

Don't derogate this message! Self-affirmation promotes online type 2 diabetes risk test taking

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The aim of the present study was to examine whether self-affirmation promotes acceptance of threatening type 2 diabetes information and risk-testing behaviour. In an experimental study ($N = 84$), we manipulated self-affirmation by allowing participants to affirm a value that was either personally important or unimportant to them, and measured participants' risk level prior to reading threatening type 2 diabetes information. As dependent variables, we measured message derogation, intentions to do an online type 2 diabetes risk test and online risk-testing behaviour. Findings showed that self-affirmation decreased message derogation, increased intentions to do an online risk test and promoted online risk test taking among at-risk participants. Among participants not at-risk, self-affirmation decreased intentions and online risk test taking. Therefore, it is concluded, that for an at-risk population self-affirmation can decrease defensive responses to threatening health information and promote (online) risk test taking for diseases.

Keywords: self-affirmation; defensive processing; health-risk information; screening behaviour; type 2 diabetes

Introduction

The International Diabetes Federation estimates that about 380 million people worldwide will suffer from diabetes by the year 2025 (International Diabetes Federation, 2006). Type 2 diabetes is the most common type of diabetes and accounts for 90–95% of all diabetes. When left undiagnosed and untreated, people with this disease can develop serious health problems (e.g. kidney, eye, nerve and cardiovascular diseases), which can result in a premature death (International Diabetes Federation, 2006). Used to be seen as most common in elderly, the number of people with diabetes will be largely increased due to an increasing prevalence of overweight and obesity among all age-groups (International Diabetes Federation, 2006). Thus, to date, more and more people are susceptible to this disease with its life-threatening complications. These developments point to the necessity of effective health promotion efforts.

Health promotion campaigns targeting type 2 diabetes aim to reach at-risk populations in order to make them aware of the negative health consequences of this disease. In addition, because an accurate perception of risk for having or developing type 2

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diabetes is a pivotal determinant of healthy behaviour (Schwarzer, 2001), diabetes campaigns recently put a lot of effort in promoting screening behaviour. For instance, the Diabetes UK's Measure Up campaign depicting a man and women with tape-measured waists stated 'If your waist is wider than this, you could need a test for type 2 diabetes' (Diabetes UK, 2007). People thinking this applied to them were highly recommended to further examine their risk. For example, people could take a simple 2min test on the Internet (see also the websites of the American Diabetes Association and the Dutch Diabetes Federation (NDF) for similar online risk tests).

Unfortunately, reading about type 2 diabetes and its life-threatening complications does not necessarily motivate at-risk individuals to take an online risk test. A great deal of research shows that people most vulnerable to a health threat often respond defensively to threatening health information. This defensiveness is expressed in downplaying the seriousness of the health risk (Jemmott, Ditto, & Croyle, 1986), questioning the accuracy of the threatening information (Ditto & Lopez, 1992) or evidence presented in the message (Kunda, 1987), and processing the information in a hyper-critical way (Lieberman & Chaiken, 1992). Defensive processing of relevant health information thus presents an obstacle for health campaigns, and more insight into the origins of this increased defensiveness is needed in order to increase the effectiveness of these campaigns.

Several theories suggest that defensive responses to threatening health information originate from concerns over self-worth (Aronson, 1969; Steele, 1988; Taylor & Brown, 1988; Tesser & Cornell, 1991). In particular, self-affirmation theory (Steele, 1988) – a theory about how people deal with concerns over self-worth – proposes that people respond defensively, because they are highly motivated to protect and maintain a global sense of self-integrity. When threatened, for instance, by reading health information, people will be motivated to restore their sense of self-integrity. One way to satisfy this motive is to respond defensively to this information. By derogating, minimising or avoiding threatening health information, people are able to restore and maintain their self-integrity. The theory further proposes that this maintenance of self-integrity is a flexible process. Because people are concerned with their *global* sense of self-integrity, they can also restore self-integrity by drawing upon alternative sources that are unrelated to the provoking threat, such as reflecting upon an unrelated but important value (Steele, 1988). Thus, when threatened in one domain (e.g. health), people can restore their global self-integrity by affirming another important domain (e.g. social skills). Such an unrelated 'self-affirmation' (i.e. reflecting upon an important self-aspect) restores global self-integrity, thereby reducing the need to respond defensively to the specific threat. In terms of theories regarding the use of threat appeals in health communications (Leventhal, 1970; Witte, 1992), self-affirmation may thus promote danger control (associated with motivations to think about the health message and adaptive behavioural actions) over fear control (associated with denial or derogation of the health message and maladaptive behavioural actions).

