how much to weight the attitude and subjective norm to come to a behavioral intention. Given the cognitive effort involved, it seems reasonable to entertain the hypothesis that habit can be used as a short-cut. For example, if Joe is in the habit of using a condom, then why shouldn't Joe assume that it is a good decision to do so (otherwise he wouldn't be in the habit of it) and bypass steps 1–3 above? In general terms, if a person is in the habit of performing a behavior, there would seem to be no need to perform the reasoning assumed by the theory of reasoned action (See Aarts, Verplanken and van Knippenberg, 1998 for evidence that habit reduces people's use of information). Rather, a behavioral intention can be constructed directly simply on the basis of the habit. This leads to a clear hypothesis. When people are not in the habit of performing a behavior, attitudes or subjective norms should predict intentions; but when people are in the habit of performing a behavior, the predictive power of attitudes or subjective norms should be attenuated.

It was convenient to also explore a secondary (and admittedly not very related) hypothesis. Researchers who have attempted to predict intentions to use condoms from attitudes, subjective norms, and perceived behavioral control have not obtained consistent results vis-à-vis the importance of perceived behavioral control (see Sheeran and Taylor, in press). Some researchers have found it to account for unique variance in condom use intentions (e.g., Reinecke, Schmidt and Ajzen, 1997), some have not (e.g., Chan and Fishbein, 1993), and some have obtained mixed findings even in the same article (e.g., Boldaro, Moore and Rosenthal, 1992) or depending on the sex of the participants (Schneider-Jammer, Wolitski, Corby and Fishbein, 1998). Part of the reason may be that attitudes and subjective norms have not always been measured according to Fishbein's (1980) principle of correspondence (also see Ajzen and Fishbein, Appendix A). For optimal measurement, according to this principle, all of the variables of concern must be measured with scales having the same action, target, time, and context. When attitudes and subjective norms are measured in this way, they should provide for maximal prediction of intentions, which should leave less unique variance available to be accounted for by perceived behavioral control. Thus, the secondary hypothesis is that perceived behavioral control will not be an important unique predictor of intentions to use condoms.

STUDY 1: METHOD

Participants

Forty-eight sexually active undergraduates (39.6% males and 52.8% females) at an American university volunteered to participate in the study. Participation did not fulfill a course requirement, nor was extra credit offered.
Table 1  Means, standard deviations, and correlation matrix for behavioral intention (BI), attitude (A), subjective norm (SN), perceived behavioral control (PBC), and habit (HABIT) in Study 1. All scales range from 1 (in favor of performing the behavior) to 7 (against performing the behavior)

<table>
<thead>
<tr>
<th></th>
<th>Means</th>
<th>SD</th>
<th>BI</th>
<th>A</th>
<th>SN</th>
<th>PBC</th>
<th>HABIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>BI</td>
<td>2.65</td>
<td>2.30</td>
<td>1</td>
<td>0.88</td>
<td>0.73</td>
<td>0.09</td>
<td>0.77</td>
</tr>
<tr>
<td>A</td>
<td>2.88</td>
<td>2.31</td>
<td>1</td>
<td>0.58</td>
<td>0.14</td>
<td>0.78</td>
<td></td>
</tr>
<tr>
<td>SN</td>
<td>2.21</td>
<td>1.98</td>
<td>1</td>
<td>0.15</td>
<td>0.58</td>
<td>0.09</td>
<td></td>
</tr>
<tr>
<td>PBC</td>
<td>1.45</td>
<td>0.50</td>
<td></td>
<td>1</td>
<td>0.09</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HABIT</td>
<td>3.65</td>
<td>2.45</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Procedure

Subjects responded on 7-point scales (these were single item measures) to measure intentions, attitudes, subjective norms, perceived behavioral control, and habit (see Trafimow and Finlay, 1996 for a demonstration of the reliability and validity of single item measures). These were, in order, “I intend/not intend to make sure a condom gets used every time I have sex.” “I like/dislike to make sure a condom gets used every time I have sex.” “Most others who are important to me think I should/should not make sure a condom gets used every time I have sex.” “I control/do not control whether a condom gets used every time I have sex.” “I habitually use/do not use a condom when I have sex.”

