

Making plans for healthy diet: The role of motivation and action orientation

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Abstract

The main objective of the present study was to examine the role of motivation and action orientation in forming spontaneous (i.e., without specific instruction or manipulation) implementation intentions for a healthy diet goal. We hypothesized that (1) the adoption of a diet goal would be determined by (either intrinsic or extrinsic) motivation only whereas, (2) forming implementation intentions would be determined by intrinsic motivation and (either low or high) action orientation. These hypotheses were addressed in a sample of 142 normal weight subjects who were concerned about their dietary habits. Primary outcomes were goal intentions and implementation intentions. Our hypothesis regarding the prediction of goal intentions was confirmed whereas results relating to the prediction of implementation intentions demonstrated that intrinsic motivation and low (but not high) action orientation proved significant predictors of intentions to implement a healthy diet goal. These findings suggest that self-regulatory skills as assessed by the concept of action orientation may relate to short-term strategies of initiating behavior change only. Copyright © 2008 John Wiley & Sons, Ltd.

Many people adopt health goals but a significant number fails to succeed in attaining these goals as is, for example, demonstrated in research on new year's resolutions which shows that about 45% of people abandon their goal of losing weight or quit smoking within 1 month (Norcross, Ratzin, & Payne, 1989). An important reason for such self-regulation failure may be that people set goals that are too difficult or that they adopt goals for external reasons such as expectations of what they should do (Koestner, Lekes, Powers, & Chicoine, 2002). Another reason why people may fail in the pursuit of their goals is that they refrain from developing plans for how they will initiate their goal pursuit and how they will ensure their persistence in the face of distractions and obstacles (De Ridder & Kuijer, 2006). Research suggests that furnishing goals with specific action plans (intentions to implement the goal or implementation intentions) can enhance success because it links the desired behaviors with certain situations and allows for automatized responding that is not as volitionally demanding as is continually making decisions about when and how to accomplish one's goals (Gollwitzer, 1993, 1999).

Despite the promise of the concept of action plans for understanding and improving self-regulation, not much is known yet about whether people may spontaneously engage in making action plans and which factors facilitate such plans. The aim of the present study is to examine the role of self-regulatory skills and motivation in making plans for implementing a healthy diet goal. We chose healthy diet as a prototypical case of a health goal that is easily adopted but often abandoned in the early stages (Kumanyika et al., 2000). Nowadays most people are aware of the health risks associated with unhealthy diet and try to change their eating habits (Croll, Neumark-Sztainer, & Story, 2001), however most of the time with limited success (Jeffery et al., 2000). Previous research has demonstrated that people often underestimate the efforts required to

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change their diet or may be too eager in adopting the goal of healthy diet without determining a strategy for goal pursuit (Polivy & Herman, 2002). Examining whether people actually make plans for acting upon their diet goal and which factors contribute to such planning may further insight in frequently reported goal failure in the domain of healthy eating.

A considerable body of research has demonstrated the salutary effects of forming implementation intentions on goal progress (e.g., Gollwitzer, 1999; Sheeran, Webb, & Gollwitzer, 2006). Implementation plans have been shown to improve people's success at health goals such as taking vitamins (Orbell & Sheeran, 2000), eating healthy foods (Verplanken & Faes, 1999), or doing regular breast examinations (Sheeran & Orbell, 2000). Gollwitzer (1999) maintains that effective goal pursuit can be facilitated by the development of specific action plans for how a goal will be attained. These implementation intentions are distinguished from goal intentions (or goals), which specify an endpoint or a desired outcome. The implementation intention specifies the precise when, where, and how of the responses leading to the accomplishment of the goal. The structure of these implementation intentions takes the form of "when situation X arises, I will perform response Y." Furnishing goals with specific implementation intentions can enhance goal progress by linking the desired behaviors with certain situations and thereby making actual behavior less dependent of competing interests. Action initiation becomes swift, efficient, and does not require conscious intent because the direct control of one's behavior has been passed to the environment. Until now, most studies on implementation intentions have been experimental, showing that people who are instructed to make a plan benefit from it as they are more inclined to perform the intended behavior. Few studies have examined whether people make implementation intentions spontaneously (e.g., Brickell, Chatzisarantis, & Pretty, 2006; Orbell & Sheeran, 2000), although Gollwitzer and Brandstätter (1997) reported that about 67% do—suggesting that implementation intentions may be a popular self-regulatory tool that is recognized without the help of specific instruction.