The prediction that self-affirmation decreases defensiveness has been supported across a wide variety of domains and research paradigms (for a review, see Sherman & Cohen, 2006). Several recent studies confirmed the relevance of self-affirmation processes in the health domain as well (e.g. Harris, Mayle, Mabbott, & Napper, 2007; Harris & Napper, 2005; Reed & Aspinwall, 1998; Sherman, Nelson, & Steele, 2000). Self-affirmation has been found to increase attendance to and acceptance of threatening health messages, perceptions of personal risk and intentions to take precautions regarding health risks such as smoking (Harris et al., 2007), excessive caffeine consumption (Reed & Aspinwall, 1998; Sherman et al., 2000, Study 1),¹ alcohol consumption

(Harris & Napper, 2005) and unsafe sex (Sherman et al., 2000, Study 2). Some of these effects even remained stable over a period of 1 month (Harris & Napper, 2005).

Of course, the aim of most health promotion campaigns is not merely to inform individuals about health risks, but to promote behaviour change (Stroebe, 2000). However, to date, little is known about the effects of self-affirmation on actual behaviour. So far, most studies examined the impact of self-affirmation on self-report measures of preventive behaviour (Epton & Harris, in press; Harris et al., 2007; Harris & Napper, 2005; Reed & Aspinwall, 1998). Preventive behaviours are directed at maintaining one's health (e.g. exercising) and are typically seen as involving little or no risk because they encompass little uncertainty (Devos-Comby & Salovey, 2002; Rothman & Salovey, 1997). While there is some evidence that self-affirmation can promote (self-reported) consumption of fruit and vegetables (Epton & Harris, in press) and the purchase of condoms (Sherman et al., 2000), other studies consistently reported no effects of self-affirmation on preventive behaviours (Harris et al., 2007; Harris & Napper, 2005; Reed & Aspinwall, 1998).

Even less is known about the impact of self-affirmation on screening or detection behaviours. Unlike preventive behaviours, screening or detection behaviours potentially inform individuals of a severe health problem and are typically considered high risk as they encompass high uncertainty (Devos-Comby & Salovey, 2002; Rothman & Salovey, 1997). For instance, doing a diabetes risk test involves the risk of learning one is highly vulnerable to have or develop this disease. As a consequence, people may be particularly reluctant to undertake such actions. Indeed, research on screening (or detection) behaviours suggests that especially people who are high at-risk are most unwilling to engage in screening behaviours (e.g. Eaker, Adami, & Sparen, 2001; Fako, 2006; Weitzman, Zapka, Estabrook, & Goins, 2001; Welkenhuysen, Evers-Kiebooms, & van den Berghe, 1997).

It remains to be established whether self-affirmation can promote screening behaviours. However, there is some encouraging evidence that suggests the potential of self-affirmation in this context. Particularly, self-affirmation has been shown to make at-risk participants attend more quickly to risk-confirming information relative to risk-neutral or risk-disconfirming information (Reed & Aspinwall, 1998). This suggests that self-affirmation may also promote intentions to assess one's risk and screening behaviour that can be risk confirming. This is all the more important considering the primary goal of recent diabetes campaigns which is to promote screening behaviours as an important first step in the prevention and detection of this disease (International Diabetes Federation, 2006). The present study provides a first test of the impact of self-affirmation on screening behaviour.

Additionally, this study extends previous findings by testing the effect of self-affirmation on the relationship between risk-level and persuasive outcomes, drawing on theories regarding the use of threat appeals in health communications (Leventhal, 1970; Witte, 1992). If self-affirmation promotes danger control over fear control when faced with threatening health information, affirmed individuals should be less likely to derogate health information. Most previous research supported this assumption by demonstrating positive effects of self-affirmation on measures related to danger control (e.g. attitudes and intentions; Reed & Aspinwall, 1998; Sherman et al., 2000). The present study extends these findings by testing the effect of self-affirmation on a measure of message derogation. This explicit measure of defensiveness is related to the persuasive outcome when fear control dominates over danger control (Witte, 1992). When self-affirmation promotes danger control, self-affirmation should decrease derogation of threatening health information.