RESULTS

Consistent with the argument made earlier about having correspondent measures (also see Chan and Fishbein, 1993; Finlay, Trafimow and Jones, 1996; Fishbein, Middlestadt and Trafimow, 1993; Fishbein, Trafimow et al., 1993; 1995; Trafimow and Finlay, 1996), attitudes and subjective norms strongly predicted intentions to use a condom ($r = 0.88$ and $r = 0.73$, $p < 0.01$ in both cases). In accordance with Chan and Fishbein (1993), perceived behavioral control failed to predict intentions ($r = 0.09$, $p > 0.1$) even as an independent predictor. Obviously, therefore, perceived behavioral control could not account for any unique variance in intentions, which is consistent with one of the hypotheses. In contrast to perceived behavioral control, however, habit was an excellent independent predictor of intentions ($r = 0.77$, $p < 0.01$). Means, standard deviations, and a correlation matrix for all of these variables are given in Table 1.

Given that habit was a good independent predictor of intention, did it account for any unique variance that was not accounted for by attitude or subjective norm? To answer this question, a hierarchical multiple regression analysis was performed where attitude and subjective norm were entered at the first step and habit was entered at the second. The combination of attitude and subjective norm predicted intention quite well ($R = 0.92$) accounting for 85% of the variance for any more variables. However, it seems we are thereby putting habit into the equation analysis. Finally, where attitude and subjective norm control on the second step, the predominance in the ability to be norm alone. The following variable.

Tests of the Moderator

To determine whether the associations, participated with habitual use of condoms or subjective norms failed (in both cases). In contrast to subjective norms where $b = 0.01$ in both cases, the used to convert all of the condom users were compared with the above analysis with $Z = 3.30$ and 0.10 with the effect of habit on the

STUDY 2

One might object to the possibility of variables and single item measures. This objection, however, is not true.

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2 One could argue that a measure of the frequency of previous condom use would be a better index of habit. In contrast, I would argue that habit is a mental state that is conceptually distinct from previous behavior. A person could perform a behavior many times and yet not think of herself as being in the habit, or she may perform a habit only a few times and nevertheless consider the behavior to be habitual. In any event, as the results will indicate, the measure that was actually used correlated well with intention (also see Verplanken, Aarts, van Knippenberg and Moonen, 1998 for a covert measure of habit that performed well).

3 Another way of testing the assumptions in a hierarchical regression is to check in the habit measure made or not in the normal distribution. (Howell, 1997). It is also to note variable terms (when the assumption is not true).
for 85% of the variance. However, the addition of habit at the second step failed to account for any more variance. Thus, habit did not account for any unique variance in intentions. However, it seems worthwhile to point out that habit and attitude were correlated ($r = 0.78$), thereby putting habit at a distinct disadvantage as the second step in a hierarchical regression analysis. Finally, Table 2 demonstrates that a 3-step hierarchical regression analysis where attitude and subjective norm were entered on the first step, perceived behavioral control on the second step, and habit on the third step, failed to result in a significant increment in the ability to predict intention beyond that engendered by attitude and subjective norm alone. The following analyses test the main hypothesis – that habit acts as a moderator variable.

### Tests of the Moderator Hypothesis

To determine whether habit moderates the attitude–intention or subjective norm–intention relations, participants were divided at the median regarding the extent to which they habitually used or did not use condoms. For those who habitually used them, attitudes and subjective norms failed to predict intentions ($r = 0.18$ and $r = 0.10$, respectively, $p > 0.1$ in both cases). In contrast, for participants who did not habitually use condoms, attitudes and subjective norms were correlated with intentions ($r = 0.81$ and $r = 0.61$, respectively, $p < 0.01$ in both cases). To make absolutely sure, Fishier's $r$ to $Z$ transformations were then used to convert all of the above correlations to $Z$-scores. Then the $Z$-scores for the habitual users were compared with the corresponding ones for the other participants. Consistent with the above analyses, each of these comparisons was significant (i.e., $Z = 3.30$ and $0.10$ versus $0.61$, $Z = 1.97$), thereby further demonstrating the moderating effect of habit on the relations between the predictor variables and intentions.

