Persuasion through facts and feelings: Integrating affect and cognition into behavioral decision models and health messages
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Chapter four

The influence of the strength of intentions’ affect and cognition bases on the intention-behavior relationship
Abstract
Recent research has revealed individual differences in the extent to which people base their intentions on affect and cognition. Two studies are presented that assess whether such differences predict the strengths of individuals’ intention-behaviour relationships. Participants completed measures of affect, cognition, intention, and behaviour regarding a wide range of health behaviours. Using a cross-sectional design, study one (N = 300) found that the strength of the intention-behaviour relationship was related to the extent individuals based their intentions on affect, but not to the extent they based them on cognition. Using a prospective design, study two (N = 343) replicated the findings of the first study. These results emphasise the importance of affect as a key variable in the likelihood that intentions are translated into behaviour.

Theories on behavioural decision making emphasise the role of intention as the main determinant of behaviour. However, the relationship between intention and behaviour is far from perfect: people who intend to behave in a certain way do not always do so. In fact, a meta-analysis of meta-analyses revealed that, on average, intentions account for only 28% of the variance in behaviour (Sheeran, 2002). The present study aims to further our understanding of the intention-behaviour gap by investigating whether the degree individuals base their intentions on affect and cognition is indicative of the likelihood that their intentions are carried out.

Previous research shows that differences in the bases of intentions are related to the likelihood that they are put into action (Godin, Conner, & Sheeran, 2005; Sheeran, Norman, & Orbell, 1999). For
example, Sheeran et al. (1999) found that individuals whose intentions were based mostly on their attitudes had stronger intention-behaviour relations than individuals whose intentions were based mostly on subjective norms. Intentions also differ in the extent to which they are based on affect and cognition (Trafimow et al., 2004). Some individuals tend to base their intentions to perform behaviours strongly on how they feel about those behaviours, whereas for others feelings have only very little impact on their intentions. The same is true for cognition: some individuals tend to strongly base their intentions on rational evaluations of the cost and benefits of the behaviours, whereas others’ intentions tend to be weakly based on rational thought. Here, we investigate whether differences in the degree to which individuals base their intentions on affect and cognition are related to the strength of the intention-behaviour relationship.

**Affect and cognition**

Throughout this article, we use the term *affect* to refer to a judgment about the overall pleasantness or unpleasantness of performing a behaviour. In contrast, *cognition* alludes to a more rational evaluation of a behaviour, for example whether it would be to one’s advantage or disadvantage to perform the behaviour. In recent years, many researchers have investigated the roles of cognition and affect in behavioural decision making (e.g., Keer, Van den Putte, & Neijens, 2010; Lawton, Conner, & McEachan, 2009; Trafimow et al., 2004). Such research has focused on the direct influence of cognition and affect on behavioural determinants such as intention. This approach has provided insight into which of these two variables more strongly predicts intention, and therefore gives a clue as to which variable might be best addressed in communication aimed at changing intentions. For example, research indicates that dental health behaviours are better predicted by cognition than by affect (Keer et al., 2010). Therefore,
health promoters may choose to focus their campaigns on cognitive arguments in favour of dental health behaviours, rather than on affective ones. However, research on the direct influence of cognition and affect on intention may tell only part of the story. Here, we consider the possibility that the degree to which an intention is based on cognition and affect influences the likelihood that it is translated into behaviour. To extend the example above, even though cognitive arguments may create a bigger change in one's intention to perform dental health behaviours, affective arguments may in the end prove more effective if the degree intentions are based on affect (but not cognition) positively influences the likelihood that that they are carried out.