Finally, previous research suggests that self-affirmation may be only beneficial among individuals at-risk, and can even have an adverse effect among those not at-risk (Briñol, Petty, Gallardo, & DeMarree, 2007; Harris & Napper, 2005). For instance, self-affirmation has been found to reduce (non-targeted) risk perceptions among participants not at-risk (Harris & Napper, 2005).² Moreover, under non-threatening conditions, Briñol et al. (2007) showed that a self-affirmation prior to reading a message reduced information processing and produced more negative attitudes towards the object of evaluation. These effects seem to occur because self-affirmation increases people's confidence in their current views when not particularly threatened, thereby reducing the need to consider information that might lead to change (cf Briñol et al., 2007; also see, e.g. Tiedens & Linton, 2001). Thus, the effects of self-affirmation may be moderated by risk level: whereas self-affirmation reduces persuasion among individuals not at-risk, self-affirmation seems to enable at-risk individuals (i.e. the target audience of health promotion campaigns) to pay attention to the informational value of the health message, instead of focussing on its implications for self-integrity (Sherman & Cohen, 2006). The present study further tests the moderating role of risk level.

The present study

In the present study, we experimentally manipulated self-affirmation by allowing participants to affirm a value that was either personally important or unimportant to them (cf Sherman et al., 2000), and measured participants' risk level prior to reading threatening type 2 diabetes information. We predicted that for at-risk participants, self-affirmation would decrease derogation of threatening type 2 diabetes information, positively fuelling intentions to assess personal risk to have or develop type 2 diabetes, and consequently promote online risk test taking behaviour. In line with the observations that self-affirmation may have an adverse effect under non-threatening conditions (Briñol et al., 2007; Harris & Napper, 2005), we predicted that for participants not at-risk, self-affirmation would not affect message derogation, and would decrease intentions to assess personal risk and online risk test taking behaviour.

Method

Participants and design

The study was conducted via the Internet, and participants were recruited via banners placed on the university website. Participants could enrol if they had not been diagnosed with any type of diabetes, never had been tested and were not familiar with the Dutch diabetes campaign (i.e. we asked participants whether they were familiar with the health education campaign 'Kijk op Diabetes'; this item had a 'yes' or 'no' option). A total of 84 participants who satisfied these inclusion criteria participated in the study, of which 26 males and 58 females with a mean age of 38.19 years ($SD = 14.58$; range 19–66 years). The computer randomly assigned participants to either the self-affirmed status condition ($n = 36$) or the non-affirmed status condition ($n = 48$). As compensation, participants could take part in a lottery in which they could win gift vouchers (2×25 euros, $\approx \$35$ per voucher). The research was conducted in accordance with APA ethical standards.

Procedure and materials

Participants were informed that they would be taking part in two separate studies, one about values and the other about health education, which was explained to entail

evaluating a message for possible use in a health campaign. The first part of the experiment was aimed at identifying participants' risk level.

Risk level

To assess participants' risk level, we adopted the questions of the type 2 diabetes risk test that is part of the Dutch diabetes campaign ('Kijk op Diabetes'). Participants responded to seven questions, and points were assigned for every answer given following the scoring system as developed by the NDF. Participants were not aware that these questions assessed their risk on type 2 diabetes; they were simply asked to complete some personal questions about their life situation, and it was emphasised that their answers were confidential and anonymous.

First, participants indicated their age (<45 years = 0 points, 45–54 years = 2 points, 55–64 years = 3 points, > 64 years = 4 points), height and weight. The latter two questions were used to calculate participants' Body Mass Index (BMI; 10–25 = 0 points, 26–30 = 1 point, > 30 = 3 points). Then, participants responded to the following questions: 'Are you physically active for at least 30 min every day?' (yes = 0 points, no = 2 points), 'Do you use high blood pressure medication?' (yes = 2 points, no = 0 points), 'Have you ever had a blood sugar level that was on the high side, for example, during illness or when you were pregnant?' (yes = 2 points, no = 0 points), 'Does anyone in your family suffer from (type 1 or type 2) diabetes?' (no = 0 points, yes: my grandfather, grandmother, aunt, uncle, nephew, niece = 3 points, yes: my father, mother, brother, sister or child = 5 points). Scores on the test could range from 0 through 21 points, with higher scores indicating a higher risk level. The mean score on the risk test was 2.86 points (SD = 2.59; range 0–10 points).³

Self-affirmation manipulation

The manipulation of self-affirmation was based on a frequently used procedure (e.g. Koole, Smeets, van Knippenberg, & Dijksterhuis, 1999; Sherman et al., 2000), whereby participants complete a brief value scale that either matched their most or least important value. Participants were first presented with the six values of the Allport-Vernon-Lindzey study of Values (AVL; Allport, Vernon, & Lindzey, 1960), which they had to rank according to their personal importance. The values listed were: science, business, art, social, politics and religion. After ranking the values, participants completed one of the AVL-subcales (science, business, art, social, politics or religion) that consist of 10 statements with 2 possible answers. Participants were asked to choose between the answers. For every statement, one answer reflected the scale's main value (e.g. religion) and the other answer reflected one of the remaining values (science, business, art, social, politics). For example, a statement from the religion scale is: 'It is more important to me that my child receives education in: religion or political organisation'. Participants in the self-affirmed status condition completed the scale that matched their previously indicated most important value. Participants in the non-affirmed status condition completed the scale that matched their least important value. Thus, for participants in the self-affirmed status condition it was possible to affirm their most important value 10 times. However, participants in the non-affirmed status condition were not given this opportunity.

