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Keer, M., Conner, M., Van den Putte, B., & Neijens, P. (2014).

The temporal stability and predictive validity of affect-based and cognition-based intentions.

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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 strength of individuals' intention-behaviour relationships. Participants completed measures of affect, cognition, intention, and behaviour regarding a range of health behaviours. Study one (N = 300) found that the strength of the intention-behaviour relationship was significantly related to the extent to which individuals based their intentions on affect, but not to the extent they based them on cognition. Study two (N = 387) replicated the findings of the first study. In addition, study 2 revealed that intention stability mediated the relationship between the degree people based their intentions on affect and the strength of the intention-behaviour relationship. Thus, individuals who base their intentions strongly on affect have more stable intentions, and are therefore more likely to enact them.

The temporal stability and predictive validity of affect-based and cognition-based intentions

Theories of 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 comprehensive review of the literature on health-related behaviours revealed a mean intention-behaviour correlation of only .43 (McEachan, Conner, Taylor, & Lawton, 2011). 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 will be 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 two types of attitude, affect and cognition (Trafimow et al., 2004). Some individuals tend to base their intentions to perform behaviours strongly on affect or how they feel about those behaviours, whereas for others feelings have very little impact on their intentions. The same is true for cognition: some individuals tend to strongly base their intentions on cognition or rational evaluations of the costs and benefits of the behaviours, whereas others' intentions tend to be weakly based on such considerations (Trafimow et al., 2004). Although there are indications that differences in the degree to which individuals base their intentions on affect and cognition are related to the strength of the intention-behaviour relationship, this has never been tested. The present study addresses this gap in the literature. Specifically, we hypothesise that the strength of the intention-

behaviour relationship is positively related to the degree to which individuals base their intentions on affect, but not related to the degree they base their intentions on cognition. In addition, we investigate temporal stability of intentions as a potential explanation for such effects. That is, we expect that strongly (versus weakly) affect-based intentions are better predictors of behaviour, because they are more stable.

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 (Breckler & Wiggins, 1989; Crites, Fabrigar, & Petty, 1994). Various terms have been used in the literature to indicate these constructs, such as affective and cognitive attitude and affective and cognitive evaluation. For convenience, we use the terms affect and cognition in the present article. Although both affect and cognition are considered to be part of the same construct (i.e., attitude) in the theory of reasoned action and the theory of planned behaviour (Ajzen, 1991; Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975), recent studies have found merit in considering them as separate constructs (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 communications 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 positively influences the likelihood that that they are carried out.

The present study focuses on the effects of individual variations in the degree to which intentions are based on affect and the extent to which intentions are based on cognition. Individuals who strongly base their intentions on affect may have strong intention-behaviour relationships because affective considerations may be very influential in the moment of enacting one's intentions. In previous research, both affect and cognition had 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 investigating the direct effects of affect and cognition on behaviour have found that affect influences behaviour but cognition does not, or does so 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) assessed 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. Therefore, it appears that cognition is relatively important in forming an intention, and affect is relatively important in actual behavioural performance.

A potential explanation for this may be found in the psychological distance from behavioural enactment. Compared to forming an intention, translating intention into behaviour is temporally more proximal to the experience of the behaviour. According to Trope and Liberman's (2010) construal level theory, proximity to behavioural enactment increases the salience of immediate consequences of the behaviour, whereas distance from behavioural enactment increases the salience of distant-future consequences. For most health behaviours, the affective consequences are experienced in the short term (e.g., craving, increase or decrease in physical discomfort), whereas the instrumental (cognitive) consequences are experienced in the long term (e.g., better health, improved stamina; cf. Rhodes & Conner, 2010). Thus, when translating intention into behaviour, short term consequences are salient, and therefore affect may be relatively influential. When forming an intention about a future behaviour, long term consequences are salient, and therefore instrumental consequences may be relatively influential.

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 relationship is related to the degree to which the individual bases his or her intentions on affect. We also predict that the strength of an individual's intention-behaviour relationships is unrelated to the degree to which the individual bases his or her intentions on cognition. As argued above, affective consequences of health behaviours are experienced in the short term. Because affective consequences are experienced in the short term, individuals who strongly base their intentions on affective consequences may be highly motivated to stay true to their intentions. In contrast, instrumental consequences may be less strong motivators, as these consequences are experienced in the long term, and often depend on multiple repetitions of the behaviour. In other words, affect may bind people to their intentions, whereas cognition may not.