In previous research, affect and cognition have not only been positioned as direct determinants of intention, but also of behaviour. Most studies investigating the influence of affect and cognition on intention have found that both affect and cognition have a large direct effect on intention for a wide variety of behaviours (e.g., Lawton et al., 2009; Trafimow et al., 2004). In contrast, most studies that have looked at the direct effects of affect and cognition on behaviour have found that affect influences behaviour but cognition does not, or to a lesser extent (Lawton et al., 2009; Lawton, Conner, & Parker, 2007; Van den Berg, Manstead, Van der Pligt, & Wigboldus, 2005). In a study on health behaviours, Lawton et al. (2009) measured the influence of affect and cognition on both intention and behaviour. For each of the 14 health behaviours included in their study, affect had a larger impact on behaviour than cognition. The authors also found that cognitive considerations played a larger role in forming intentions than in actual performance of the behaviour. Thus, the considerations that are most important in forming an intention are not necessarily the same considerations that are most important for behavioural performance.
Specifically, cognition is relatively important in forming an intention, and affect is relatively important when it comes to actual behaviour.

A possible explanation for this is that temporal proximity to the experience of performing a behaviour generates impulsivity (Frederick, Loewenstein, & O'Donoghue, 2002; Loewenstein, 1996; Mischel & Ayduk, 2004). Translating intention into behaviour is temporally more proximal to the experience of the behaviour than forming an intention. The former process is therefore more likely to be characterised by impulsivity. In an impulsive state, individuals may attribute greater weight to their affective (compared to cognitive) evaluation of the behaviour as the monitoring of feelings provides judgmental responses that are potentially faster and more efficient than weighing all the pros and cons associated with the behaviour (Fiske & Pavelchak, 1986; Pham, Cohen, Pracejus, & Hughes, 2001; Slovic, Peters, Finucane, & MacGregor, 2005). Thus, although both affect and cognition are important in forming an intention, affect takes the upper hand when it comes to behaviour.

**The strength of the affect base as a predictor of the intention-behaviour relationship**

Here, we propose that the strength of an individual’s intention-behaviour relationships is related to the degree to which the individual bases his or her intentions on affect but not cognition. Two reasons underlie this expectation. The first follows from the findings that indicate that although both affect and cognition are important determinants of intention, affect has a larger influence on behaviour (e.g., Lawton et al., 2009). This suggests that the affective evaluations that are important in forming one’s intention remain important as temporal proximity to behavioural performance increases, whereas cognitive evaluations lose their relevance. As affective evaluations remain important, the degree to which people base their intentions on
Affect should be positively related to the likelihood that they will enact their intentions. As cognitive evaluations lose their relevance, the degree to which people base their intentions on cognition should not be related to the likelihood that they will enact their intentions.

The second reason for our expectation follows from the time frame in which affective and cognitive consequences of health behaviours are experienced. Individuals in an impulsive state may attribute greater weight to the short-term consequences of behaviours, compared to the long-term consequences. For most health behaviours, the affective consequences are experienced in the short term (e.g., craving, increase or decrease in energy), whereas the instrumental (cognitive) consequences are experienced in the long term (e.g., better health, improved stamina). As affective consequences of health behaviours are experienced immediately or shortly after enacting one’s intention, they can be powerful motivators for people to stick to their intentions. In line with this reasoning, Kwan and Bryan (2010) found that the degree to which individuals exhibited a positive affective response to exercise predicted the strength of the relationship between their intentions and future exercise behaviour. The authors suggested that remembering long-term goals may be difficult, and that anticipating an immediate affective response may help people to follow through on their intentions to exercise. The notion that affect may motivate people to enact their intentions is also shared by Sheeran and Orbell (1999). These authors postulated that anticipated regret helps people to translate their intentions into behaviour by associating failure to enact their intentions with negative affect. Basing one’s intentions on affect may thus bind people to their intentions. As most instrumental consequences of health behaviours are to be expected in the long run, such consequences may be neglected in stages of decision making that are prone to be characterised by impulsivity, such as the translation of intention into
behaviour. Instrumental consequences are thus less able to bind individuals to their intentions. Consequently, the degree to which individuals base their intentions on cognition is expected not to be predictive of the likelihood that their intentions are enacted.