Health message

After the manipulation of self-affirmation, participants read a health message (≈560 words), entitled 'What everybody should know about type 2 diabetes'.

The message was closely based on a brochure published by the Dutch Diabetes Foundation (Diabetes Fonds, 2006). The first part of the message explained what type 2 diabetes is and described several symptoms. The second part described risk factors associated with type 2 diabetes. Then, participants read about the health problems people can experience due to this disease, for example, increased risk of cardiovascular disease, problems with kidneys and eyes, dementia. The message closed with the recommendation to do a type 2 diabetes risk test.

Dependent measures

Participants rated three items that measured message derogation on a seven-point scale ('The message was distorted', 'The message was exaggerated' and 'The message was too extreme'; 1 = strongly disagree, 7 = strongly agree; $\alpha = 0.94$). Higher scores indicate greater message derogation. Then, participants were informed that the NDF provided an online risk test for type 2 diabetes. To assess participants' intentions to do the online test, they were asked 'How likely is it that you are going to do the online type 2 diabetes risk test?' (1 = very unlikely, 7 = very likely). Higher scores indicate greater intentions to do the online risk test. Next, participants were offered the opportunity to do the online risk test. They could click on the link that would direct them to this online test. Participants that clicked on the link to the online risk test were coded 1, participants that did not use the clickable link were coded 0 (i.e. the behavioural measure was dummy coded).⁴ After completing these measures, participants were probed for suspicion about the purpose of the study, and then were debriefed. None of the participants guessed any aspect of the true purpose of the study, and none of them reported a suspicion that the two studies were related.

Results

Randomisation check

Participants in the self-affirmed status and non-affirmed status condition were compared on age, gender and risk level. No analysis was significant, $F_s(1, 82) < 0.60$, $p_s > 0.44$, all $\eta_p^2 < 0.008$, suggesting that randomisation to self-affirmation status condition was successful.

Manipulation check self-affirmation

The validity of the self-affirmation manipulation was assessed by counting the number of times participants endorsed the manipulated value. A score of 1 was given when participants chose the manipulated value (thus affirming their least or most important value). A score of 0 was given when participants chose the filler answer. Thus, total scores on the affirmation task ranged from 0 to 10, with higher scores indicating higher affirmation. A one-way analysis of variance (ANOVA) confirmed that self-affirmed participants endorsed the manipulated value more often ($M = 6.92$, $SD = 1.70$) than non-affirmed participants ($M = 3.27$, $SD = 1.81$), $F(1, 82) = 88.20$, $p < 0.001$, $\eta_p^2 = 0.52$.

Dependent measures

Hierarchical regression analyses tested the main effects of self-affirmation status (coded as $-1 =$ non-affirmed status, $1 =$ self-affirmed status) and risk level (mean centred) in Step 1,

and the interaction term in Step 2, on the dependent measures. Where the predicted interaction was significant, we computed simple slopes for the dependent variable at two levels of the moderator (i.e. risk level): one SD below the mean (i.e. participants not at-risk) and one SD above the mean (i.e. at-risk participants) (cf Aiken & West, 1991). Means, SDs and intercorrelations for the study variables are presented in Table 1.

Message derogation

The main effects of self-affirmation status and risk level were not significant (Table 2). Most importantly and as predicted, results indicated that the interaction between self-affirmation status and risk level had a significant relation with message derogation. Self-affirmation decreased message derogation among at-risk participants ($B = -0.48$, $t = -2.37$, $p < 0.05$), but not among participants not at-risk ($B = 0.18$, $t < 1$, $p = 0.39$; Figure 1).

Intentions

Results indicated that risk level was positively related to intentions, whereas the main effect of self-affirmation status was not significant (Table 2). However, as predicted, results indicated that the interaction between self-affirmation status and risk level had a significant relation with intentions. Self-affirmation increased intentions to do the online risk test among at-risk participants ($B = 0.64$, $t = 2.11$, $p < 0.05$), but decreased intentions among participants not at-risk ($B = -0.96$, $t = -3.06$, $p < 0.01$; Figure 2).