Which factors may contribute to spontaneously engaging in making implementation intentions? The model of action phases (Heckhausen & Gollwitzer, 1987) identifies two major phases of behavior change: The motivational phase during which individuals resolve to change a specific behavior and the volitional phase during which they establish specific actions plans and pursue action in the relevant contexts. This distinction suggests two critical factors that are relevant for making implementation intentions: Motivation for a specific goal and self-regulatory (or volitional) skills to enact that goal. Motivation to achieve a specific goal may play an important role as previous studies have shown that implementation intentions are particularly effective when individuals hold strong goal intentions (Sheeran, Webb, & Gollwitzer, 2005). This suggests that motivation for a goal may also be an important factor in forming implementation intentions. However, it may be relevant to distinguish between types of motivation. Especially in case of healthy diet, individuals may adopt the goal of changing their dietary habits for external reasons such as social pressure (Pelletier, Dion, Slovinec-D'Angelo, & Reid, 2004). Whereas external motivation may be sufficient to adopt a goal, it may fall short in acting upon that goal by making implementation plans. Previous research has demonstrated that individuals with an external motivation take less responsibility and exert less effort toward the achievement of their goal (Ryan, Plant, & O'Malley, 1995), and have lower chances of attaining their goals (Sheldon & Elliott, 1998) than individuals who hold an intrinsic motivation for a goal. It has also been suggested that, even though both external and intrinsic motivation provide strong motivation during the decisional phase of goal setting, external motivation may fade during the preactional (in which planning occurs) and actional (in which plans are carried out) phases (Ryan & Connell, 1989; Sheldon & Elliott, 1998). These suggestions have been corroborated by empirical studies showing that individuals with an external motivation for dietary change fail more often to reach their intended dietary or weight change outcomes for reasons related to not planning to act upon their intentions (Patterson, Kristal, & White, 1996; Williams, Grow, Freedman, Ryan, & Deci, 1996). Therefore, it is reasonable to assume that only individuals with an intrinsic motivation for a healthy diet goal will proceed to the volitional stage of behavior change and actually make implementation intentions whereas individuals with an external motivation are less likely to make such plans.

A second factor that may be important in forming implementation intentions is whether individuals possess the self-regulatory skills that permit the execution of goals by facilitating the initiation of intended action. One could be highly motivated to change one's eating behavior, however, the ability to do so would be critically dependent on skills such as being able to plan specific behavior change strategies and implement them in relevant contexts. In his theory of action control, Kuhl (1992) posits that individuals differ with respect to these self-regulatory skills. Individuals who are high in "action orientation" have a stronger ability to initiate new activities that are not externally or automatically controlled (Kuhl, 1992). Accordingly, such individuals are more likely to be able to initiate goal-directed actions in the face of competing habitual tendencies. In contrast, individuals who are low in action orientation (in the vocabulary of Kuhl

labeled as “state orientation”) focus on their present state and thereby are less likely to consider possible action alternatives to reach their goal. The action control scale (ACS; Kuhl, 1994) was developed to assess individual differences in the ability to initiate goal-related behavior. The key characteristics associated with the initiative component of volition are assessed with the decision-related subscale of action orientation (AOD; Kuhl, 1994), which is believed to play a crucial role in activating self-regulatory processes such as getting started on a difficult task. Individuals who report low AOD have been shown to have more difficulties in regulating their eating behavior (Fuhrmann & Kuhl, 1998; Palfai, 2002). Previous research has demonstrated that especially individuals with poor self-regulatory skills benefit from instructions to make implementation plans (Brandstätter, Lengfelder, & Gollwitzer, 2001). This suggests that individuals who are low in action orientation may be less able or less willing to engage in plan making spontaneously whereas high action orientation would contribute to the formation of implementation intentions (Bagozzi, Baumgartner, & Yi, 1992; Palfai, 2002; Van Hooft, Born, Taris, Van der Flier, & Blonk, 2005).