The present study

In sum, the present research aims to further our understanding of the intention-behaviour relationship in the realm of health behaviours. Previous research has shown that there are large differences in the degree to which individuals base their intentions on affect and cognition (Trafimow et al., 2004). Although there are indications that these individual differences are related to the strength of the intention-behaviour relationship (e.g., Kwan & Bryan, 2010), to our knowledge, this has not yet been tested. Here, we present two studies aimed to fill this gap in the literature. Based on the above theoretical and empirical considerations, we predict that the strength of the intention-behaviour relationship is positively related to the degree intentions are based on affect, but not related to the degree intentions are based on cognition. Datasets from two studies were available to test these predictions. The first comprised cross-sectional data collected from students in The Netherlands; the second comprised prospective data gathered among an older and more varied sample in the United Kingdom.

Study 1

Method

Participants and procedure

Three hundred students at a large Dutch university (70% women, 30% men) took part in this study. Participants were invited to the computer laboratory where they were seated in a private cubicle. Here,
they completed a computer-assisted questionnaire assessing cognition, affect, intention, and actual behaviour regarding 20 health behaviours. Assessing these variables across multiple behaviours enabled us to perform within-subject analyses to assess the degree individuals generally (i.e., across behaviours) based their intentions on cognition and affect. The selected behaviours were chosen for their expected relevance for the target population, and included, among others, dietary, sport, and alcohol-related behaviours. The questionnaire consisted of several pages, each covering one of the behaviours. The order of the pages, and thus of the behaviours, was randomized for each respondent. The behaviours were described at the top of their pages in terms of an action, a frequency and a time-span (e.g., “to have breakfast every day during the coming month”, “to brush your teeth at least twice a day during the coming month”, “to engage in sports twice a week during the coming month”). The subsequent questions referred to the behaviour as “the behaviour specified above”. Participants received €8 upon completing the questionnaire.

**Measures**

The present study employs a subset of measures from a larger research project. Here, only variables relevant to the present study will be mentioned.

**Affect and cognition.** Participants responded to the stem “For me to perform the behaviour specified above would be...” followed by six seven-point bipolar scales (three for each construct) in random order. The word pairs used were unpleasant/pleasant, not enjoyable/enjoyable, and nasty/nice for affect; and useless/useful, harmful/beneficial, and worthless/valuable for cognition. These items were successfully used and validated in previous research (Crites, Fabrigar, & Petty, 1994; Trafimow & Sheeran, 1998). As both measures had high internal
reliabilities (mean alpha values were .90, and .85 for affect and cognition, respectively), a single scale was computed for each measure.

**Intention and behaviour.** Participants' intentions were measured using two seven-point bipolar scale items: “I intend to perform the behaviour specified above (definitely do not/definitely do)” and “I will try to perform the behaviour specified above (definitely will not/definitely will)”. The two items were highly correlated (mean $r = .93$), and so a single scale was computed. Current behaviour was measured using a single item for each behaviour. Participants indicated the frequency with which they had performed the behaviour in the previous month on a five-point scale.

**Results**

The degree to which individuals based their intentions on cognition and affect was calculated using within-subjects correlations between cognition and intention (mean $r = .57$; $SD = .25$), and affect and intention (mean $r = .58$; $SD = .19$) across the 20 behaviours. Within-subject correlations were also used to calculate the strength of the intention-behaviour relationship (mean $r = .63$; $SD = .19$). We converted these within-subject correlations to Fisher’s $z$-values, in line with Michela (1990).

First, we analyzed whether the strength of the intention-behaviour relationship depended on the strength of the intention’s cognition base. Using the Pearson product-moment correlation coefficient we found no correlation between the strength of the intention’s cognition base and the intention-behaviour relationship ($r = .07$, $N = 298$, $p = .20$). In contrast, there was a positive correlation between the strength of the intention’s affect base and the intention-behaviour relationship ($r = .21$, $N = 300$, $p < .001$). Using the formula recommended by Steiger (1980), we found a highly significant difference between these two correlations.
\( T_2(295) = 2.29; p = .02 \). Thus, the strength of the affect base predicted the intention-behaviour relationship significantly better than the strength of the cognition base.