### STUDY 2

One might object to Study 1 on the grounds that single items were used to measure the variables and single item measures are less reliable than multiple item measures. Contrary to this objection, however, large correlations were generally obtained, except for the perceived

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3Another way of testing for moderator effects is to include attitude $\times$ habit and subjective norm $\times$ habit interaction terms in a hierarchical regression analysis. However, an examination of the frequency distribution of responses on the habit measure made clear that this would not have been appropriate. The actual distribution of responses on the habit measure was very deviant (participants tended to make responses on the extreme ends of the measure) from the normal distribution assumed by such an analysis, thereby making necessary the method that was used (c.f., Howell, 1997). It is also worth pointing out that although the present method is less sensitive than using interaction terms (when the assumptions are met), it was sufficiently sensitive to obtain very clear findings.
behavioral control–intention relation. Had the measures been unreliable, the obtained correlations should have been much lower. On the other hand, perhaps perceived behavioral control would have performed better had a multiple item measure been used. For example, Armitage and Conner (1999) found that there was both a “control” and “self-efficacy” component to perceived behavioral control and their research suggests that both of these components should be included in a measure of perceived behavioral control. For this reason, and because cross-validation is generally important, it seemed worthwhile to perform another study with multiple item measures.

METHOD

Participants

Eighty-one undergraduates (35.7% males and 64.3% females) at an American university volunteered to participate in the study. Participation did not fulfill a course requirement, nor was extra credit offered.

Procedure

Subjects responded on 7-point scales to measure the variables. Similarly to Study 1, intentions were measured with the single item (see Ajzen and Fishbein, 1980, Appendix A) “I intend/not intend for a condom to get used every time I have sexual intercourse.” Attitudes were measured with 5 items: “I like/dislike for a condom to get used every time I have sexual intercourse,” “It is good/bad to make sure a condom gets used every time I have sexual intercourse,” “It is beneficial/harmful to make sure a condom gets used every time I have sexual intercourse,” “It is safe/unsafe to make sure a condom gets used every time I have sexual intercourse,” and “It is rewarding/punishing to make sure a condom gets used every time I have sexual intercourse.”

Subjective norms were measured with three items: “Most others who are important to me think I should/should not make sure a condom gets used every time I have sexual intercourse,” “Most people whose opinions I care about think I should/should not make sure a condom gets used every time I have sexual intercourse,” and “Most people who are close to me think I should/should not make sure a condom gets used every time I have sexual intercourse.”

Perceived behavioral control was measured with six items: “I control/do not control whether a condom gets used every time I have sexual intercourse,” “It is up to me/not up to me whether a condom gets used every time I have sexual intercourse,” “I can/cannot determine if a condom gets used every time I have sexual intercourse,” “It is no problem/an extreme problem to make sure a condom gets used every time I have sexual intercourse,” “It is easy/difficult to make sure a condom gets used every time I have sexual intercourse,” and “It is a simple matter/a difficult matter to make sure a condom gets used every time I have sexual intercourse.”

Finally, habit was measured with three items: “I am in the habit/not in the habit of making sure a condom gets used every time I have sexual intercourse,” “I am steadfast/not steadfast about making sure a condom gets used every time I have sexual intercourse,” “I reliably/not reliably make sure a condom gets used every time I have sexual intercourse.”

RESULTS

Reliability of the Measures

The measures yielded the following: attitude (α = 0.94), habit (0.94).

Traditional Prediction Model

As in Study 1, Trafimow and Trafimow et al. (1997), predicted intentions to use a condom added to the prediction of intentions to use a condom. The addition of predictability of intentions added an additional 0.18 to the prediction from 0.77 to 0.95. The model also consistently predicted use a condom, with the exception of these variables.