There is some empirical support for the notion that affect can be a powerful motivator for people to stay true their intentions. For example, 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. In addition, with regard to cervical screening and exercise, Sandberg and Conner (2009; 2011) showed that assessing individuals' anticipated regret increases the strength of their intention-behaviour relationship, and this effect occurs only when anticipated regret is measured before intention. In other words, making people aware of the possible affective consequences before measuring intention improved the intention-behaviour relationship. All in all, the above studies suggest that basing one's intentions on affect may help bind you to your 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 may thus be less able to bind individuals to their intentions. Consequently, the degree to which individuals base their intentions on cognition is expected not to predict the likelihood that their intentions are enacted.

In line with the notion that affective influences can bind people to their intentions, studies suggest that the degree to which intentions are based on affect positively influences the temporal stability of those intentions (Abraham & Sheeran, 2003; Doll & Ajzen, 1992). Temporal stability, in turn, has been shown to be a key moderator of intention-behaviour

relationships (Conner & Godin, 2007; Cooke & Sheeran, 2004). For example, in an experimental study, Doll and Ajzen (1992) varied the motivational orientation of participants to play video games. Participants were either informed that video games are meant to be enjoyed (fun orientation), or they were asked to demonstrate their skills (skill orientation). A marginally significant result indicated that intentions to play the game were more predictive of play time for individuals with a fun orientation, and this effect was mediated by temporal stability of the attitude. In other words, compared to skill orientation, fun orientation produced attitudes that were more temporally stable, and therefore more predictive of behaviour. The findings of Doll and Ajzen suggest that intentions based on affect should be relatively stable and therefore good predictors of behaviour.

The Present Research

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 the extent to which individuals base their intentions on 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. Datasets from two studies were available to fill this gap in the literature. In study 1, we test the hypothesis 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. Study 2 provides a second test of this prediction and also assesses temporal stability of intentions as a potential mediator of the effect. That is, temporal stability of intentions is expected to mediate the influence of the degree individuals base their intentions on affect and the intention-behaviour relationship.

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 to which individuals generally (i.e., across behaviours) based their intentions on cognition and affect (see Trafimow & Finlay, 1996 for a similar analysis). The selected behaviours were chosen for their expected relevance for the target population, and included, among others, dietary, sport, and alcohol-related behaviours (for a list of all behaviours, see [author reference]). 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 at least twice a week during the coming month”). The subsequent items measuring affect, cognition, intention and behaviour, referred to the behaviour as “the behaviour specified above” (e.g., “I intend to perform 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 et al., 1994; Trafimow & Sheeran, 1998). As both measures had high reliabilities (mean alpha values were .90, and .85 for affect and cognition, respectively), a single score 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 score 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 $r = .58$, $SD = .19$) respectively across the 20 behaviours. Thus, when we mention the degree intentions are based on affect or cognition, we are referring to the strength of these correlations. Within-subject correlations were also used to calculate the strength of the intention-behaviour relationship (mean $r = .61$, $SD = .20$). We converted all these within-subject correlations to Fisher’s z-values, in line with Michela (1990), and eight extreme outliers (scores outside three standard deviations) were removed from the data.

Having established the within-participant correlations between affect and intention, cognition and intention, and intention and behaviour, we used these in between-subjects analyses. Specifically, we performed between-subjects analyses to assess whether the strength of individuals' intention-behaviour relationships depended on the strength of their intention's cognition bases and affect bases (cf. Trafimow & Finlay, 1996). Specifically, we regressed the intention-behaviour correlation on the affect-intention and cognition-intention correlations ($R^2 = .03$, $F(2, 288) = 4.13$, $p < .05$). This multiple regression analysis indicated that the intention-behaviour relationship was significantly predicted by the strength of the intention's affect base (controlling for the strength of the intention's cognition base), $B = .19$, $SD = .07$, $p < .01$, 95% CI [.06, .31], but not by the strength of the intention's cognition base (controlling for the strength of the intention's affect base), $B = -.05$, $SD = .06$, $p = .43$, 95% CI [-.17, .07].

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 are consistent with the notion that strongly basing one's intentions on affect may bind people to their intentions, whereas strongly basing them on cognition may not. However, 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 were based on cross-sectional data, limiting the extent to which causal impacts of one study variable on another can be inferred. Notably, we have assessed the relationship between intention and past behaviour, not future behaviour. Therefore, an alternative interpretation of the findings is that basing an intention on affect does not bind people to their intention, but that people who experienced positive affect while performing a behaviour subsequently intend to continue performing that

behaviour. Thus, the results would be more convincing if they were replicated in a prospective study (i.e., intentions measured before behaviour) among a more varied sample. Study 2 addresses these limitations. In addition, study 2 assesses the temporal stability of intentions as a possible explanation for why the degree to which people base their intentions on affect influences the intention-behaviour relationship.