Screening behaviour

The effects of the independent variables on the behavioural measure were tested with logistic regression analysis. The main effects of self-affirmation status and risk level were not significant (Table 2). However, as predicted, results indicated that the interaction between self-affirmation status and risk level had a significant relation with behaviour. Subsequent analyses showed that self-affirmation had a positive effect on behaviour among at-risk participants ($B = 2.18$, Wald (1) = 5.46, $p < 0.05$), but a negative effect among those not at-risk ($B = -4.12$, Wald (1) = 7.70, $p < 0.01$). These results indicate that self-affirmation increased the likelihood to do the online type 2 diabetes risk test among at-risk participants, but decreased this likelihood among those not at-risk (Figure 3).

Table 1. Means, SDs, and intercorrelations of risk level, message derogation, intentions and screening behaviour.

		<i>M</i>	<i>SD</i>	1	2	3	4
(1)	Risk level	2.86	2.59	1.00			
(2)	Message derogation	2.27	1.35	0.14	1.00		
(3)	Intentions	4.17	2.10	0.14	-0.26*	1.00	
(4)	Screening behaviour ^a	0.37	0.49	0.19	-0.17	0.60**	1.00

Note: $N = 84$.

^aPoint-biserial correlation coefficients for intercorrelations with screening behaviour are reported (all other are Pearson correlation coefficients)

* $p < 0.05$. ** $p < 0.001$.

Table 2. Summary of hierarchical regression analyses for the dependent measures.

Predictor or statistic	Message derogation				Intentions				Screening behaviour			
	Step 1		Step 2 ^a		Step 1		Step 2 ^b		Step 1		Step 2	
	B	SE B	B	SE B	B	SE B	B	SE B	B	SE B	B	SE B
Self-affirmation	-0.16	0.15	-0.15	0.14	-0.14	0.23	-0.16	0.22	-0.32	0.47	-0.97	0.68
Risk level	0.08	0.06	0.05	0.06	0.12	0.09	0.19*	0.09	0.15	0.09	-0.11	0.12
Self-affirmation × risk level	-	-	-0.13*	0.06	-	-	0.31**	0.09	-	-	1.21**	0.40
Regression constant			2.26	0.14			4.10	0.22			-0.44	0.30
R^2 ^c	0.03		0.09		0.03		0.16		0.05		0.32	

Note: $N = 84$.

^a $MS_{\text{error}} = 1.71$.

^b $MS_{\text{error}} = 3.83$.^cFor screening behaviour we reported Nagelkerke R^2 .

* $p < 0.05$. ** $p < 0.01$.

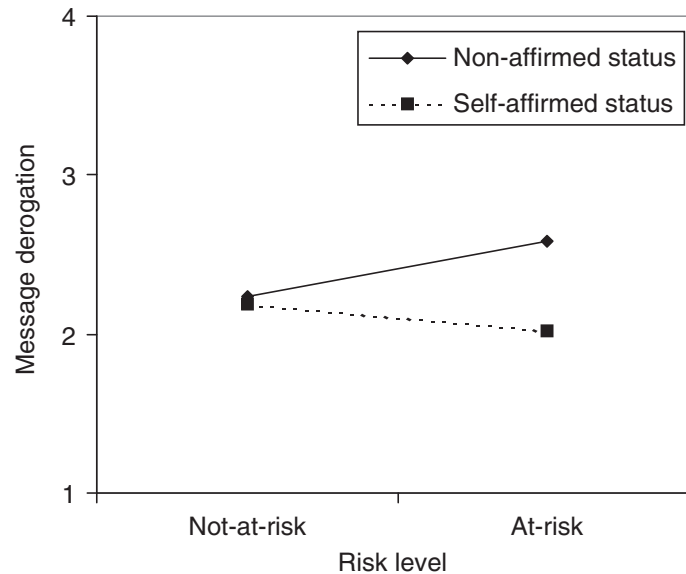


Figure 1. Regression slopes arising from the relation between self-affirmation status and message derogation for at-risk participants (one SD above the mean of risk level) vs. participants not at-risk (one SD below the mean of risk level).