Given that none of the unique variance contributed by any one question, a high level of subjective norm. As discussed above, the correlation between attitudes and subjective norms (R = 0.77). For the prediction (to be explained in step 2, and habit increased the prediction power to 0.95, but this variable alone. Thus, the strong prediction suggests that the hypothesis – that better.
The obtained correlations between perceived behavioral control and self-efficacy were moderate. For example, self-efficacy correlated with perceived behavioral control (PBC) and habit (HABIT). For this reason, it was worthwhile to perform a correlation analysis.

Table 3: Means, standard deviations, and correlation matrix for behavioral intention (BI), attitude (A), subjective norm (SN), perceived behavioral control (PBC), and habit (HABIT) in Study 2. All scales range from 1 (in favor of performing the behavior) to 7 (against performing the behavior).

<table>
<thead>
<tr>
<th></th>
<th>Means</th>
<th>SD</th>
<th>BI</th>
<th>A</th>
<th>SN</th>
<th>PBC</th>
<th>HABIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>BI</td>
<td>2.33</td>
<td>1.95</td>
<td>1</td>
<td>0.75</td>
<td>0.71</td>
<td>0.41</td>
<td>0.84</td>
</tr>
<tr>
<td>A</td>
<td>2.02</td>
<td>1.08</td>
<td>1</td>
<td>0.71</td>
<td>0.39</td>
<td>0.79</td>
<td></td>
</tr>
<tr>
<td>SN</td>
<td>1.77</td>
<td>1.43</td>
<td>1</td>
<td>0.71</td>
<td>0.30</td>
<td>0.63</td>
<td></td>
</tr>
<tr>
<td>PBC</td>
<td>2.04</td>
<td>1.18</td>
<td>1</td>
<td>0.71</td>
<td>0.30</td>
<td>0.63</td>
<td></td>
</tr>
<tr>
<td>HABIT</td>
<td>2.60</td>
<td>1.89</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

RESULTS

Reliability of the Measures

The measures of all of the predictor variables were reliable. The Cronbach alphas were as follows: attitude (0.78), subjective norm (0.98), perceived behavioral control (0.89), and habit (0.94).

Traditional Tests of the Predictor Variables

As in Study 1 and consistent with previous research (Chan and Fishbein, 1993; Finlay, Trafimow and Jones, 1996; Fishbein, Middlsetad and Trafimow, 1993; Fishbein, Trafimow et al., 1993, 1995; Trafimow and Finlay, 1996), attitudes and subjective norms predicted intentions to use a condom ($r = 0.75$ and $r = 0.71$). In addition, and unlike Study 1, perceived behavioral control also was a significant, though less impressive, predictor of intentions to use a condom ($r = 0.41$, $p < 0.01$). However, consistent with expectations, the addition of perceived behavioral control failed to significantly increase the prediction of intentions above and beyond that from attitudes and subjective norms alone ($R$ increases from 0.77 to 0.78 when perceived behavioral control was included in the analysis). Finally, also consistent with Study 1, habit was an excellent independent predictor of intentions to use a condom ($r = 0.84$). Means, standard deviations, and a correlation matrix for all of these variables are presented in Table 3.

Given that habit is a good independent predictor of intention, does it account for any unique variance that is not accounted for by attitude or subjective norm? To answer this question, a hierarchical multiple regression analysis was performed where attitude and subjective norm were entered at the first step and habit was entered at the second. As described above, the combination of attitude and subjective norm predicted intention quite well ($R = 0.77$). Furthermore, the addition of habit at the second step significantly increased the prediction (to $R = 0.86$). Finally, Table 4 presents a 3-step hierarchical regression analysis where attitude and subjective norm were entered at step 1, perceived behavioral control at step 2, and habit at step 3. Consistent with the previous analysis, only habit significantly increased the prediction of intention above that engendered by attitude and subjective norm alone. Thus, habit was a good independent predictor of intention in both studies, and even predicted some unique variance in Study 2. The following analyses test the main hypothesis – that habit acts as a moderator variable.
Table 4  Hierarchical regression predicting behavioral intentions from attitude (A) and subjective norm (SN), perceived behavioral control (PBC), and Habit (HABIT) in Study 2