However, direct tests of the assumption that individuals high in action orientation are more inclined to enact their (health-related) goals by making implementation intentions are scarce and typically show inconsistent results, varying from a (weak) link between action orientation and implementation intentions (Van Hooft et al., 2005) to no effect of action orientation on the relation between intention and action (Bagozzi et al., 1992). From a theoretical point of view, both types of results make sense. It may be that the greater tendency for goal-directed action found in individuals high in action orientation is reflected by spontaneous making of implementation intentions. Alternatively, it may be that action-oriented individuals are not in need of such plans because their higher inclination to enact their goals is sufficient for the initiation of goal-directed action whereas individuals low in action orientation may make plans in an attempt to compensate for their low skills of translating intentions into action.

To examine the role of motivation and self-regulatory skills in forming implementation plans for healthy diet we make a distinction between the motivational phase of goal setting and the volitional phase of implementation plans, which allows for finding out to what extent the strength of goal intentions determines engagement in making plans for implementing a goal (*cf.* Sheeran et al., 2005). We hypothesize that either intrinsic or extrinsic motivation is the most important factor in the motivational phase whereas self-regulatory skills are not relevant during this stage. With regard to making implementation intentions, we hypothesize that only individuals with an intrinsic motivation for their goal will engage in making plans to act upon their goal. We make no specific predictions for the role of action orientation on the spontaneous formation of implementation intentions as theoretically both low and high action orientation may result in making plans for enacting one’s goals. These hypotheses were addressed in a field study amongst undergraduate students who were concerned about their eating habits.

METHOD

Sample and Procedure

Undergraduates ($N = 153$) who were concerned about their unhealthy eating habits were recruited to participate in a survey study that was presented as examining the role of lifestyle factors in the adoption of healthy eating habits. Participants reported high scores on an item that asked whether they were concerned about their eating habits ($M = 4.01$, $SD = 1.70$ on a seven-point scale; range 2–7 with 76% of the participants scoring ≥ 4), indicating that we had succeeded in recruiting the intended sample. Participants received course credit for participation. Six participants who were underweight (body mass index (BMI) (weight/height \times height) < 18) were excluded as were five participants who were overweight (BMI > 25). Mean BMI of the final sample ($N = 142$) was 21.14 ($SD = 1.76$); 88% of the participants were female and their mean age was 19.8 years ($SD = 1.6$).

Measures

Participants first responded to a number of questions relating to their personal goal of controlling their food intake (one item: “Are you intending to control your diet?” on a seven-point scale with 1 = “absolutely not” to 7 = “definitely”) and

their plans relating to the implementation of that goal. The latter scale consisted of three items (on a seven-point scale with the same format as the goal item), derived from Gollwitzer's (1993) conceptualization of implementation plans, and addressed three aspects of plans, that is whether participants had an idea about when, where, and how they would change their diet ("I have a specific plan of when/where/how I will improve my diet"). Similar operationalizations of spontaneous implementation intentions have been used in previous studies (Brickell et al., 2006; Sniehotta, Schwarzer, Scholz, & Schüz, 2005; Van Hooft et al., 2005; Ziegelmann, Luszczynska, Lippke, & Schwarzer, 2007). The reliability of the implementation intention scale was excellent (Cronbach's $\alpha = .92$). Participants then responded to a number of questionnaires relating to the predictor variables under study. Motivation for healthy diet was measured by the regulation of eating behavior scale (REBS; Pelletier et al., 2004), which is derived from Deci and Ryan's (1985) self-determination theory and distinguishes between six types of motivation, varying from amotivation to intrinsic motivation. In the present study we used four scales (four items each with a seven-point format) to compute two general scales of intrinsic (i.e., "intrinsic motivation" and "integrated regulation;" e.g., "it is fun to create meals that are good for my health") and extrinsic motivation (i.e., "introjected regulation" and "external regulation;" e.g., "other people close to me insist that I eat healthy") for healthy diet (Cronbach's α 's .74 and .73, respectively). Self-regulatory skills were measured using the decision-related subscale of the ACS (AOD; Kuhl, 1994). The AOD subscale assesses individual differences in the ability to enact behavioral intentions and consists of 12 forced-choice items with one response reflecting decision-related state orientation and the other reflecting AOD. For example, in response to the item "when I am facing a big project that has to be done" participants could choose the state orientation option ("I often spend too long thinking about where I should begin" or the action orientation alternative ("I do not have any problems getting started"). Responses to the 12 items are summed (scale range of 12–24), with high scores indicating action orientation. The scale was found to have satisfactory internal reliability (Cronbach's α .74).