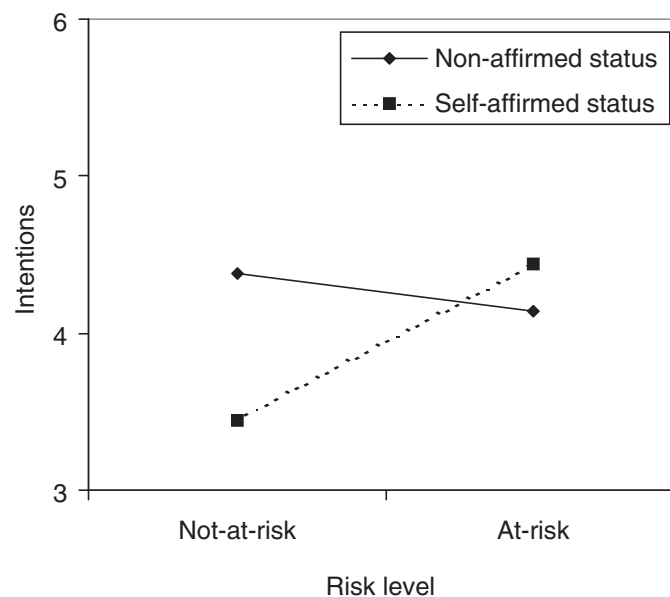


Figure 2. Regression slopes arising from the relation between self-affirmation status and intentions to do the online type 2 diabetes risk test for at-risk participants (one SD above the mean of risk level) vs. participants not at-risk (one SD below the mean of risk level).

Mediation

Following Baron and Kenny (1986), we tested whether the difference in message derogation mediated the impact of self-affirmation on intentions to do the online risk test for participants at-risk (cf Harris & Napper, 2005). Self-affirmation predicted message derogation (i.e. the potential mediator), $B = -0.48$, $t = -2.37$, $p < 0.05$, and also intentions, $B = 0.64$, $t = 2.11$, $p < 0.05$. When intentions were regressed simultaneously on message derogation and self-affirmation, message derogation predicted intentions,

$B = -0.34$, $t = -2.08$, $p < 0.05$, and the previous significant effect of self-affirmation became non-significant, $B = 0.48$, $t = 1.55$, $p = 0.13$. A subsequent Sobel/Goodman test of mediation proved marginally significant ($Z = 1.65$, $p < 0.10$), suggesting mediation.

We also tested whether the difference in intentions mediated the impact of self-affirmation on risk test taking behaviour. For at-risk participants, self-affirmation predicted intentions (i.e. the potential mediator), $B = 0.64$, $t = 2.11$, $p < 0.05$, and also behaviour, $B = 0.16$, $t = 2.31$, $p < 0.05$. When behaviour was regressed simultaneously on intentions and self-affirmation, intentions predicted behaviour, $B = 0.12$, $t = 5.34$, $p < 0.001$, and the previous significant effect of self-affirmation became non-significant, $B = 0.09$, $t = 1.38$, $p = 0.17$. A subsequent Sobel/Goodman test of mediation proved significant ($Z = 1.99$, $p < 0.05$), indicating that intentions mediated the impact of self-affirmation on risk test taking behaviour for participants at-risk. For participants not at-risk, self-affirmation also predicted intentions (i.e. the potential mediator), $B = -0.96$, $t = -3.06$, $p < 0.01$ and behaviour, $B = -0.24$, $t = -3.41$, $p < 0.01$. When behaviour was regressed simultaneously on intentions and self-affirmation, intentions predicted behaviour, $B = 0.12$, $t = 5.34$, $p < 0.001$, and the effect of self-affirmation was reduced, but remained significant, $B = -0.13$, $t = -2.01$, $p < 0.05$. A subsequent Sobel/Goodman test of mediation proved significant ($Z = 2.69$, $p < 0.01$), indicating mediation.

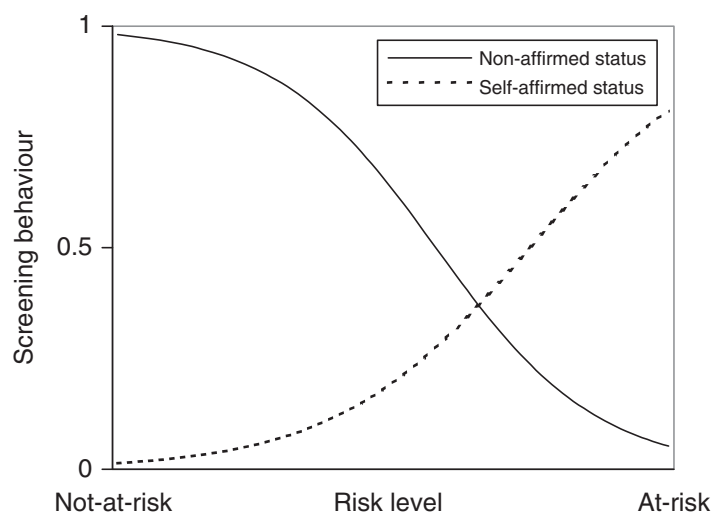


Figure 3. Regression slopes arising from the relation between self-affirmation status and screening behaviour for at-risk participants (one SD above the mean of risk level) vs. participants not at-risk (one SD below the mean of risk level).