<table>
<thead>
<tr>
<th>Step</th>
<th>Variables</th>
<th>R</th>
<th>R^2 Change</th>
<th>F Change</th>
<th>p Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>A &amp; SN</td>
<td>0.77</td>
<td>0.60</td>
<td>57.52</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Step 2</td>
<td>PBC</td>
<td>0.78</td>
<td>0.01</td>
<td>2.92</td>
<td>0.09</td>
</tr>
<tr>
<td>Step 3</td>
<td>HABIT</td>
<td>0.86</td>
<td>0.13</td>
<td>39.20</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Tests of the Moderator Hypothesis

To determine whether habit moderates the attitude–intention or subjective norm–intention relations, participants were divided at the median regarding the extent to which they habitually used or did not use condoms. For those who habitually used them, attitudes and subjective norms failed to predict intentions (r = 0.21 and r = 0.18, p > 0.1 in both cases). In contrast, for participants who did not habitually use condoms, attitudes and subjective norms were each correlated with intentions (r = 0.64 and r = 0.63, p < 0.01 in both cases).

To make absolutely sure, Fisher’s r to Z transformations were then used to convert all of the above correlations to Z-scores. Then the Z-scores for the habitual users were compared with the corresponding correlations for the other participants. Consistent with the above analyses, each of these comparisons was significant (i.e., 0.21 versus 0.64, Z = 2.34 and 0.18 versus 0.63, Z = 2.41), thereby further demonstrating the moderating effect of habit on the relations between the predictor variables and intentions.

DISCUSSION

The data can be easily summarized. Attitudes and subjective norms predicted intentions both separately, and when combined in a multiple regression equation. Habit was also a good independent predictor of intentions in both studies, and accounted for some unique variance in intentions above and beyond what was accounted for by a combination of attitudes and subjective norms in Study 2, but not in Study 1. Perceived behavioral control did not predict any unique variance in intentions in either study, thereby supporting the hypothesis (e.g., Chan and Fishbein, 1993) that when attitudes and subjective norms are measured well (i.e., according to the principle of correspondence), perceived behavioral control is less likely to account for unique variance in intentions to use condoms.

Most importantly, however, there was strong evidence for the moderating effect of habit on the attitude–intention and subjective norm–intention relations. These relations were essentially nonexistent for participants who habitually used condoms, but were quite strong for participants who did not. These results are consistent with the hypothesis that people who habitually use condoms do not base their decision on an explicit consideration of their attitudes or subjective norms, whereas other people do consider these variables. More generally, the data suggest that theories involving “reasoned” processes may only be valid for people who do not habitually perform the behavior of concern.

It is possible to object to these analyses on the grounds that splitting participants into habitual versus non-habitual users attenuated the variance in intentions, thereby reducing how much variance is explained. However, both studies showed strong decreases in the strength of the correlation and thus this would not have been an issue. Indeed, this would predict that the correlations and predictions in Study 1 would not have been as strong as they were not for habitual users, thereby making the results from Study 2 surprising. An analysis of variance (ANOVA) also showed that the group differences were significant (p < 0.05).

Another possible objection is that participants might have been a little too young, as they were, however, there were plenty of older study participants. Similarly among the young, areas such as abortion and contraception are issues that are often discussed. Therefore, the participants in this study were quite representative of the young population. The data from Aarts and Lee (1988) also shows that sexual behavior is low among teenagers in general.

Finlay and Trafimow (1999) argue that Aarts, Koomans, and Hofstee (1999) did not have the same data. However, in their data, a significant correlation between the factors of habit and behavior was found. Therefore, the moderating effect of habit on the predictor variables is considered to be strong.