Study 2

Previous research has shown that the strength of an intention-behaviour relationship depends on the temporal stability of the intention (e.g., Conner, Sheeran, Norman, & Armitage, 2000; Doll & Ajzen, 1992). To explore the possibility that individuals who strongly base their intentions on affect have more stable intentions than individuals who base their intentions only weakly on affect, study 2 assessed the temporal stability of intentions. We expected that the relationship between the degree to which individuals based their intentions on affect and the intention-behaviour relationship would be mediated by intention stability. That is, if affect is able to bind people to their intentions, individuals who base their intentions strongly (versus weakly) on affect produce more stable intentions, and are therefore more likely to put their intentions into action. No such predictions were made for the extent to which individuals based their intentions on cognition.

Method

Participants and Procedure

Following ethical approval, 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 387 respondents completed both questionnaires and were used in subsequent analyses; this included 291 females and 95

males (1 respondent indicated male in the first questionnaire and female in the second) with a mean age of 39 years.

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 (e.g., exercising; for a list of all behaviours, see [author reference]).

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 et al., 1994; Trafimow & Sheeran, 1998). As there was a strong correlation between the pair of cognition items (mean $r = .50$), and between the pair of affect items (mean $r = .68$), a single score 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 $r = .58$), and so a single score was computed. The same items were used to measure intentions one month later (mean $r = .62$). Average intention change across the behaviours varied between $M = -.05$, $SD = 1.79$, for daily alcohol use, and $M = .23$, $SD = 1.90$, for bicycle helmet use. 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

Predicting the Intention-Behaviour Relationship

The results for study 2 again revealed that the strength of the intention-behaviour relationship was related to the degree to which individuals base their intentions on affect and not to the degree individuals base their intentions on cognition. The degree to which individuals based their intentions on cognition and affect was calculated using within-subjects correlations between cognition and intention (mean $r = .46$, $SD = .28$), and affect and intention (mean $r = .52$, $SD = .25$) across the 16 behaviours. Within-subject correlations were also used to calculate the strength of the intention-behaviour relationship (mean $r = .51$, $SD = .26$). As in Study 1, we converted these within-subject correlations to Fisher's z-values, and seven outliers outside three standard deviations were removed.

As in study 1, we used the within-participant correlations between affect and intention, and cognition and intention, in between-subjects analyses. Specifically, we regressed the intention-behaviour relationship on the affect-intention and cognition-intention correlations ($R^2 = .05$, $F(2, 351) = 8.89$, $p < .001$). This multiple regression analysis indicated that the intention-behaviour relationship was significantly predicted by the strength of the intention's affect base (controlling for the strength of the intention's cognition base), $B = .23$, $SD = .05$, $p < .001$, 95% CI [.12, .33], but not by the strength of the intention's cognition base (controlling for the strength of the intention's affect base), $B = -.07$, $SD = .05$, $p = .21$., 95% CI [-.17, .04].

Predicting the Intention-Intention Relationship

We next examined whether the strength of the intention-intention relationship (i.e., intention stability) was related to the strength of the intention's cognition base and the strength of the intention's affective base. The intention-intention relationship refers to the relationship between intentions at baseline and intentions at follow-up, assessed one month

apart. We predicted that intention stability would be related to the strength of the intention's affect base, but not to the strength of its cognition base. The same procedure as described above was used to test these relationships. First, within-subjects correlations between intention measures at the two time points (mean $r = .70$, $SD = .23$) were computed across the 16 behaviours as a measure of intention stability. The correlations were converted to Fisher's z -values, and two outliers outside three standard deviations were removed. We then regressed the intention-intention relationship on the affect-intention and cognition-intention correlations ($R^2 = .07$, $F(2, 352) = 13.89$, $p < .001$). This multiple regression analysis indicated that the intention-intention relationship was significantly predicted by the strength of the intention's affect base (controlling for the strength of the intention's cognition base), $B = .20$, $SD = .05$, $p < .001$, 95% CI [.10, .31]. In contrast, the strength of the intention's cognition base had a marginally significant influence on the intention-intention relationship (controlling for the strength of the intention's affect base), $B = .10$, $SD = .05$, $p = .05$, 95% CI [.00, .20]. The intention-intention relationship also showed a positive correlation with the intention-behaviour relationship ($r = .44$, $p < .001$); in other words, stable intentions were more likely to be put into action than unstable ones. Finally, we performed mediation analyses to assess whether intention stability mediates the influence of the strength of the intention's affect base on the intention-behaviour relationship. The indirect effect was formally tested using a bootstrapping procedure. Based on 5000 bootstrap samples, a 95% bias corrected and accelerated confidence interval (95% BCa CI) was computed for the point estimate of the indirect effect (the point estimate is the product of the two effects that constitute the indirect effect; see Preacher & Hayes, 2008). The result indicated that the influence of the intention's affect base on the intention-behaviour relationship was significantly mediated by intention stability, Point estimate = .10, 95% BCa CI [.05, .15].