**Discussion**

The results provided by study 1 were in line with our expectations. The strength of the intention-behaviour relationship was only related to the strength of the intention’s affect base, not to the strength of its cognition base. These findings support the notion that strongly basing one’s intentions on affect may bind people to their intentions, whereas strongly basing them on cognition does not. Although the results of study 1 were in line with our expectations, some limitations should be addressed. First, the study was conducted among a sample of college students, limiting the generalisability of the findings. Second, the results are based on cross-sectional data, limiting drawing causal inferences between the study variables. Therefore, the results would be more convincing if they were replicated in a prospective study among a more varied sample.

**Study 2**

**Method**

**Participants and Procedure**

Participants were recruited via an advertisement in a local newspaper in a city in the North of England, via Local Council employee newsletters, via an internet prize site, or by poster or word of mouth. Respondents completed two postal questionnaires sent one month apart. In return for their time, respondents received £20 worth of gift vouchers after completing the questionnaires. A total of 343 respondents comple-
ted all measures and were used in subsequent analyses; this included 257 females and 86 males with a mean age of 40 years; approximately 64% were non-college-educated.

Measures

The present study employs a subset of measures from a larger research project. Here, only variables relevant to the present study will be mentioned. Questions were completed in relation to 16 health behaviours, most of which were not included in study 1 (e.g., helmet use, adhering to medication, sunscreen use).

Cognition and affect. Participants responded to the stem “[Behaviour x] over the next four weeks would be...” followed by four seven-point bipolar scales (two for each construct). The word pairs used were harmful/beneficial, and worthless/valuable for cognition; unpleasant/pleasant, and not enjoyable/enjoyable for affect. These items were successfully used and validated in previous research (Crites, Fabrigar, & Petty, 1994; Trafimow & Sheeran, 1998). As all measures had high internal reliabilities (mean r values were .64 and .75 for cognition and affect, respectively), a single scale was computed for each measure.

Intention and behaviour. Participants’ intentions were measured using two seven-point bipolar scale items: “I intend to [behaviour x] over the next four weeks (strongly disagree/strongly agree)” and “I am likely to [behaviour x] over the next four weeks (very unlikely/very likely)”. The two items were highly correlated (mean r = .62), and so a single scale was computed. Behaviour was measured one month after completing the first questionnaire, using a single item for each behaviour. Participants indicated the frequency with which they had performed the behaviour in the previous month on a seven-point scale.
Results

To assess whether the strength of the intention-behaviour relationship was related to the degree individuals based their intentions on affect and cognition, we used the same procedure as in study 1. The degree to which individuals based their intentions on cognition and affect was calculated using within-subjects correlations between cognition and intention (mean $r = .49; SD = .28$), and affect and intention (mean $r = .65; SD = .34$) across the 16 behaviours. Within-subject correlations were also used to calculate the strength of the intention-behaviour relationship (mean $r = .53; SD = .23$). As in Study 1 we converted these within-subject correlations to Fisher’s $z$-values.

First, we analyzed whether the strength of the intention-behaviour relationship depended on the strength of the intention’s cognition base. Using the Pearson product-moment correlation coefficient we found no significant correlation between the strength of the intention’s cognition base and the intention-behaviour relationship ($r = .03, p = .57$). In contrast, there was a positive correlation between the strength of the intention’s affect base and the intention-behaviour relationship ($r = .21, p < .001$). Using the formula recommended by Steiger (1980), we found a significant difference between these two correlations ($T^2(340) = 2.85; p < .01$), suggesting that the strength of the affect base predicted the intention-behaviour relationship better than the strength of the cognition base.

Discussion

Study 2 replicated the findings of study 1. Like study 1, it found that the degree individuals base their intentions on affect is positively related to the intention-behaviour relationship. In line with our expectations, and consistent with study 1, the degree to which indi-
duals based their intentions on cognition was not related to the strength of the intention-behaviour relationship.

As study 1 used a cross-sectional design, no conclusions could be drawn about the direction of the relationship between the strength of the intention-behaviour relationship and the strength of intentions’ affect and cognition bases. Study 2 improved this design by measuring behaviour prospectively. Therefore, the results of study 2 are more convincing evidence that the intention-behaviour relationship is influenced by the degree to which individuals base their intentions on affect, and not the other way around.