Correlations

Another way of looking at the effects of self-affirmation is to test whether self-affirmation reduces the often observed relation between risk level and maladaptive outcomes (e.g. Sherman et al., 2000). That is, if self-affirmation promotes danger control, risk level should be positively related to intentions and behaviour among self-affirmed participants. Correlational analyses showed that, for self-affirmed participants, risk level was unrelated to message derogation, $r(36) = -0.16$, $p = 0.35$, and positively related to intentions to do the online risk test, $r(36) = 0.57$, $p < 0.001$ and behaviour, $r_{pb}(36) = 0.67$,

$p < 0.001$. In contrast, for non-affirmed status participants, risk level was positively related to message derogation, $r(48) = 0.33$, $p < 0.05$, and was not related to intentions, $r(48) = -0.16$, $p = 0.29$ and behaviour, $r_{pb}(48) = -0.13$, $p = 0.37$.

Discussion

Although information about type 2 diabetes and its life-threatening implications becomes relevant for more and more people, research has shown that at-risk individuals often respond defensively to this kind of information (e.g. Liberman & Chaiken, 1992). In the present research, we tested the impact of self-affirmation – a self-regulatory mechanism that has been shown to affect the acceptance of threatening messages – on responses to threatening type 2 diabetes information. The results show that self-affirmation decreased defensive responses to threatening information about type 2 diabetes, and promoted adaptive behavioural action in the target audience.

Specifically, at-risk participants who were given the opportunity to self-affirm, derogated the threatening information less and expressed greater intentions to do an online type 2 diabetes risk test than their non-affirmed counterparts. More importantly, self-affirmed (*vs.* non-affirmed) at-risk participants were more likely to assess their personal risk for having or developing type 2 diabetes by taking an online risk test. This is especially encouraging, given that people at-risk are often most reluctant to undertake such actions (e.g. Eaker et al., 2001; Welkenhuysen et al., 1997). While people often perceive screening or detection behaviours as risky because of the outcome-uncertainty associated with these behaviours (Devos-Comby & Salovey, 2002; Rothman & Salovey, 1997), self-affirmation enables people to focus on the long-term benefits of this behaviour (i.e. obtaining treatment to reduce the impact of disease when one runs the risk of having or developing this disease). To the best of our knowledge, this finding is the first to suggest that self-affirmation may play a pivotal role in promoting screening behaviours. Moreover, since risk test taking is an important primary step in the prevention and detection of type 2 diabetes (e.g. Borch-Johnsen, Lauritzen, Glümer, & Sandbæk, 2003; International Diabetes Federation, 2006; Wareham & Griffin, 2001), this result underscores the potentially applied value of interventions derived from self-affirmation theory. The results further suggest that for at-risk participants, the effect of self-affirmation on intentions to take precautions was mediated by the decrease in message derogation. In addition, intentions to engage in precautionary behaviour mediated the impact of self-affirmation on online type 2 diabetes risk test taking.

Inspection of the correlations between participants' risk level and the dependent measures provides further insight into the beneficial effects of self-affirmation when faced with threatening health information. Whereas among self-affirmed participants, risk level was unrelated to message derogation, and highly related to both intentions and risk test taking, risk level for non-affirmed participants was positively related to message derogation and unrelated to intentions and behaviour. Thus, self-affirmation enabled at-risk individuals to focus on the informational value of the threatening health information instead of its implications for self-integrity. Moreover, by demonstrating the positive impact of self-affirmation on measures that have not been employed in previous studies (i.e. message derogation and screening behaviour), our findings strengthen the case that self-affirmation promotes danger control over fear control among at-risk individuals. In addition, the current study generalises the findings of previous self-affirmation research in the health domain by employing a new health topic.

This study also confirmed the moderating role of risk level (cf Briñol et al., 2007; Harris & Napper, 2005). Among participants not at-risk, self-affirmation decreased intentions to do an online type 2 diabetes risk test and reduced the likelihood of doing such a test. As expected, self-affirmation did not affect our measure of information processing among participants not at-risk, that is, no effect was found on message derogation. This finding is in line with previous research showing that affirming participants prior to reading information that is not particularly threatening to them decreases the degree of information processing, resulting in less favourable attitudes towards the object of evaluation (Briñol et al., 2007). In the present study, participants (indirectly) evaluated doing a type 2 diabetes risk test, by indicating their willingness to do this test and by deciding to do the risk test. Among participants not at-risk, self-affirmation may have increased confidence in their current views, resulting in decreased willingness to do the online risk test. Although the present study did not directly test this account, recent research demonstrated that self-affirmation indeed increases confidence when not particularly threatened (Briñol et al., 2007). This increased confidence may make people not at-risk even feel relatively invulnerable for diseases other than type 2 diabetes (cf Harris & Napper, 2005), thereby impeding adaptive responses to health information about these diseases. In sum, the present findings stress the importance of carefully attending to people's risk level in determining whether self-affirmation will have beneficial effects or not.