Discussion

Study 2 replicated the findings of study 1. It found that the degree to which individuals based their intentions on affect was positively related to the intention-behaviour relationship. In line with our expectations, and consistent with study 1, the degree to which individuals 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, providing stronger support for the hypothesis that the degree to which individuals base their intentions on affect is causally antecedent to the intention-behaviour relationship. 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 substantively identical suggests that they are generalisable to a large proportion of the general population.

In addition, study 2 assessed intention stability as a potential explanation for the finding that the degree to which intentions are based on affect influences the intention-behaviour relationship. As expected, the results indicated that individuals who tend to strongly base their intentions on affect have more stable intentions than those who weakly base their intentions on affect. Intention stability significantly mediated the relationship between the degree to which individuals based their intentions on affect and the likelihood that they would translate their intentions into behaviour. Thus, the present results suggest that individuals who strongly base their intentions on affect produce intentions that are more temporally stable and consequently better predictors of behaviour than individuals who weakly base their intentions on affect.

General Discussion

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.

Several previous studies suggest that intentions that are based on affect are better predictors of actual behaviours than are intentions that are not based on affect. For example, Sandberg and Conner (2009; 2011) showed that intentions formed when anticipated regret is salient better predicted behaviour than intentions formed when anticipated regret was not salient. Similar results were found by Abraham and Sheeran (2003), and these authors also found that the effect of anticipated regret on the intention-behaviour relationship was mediated by the temporal stability of the intention. Most previous studies on this topic looked at a single behaviour. The present study is unique in that it focused not on a single behaviour, but that it considered individuals' general tendencies to base their intentions on affect and cognition, measured across a variety of health behaviours. The present study thus adds to the literature by showing that individuals who tend to base their intentions strongly on affect are more likely to translate those intentions into behaviours than individuals who tend to neglect affect when forming their intentions. In addition, the present study shows that the same is not true for the degree individuals base their intentions on cognition.

The present results suggest that affect but not cognition may be able to bind people to their intentions. An explanation for this is that affective consequences of health behaviours are experienced in the short term, whereas most instrumental consequences are experienced in the long term. As translating intention into behaviour is a stage of decision making that is proximal to the experience of the behaviour, short term consequences may be especially salient (Trope & Liberman, 2010). Affective consequences are experienced immediately or

shortly after engaging in a behaviour. Therefore, people who strongly base their intentions to perform a behaviour on affect are more likely to be instantly rewarded when they enact their intentions, in the sense that they immediately experience the affective consequences which led them to intend to perform the behaviour. It may be through this immediate effect that affect is able to bind people to their intentions (see Kwan & Bryan, 2010; Sheeran & Orbell, 1999). 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), individuals who strongly base their intentions on cognition may be more likely to deviate from their intention. Therefore, cognition may be 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 behaviours, and despite their good intentions based on those instrumental benefits.

In line with the notion that affect helps people to stay true to their intentions, study 2 revealed that intentions that are strongly based on affect are more temporally stable than those that are weakly based on affect. Consistent with previous research, temporal stability of intentions was positively related with the intention-behaviour relationship (e.g., Conner et al., 2000; Doll & Ajzen, 1992). Indeed, the present results indicate that temporal stability mediated the relationship between the degree individuals based their intentions on affect and the intention-behaviour relationship. Intentions strongly based on affect are more likely to be enacted than intentions weakly based on affect, partly because they are more stable over time.

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 whose intentions are weakly correlated with affect, as these individuals have the largest intention-behaviour gap. The results further suggest that health practitioners might usefully 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. However, it should be kept in mind that the effect sizes found in the current studies were small, and that the improvement in the effectiveness of health interventions based on these findings may be limited.

The present research is, of course, not without limitations. First, all measures in the present study were based on self-report. Future studies using objective measures of behaviour are needed to provide stronger evidence for the claims made in this study. Second, 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 (but not individual differences in the degree intentions are based on cognition) can account for individual differences in the intention-behaviour relationship. The findings imply that in addition to changing people's intentions, health messages might usefully focus on creating intentions that have a high likelihood of being carried out. Affective arguments are essential in attaining this goal.

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