Another difference between the two studies was the sample used. Whereas data for study 1 was collected among a Dutch student population, the data for study 2 was collected in the United Kingdom among an older and more varied sample. The results being virtually the same suggests that they are generalisable to a large proportion of the general population.

**General Discussion**

Previous research has demonstrated individual differences in the extent people base their intentions on cognition and affect (Trafimow et al., 2004). The present research assessed whether such individual differences are related to the likelihood that people translate their intentions into behaviours. Two studies indicated that Individuals whose intentions were strongly based on affect had a stronger intention-behaviour relationship than individuals whose intentions were weakly based on affect. The strength of the intention’s cognition base did not influence the intention-behaviour relationship.

These findings are congruent with the notion that temporal proximity to the performance of a behaviour increases impulsivity (Frederick, Loewenstein, & O’Donoghue, 2002; Loewenstein, 1996;
Mischel & Ayduk, 2004). With impulsivity, the importance of affect increases, and that of cognition decreases. Therefore, individuals who do not take affect into account when they form their intentions may deviate from their intentions as temporal proximity to performing the behaviour increases, and the affect associated with it becomes more apparent. The findings suggest that affect is better able to bind people to their intentions than cognition. An explanation for this is that affective consequences of health behaviours are experienced in the short term, whereas most instrumental consequences are only experienced in the long term. As translating intention into behaviour is a stage of decision making that is likely to be characterised by impulsivity, people may lose sight of the long-term instrumental consequences, and focus on the short-term affective consequences instead. As affective consequences are experienced immediately or shortly after engaging in the behaviour, affect is able to bind people to their intentions (see Kwan & Bryan, 2010; Sheeran & Orbell, 1999). That is, people who strongly base their intentions on affect are instantly rewarded when they stick with their intentions, and instantly ‘punished’ when they do not. In contrast, most instrumental consequences of health behaviours are experienced after repeated performance of the behaviour. As there are few immediate instrumental consequences of performing the behaviour (or not), it is easy for people to deviate from their intention. Cognition is thus less able to bind people to their intentions. This could explain why many fail to behave in a healthy manner, despite their awareness of the benefits of health behaviour, and despite their good intentions based on those benefits.

The present findings imply that health interventions should ideally make room for individual differences in the degree to which intentions are based on affect. For example, strategies aimed at strengthening the intention-behaviour relationship, such as formulating implementation
intentions and inducing distant-future time perspectives (see Gollwitzer, 1993; Strathman, Gleicher, Boninger, & Edwards, 1994), should be especially beneficial for those who tend not to consider affective factors when forming intentions, as these individuals have the largest intention-behaviour gap. The results further suggest that health practitioners may shift their focus from trying to change people’s intentions to perform health behaviours to creating intentions that have a high likelihood to be carried out. For example, health messages targeting cognition (e.g., by communicating the advantages and disadvantages of a behaviour) may be effective in changing people’s intentions to perform certain behaviours. However, as the degree individuals base their intentions on cognition is unrelated to the predictive power of those intentions, this strategy may prove ineffective in changing people’s actual behaviour. Instead, messages associating health behaviours with positive affect may change people’s intentions and increase the likelihood that those intentions are actually translated into behaviour.

The present research is, of course, not without limitations. By examining individual differences in the strengths of cognition and affect bases across multiple behaviours, we did not take into account that the strengths of these bases may differ across behaviours. An interesting avenue for future research would be to investigate whether such differences exist. For example, people’s intentions with regard to purchasing fruit and vegetables may be less strongly affect-based than people’s intentions with regard to eating fruit and vegetables. Interventions aimed at increasing the likelihood that intentions are carried out should be particularly effective when aimed at intentions that tend to be weakly based on affect. Such interventions may therefore be more effective for promoting preparatory behaviours, such as buying wholesome food, registering at a sports club, and carrying condoms than for
actually eating wholesome food, exercising, and having protected intercourse.

In conclusion, individual differences in the degree intentions are based on affect and cognition can account for individual differences in the intention-behaviour relationship. The findings imply that in addition to changing people’s intentions, health messages may focus on creating intentions that have a high likelihood of being carried out. Affective arguments will be essential in attaining this goal.