Potential limitations and future directions

This study included a relatively 'healthy' sample: none of the participants scored extremely high on risk level. Likewise, in the present sample, participants were not highly defensive as message derogation was rather moderate in general. Even in spite of our relatively 'healthy' sample, higher risk levels were associated with higher levels of message derogation when participants were not self-affirmed. It seems nonetheless important for future studies to test the potential of self-affirmation to promote type 2 diabetes risk test taking among people who are very susceptible to this disease; higher levels of risk may increase defensiveness and this may affect the effectiveness of the self-affirmation.

In the present study, we were eager to test whether self-affirmation could promote type 2 diabetes risk test taking. This focus was motivated by the observation that screening is regarded as an important primary step in the prevention and detection of type 2 diabetes (e.g. International Diabetes Federation, 2006). In this light, it is encouraging that we established that self-affirmation can indeed promote intentions and online risk test taking among at-risk participants. Of course, the ultimate goal of many health promotion campaigns is to change people's unhealthy behaviours (Stroebe, 2000). In the present context, this means convincing people, for instance, to increase their level of physical activity since this greatly reduces one's risk of developing type 2 diabetes or at least reduce its impact. Because effects of experimental manipulations on actual behaviour are difficult to measure, self-reports of behaviour change are often the best we can get. Most studies that used such self-report measures (e.g. cigarette consumption) did not establish effects of self-affirmation on preventive behaviours (Harris et al., 2007; Harris & Napper, 2005; Reed & Aspinwall, 1998). More encouraging, however, are recent findings showing that self-affirmation increased self-reported fruit and vegetable consumption (Epton & Harris, in press). Taken together, this study provides evidence that self-affirmation can motivate

people to take a first step (see also Sherman et al., 2000, Study 2), however, the impact of self-affirmation on actual preventive behaviour change remains an important agenda for future studies.

An alternative explanation for the observed effects of self-affirmation is that the manipulation improved participants' mood and that the positive mood functioned as a resource that participants at-risk used to face up to the threatening information (e.g. Raghunathan & Trope, 2002; Tesser & Cornell, 1991). However, it seems unlikely that a mood explanation accounts for the present findings. Typically, self-affirmation studies in which similar value manipulations have been used do not find effects on mood (e.g. Briñol et al., 2007; Cohen, Aronson, & Steele, 2000; Fein & Spencer, 1997; Schmeichel & Martens, 2005; Sherman et al., 2000). Likewise, in the present study, we found no effect of self-affirmation on negative affect. Nevertheless, both self-affirmation and a positive mood seem to operate as a resource that at-risk individuals use to deal with threatening information, and the effects on persuasion do show a resemblance. Therefore, as suggested by Tesser (2000), future studies may want to examine whether self-affirmation produces affect that people do not experience consciously (e.g. see Koole et al., 1999 for such a study outside the health domain) to gain more insight in how self-affirmation is related to affective processes.

Concluding remarks

Although much information about type 2 diabetes and its life-threatening complications is available, it is often difficult to get this information across to the public. This is especially the case for people at-risk as they are most reluctant to act upon this important information. This study shows that self-affirmation can promote screening behaviour among a target audience. After being self-affirmed, people at-risk derogated threatening type 2 diabetes information less and were more likely to assess their personal risk for developing this disease. This is important, as risk test taking is an important primary step in the prevention and detection of type 2 diabetes. Since screening behaviours are also relevant in detecting other diseases (e.g. breast self-examination for detecting breast cancer), self-affirmation may have a great potential to promote a broad range of screening behaviours.

Notes

1. The study of Reed and Aspinwall (1998) forms an exception regarding intentions to take precautions; self-affirmed participants at-risk reported lower intentions to reduce their caffeine consumption than their non-affirmed counterparts.
2. It should be noted that we do not know what level of risk participants were for these non-targeted outcomes. However, the effect of self-affirmation on risk perception is consistent with the idea that self-affirmation can have an adverse effect when people do not feel particularly threatened.
3. The mean risk-level score is low, indicating a relatively 'healthy' sample. This is not surprising as the mean age in our sample is below 39 years.
4. We also included a measure of negative affect to rule mood out as an alternative explanation for the observed effects. Participants responded to the question 'I felt fearful while reading the information about type 2 diabetes' (1 = strongly disagree, 7 = strongly agree). The analysis using this measure as dependent variable revealed no significant main or interaction effects.

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