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1 am not suggesting that habits are great for people who do not habitually use condoms, thereby greatly reducing the variance in intentions, thereby reducing how much variance is explained.
HABIT

how much they could correlate with attitudes and subjective norms. On the other hand, a careful assessment suggests this is not the best interpretation. For one thing, note that in both studies, for participants who were not habitual users, attitudes and subjective norms strongly predicted intentions. Clearly, then, there was not a problem with small variances decreasing the size of the correlations. To be sure, variances in intentions might have only been attenuated for the group of participants who were habitual condom users. However, if this were responsible for the low correlations obtained for habitual users, then another prediction can be made regarding the correlation between intentions and habits within the two groups. Specifically, intentions and habits should correlate only for participants who were not habitual users (whose range of intentions would be presumed to be less attenuated) and not for participants who were habitual users (whose range of intentions would be presumed to be more attenuated). However, in contradiction to this reasoning, the correlation was approximately the same in both conditions in each study \( r = 0.55 \) and \( r = 0.53 \), respectively in Study 1; \( r = 0.62 \) and \( r = 0.67 \), respectively in Study 2. Thus, there is little evidence to suggest that an attenuation of range issue is responsible for the moderating effect of habit in the two studies.

Another possible objection is that intention rather than actual behavior was measured. Clearly, it would have been desirable to measure actual behavior, particularly as habit might have moderated the intention–behavior relationship. On the other hand, there is plenty of evidence that intention, when measured properly, is a good predictor of behavior. Impressive intention–behavior correlations have been obtained in a number of diverse areas such as cooperating in a prisoner's dilemma game \( r = 0.82 \); Ajzen, 1971), having an abortion \( r = 0.96 \); Smetana and Adler, 1980), using birth control pills \( r = 0.85 \); Ajzen and Fishbein, 1980), breast versus bottle feeding \( r = 0.82 \); Manstead, Proffitt and Smart, 1983), attending church during an Easter holiday \( r = 0.90 \); King, 1975), performing mental practice before football games \( r = 0.81 \); Trafimow and Miller, 1996), and others (see meta-analyses by Kraus, 1995, Sheeran and Orbell, 1998 and Shepard, Hartwick and Warshaw, 1988, for systematic reviews of research on this issue). Thus, although a measure of actual behavior would have been desirable, there is sufficient precedent for using intentions (e.g., Finlay et al., 1997; Fishbein, 1980; Trafimow, 1994; 1996; Trafimow and Finlay, 1996; Trafimow and Fishbein, 1994a, 1994b). It is interesting, however, to note that Verplanken, Aarts, van Knippenberg, and Moonen (1998) obtained a stronger intention–behavior relation for people who were not in the habit of performing the behavior than for people who were in the habit of performing the behavior. Combining the implications from the two data sets suggests the habit may play multiple roles. Habit can affect intention directly, or by moderating the effects of attitude and subjective norm. Or, it can obviate the need for the formation of a conscious intention. Clearly, these possibilities will need to be addressed by future research before a complete understanding of the role of habit in determining behavior can be achieved.

There may be additional variables that moderate the attitude–intention and subjective norm–intention relations. For example, if it is true, as the present data suggest, that the consideration of attitudes and/or subjective norms when making a behavioral decision is

\footnote{1 I am not arguing that attenuation of range is completely unimportant. Note that the habit–intention correlations are greater for the whole sample (where there is a greater range in both habits and intentions) than in either group, thereby demonstrating that attenuation of range can affect the size of correlations. Rather, my point here is that attenuation of range does not plausibly account for the fact that the attitude–intention and subjective norm–intention correlations were completely eliminated among habitual condom users.}
an effortful process, then individual differences in cognitive activity might moderate the attitude–intention and subjective norm–intention relations. Cacioppo and Petty (1982) invented a “need for cognition” scale that validly indexes individual differences in cognitive activity. Thus, it would be interesting to test a prediction that the attitude–intention and subjective norm–intention relations are stronger for people who are high than low in “need for cognition.” Or, in a more experimental vein, cognitive resources (or motivation to use cognitive resources) could be manipulated, and attitude–intention and subjective norm–intention correlations should change in a way that corresponds with the manipulation.

Finally, although it seems clear now that people who habitually use condoms tend not to base their decisions on attitudes or subjective norms, the exact nature of their decision process pertaining to condom use has not yet been explicated. One possibility is that some kind of implicit process is used (Jacoby, 1988; 1991; Reber, 1992; 1993). Future research might profitably investigate if this possibility is actually the case, and if so, what the factors are that affect it.

Authors Notes

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