As a control variable we included a measure of actual eating habits, assessed by an index of the frequency of consumption of eight unhealthy foods (e.g., crisps, fries, chocolate, candy, ice cream) scored on a 1–6 scale (1 = never to 6 = several times a day; Cronbach's α .65), which was derived from the food frequency scale (Cartwright, Wardle, Steggle, Simon, Groker, & Jarvis, 2003). High scores reflect unhealthy eating habits (scale range of 8–48).

RESULTS

Table 1 present descriptive statistics for the variables under study. Not surprisingly, participants reported relatively unhealthy eating habits and were highly motivated (either intrinsically or extrinsically) for changing their diet. They also exhibited relatively high levels of self-regulatory skills (high in action orientation) and most of them reported strong goal intentions but far lower scores of implementations intentions for changing their diet. Several correlations are noteworthy. First, both intrinsic and extrinsic motivation were significantly associated with goal intentions and implementation intentions. As expected, the associations of motivation with goal intentions were stronger than those with implementation intentions. Second, and also as expected, self-regulatory skills were not associated with goal intentions but they were with

Table 1. Means, standard deviations, and intercorrelations for the variables under study ($n = 142$)

	1	2	3	4	5	6	7	8
1 Gender ^a	—	—						
2 BMI	.03	—						
3 Unhealthy eating habits	.07	.16*	—					
4 Intrinsic motivation	.20*	.05	.22**	—				
5 Extrinsic motivation	.16	.09	.05	.27***	—			
6 Action orientation	.02	-.12	-.02	.08	-.05	—		
7 Goal intention	.22**	.18*	.36***	.36***	.41***	.02	—	
8 Implementation intention	.14	.29***	.08	.28***	.29***	-.23**	.44***	—
<i>M</i>	—	21.14	34.35	4.83	3.76	19.21	5.44	3.12
<i>SD</i>	—	1.76	4.53	1.01	1.03	2.77	1.31	1.90

^a1 = male (12%), 2 = female (88%).

* $p < .05$; ** $p < .01$; *** $p < .001$.

implementation intentions, albeit in a different direction from what we predicted and suggesting that individuals with poor self-regulatory skills are more inclined to make plans for acting upon their goals.

Motivation and Self-regulatory Skills in Goal Intentions and Implementation Intentions

We performed two series of multiple hierarchical regression analyses to examine the effects of motivation and self-regulatory skills on goal intentions and implementations intentions, respectively. First, gender, BMI, and eating habits were tested for inclusion as control variables. All variables were associated with the outcome variables as well as with some of the other predictor variables. For that reason and because we hypothesized that variables relating to actual eating practices may be relevant in whether people adopt goals and make plans for acting upon them, we included them as control variables. In the second step, intrinsic/extrinsic motivation and action orientation were entered in the equation.

Table 2 presents the results of analyses for goal intentions and implementation intentions. With regard to the dependent variable of goal intention, none of the control variables except eating habits proved to be a significant predictor of goal intentions to change dietary habits, indicating that individuals who are aware of their unhealthy eating practices have a stronger inclination to change their diet. As expected, both intrinsic and extrinsic motivation for dietary change contributed significantly to the prediction of goal intentions, whereas self-regulatory skills were irrelevant.

With regard to implementation intentions, only one of the control variables (BMI) proved significant, indicating that individuals whose unhealthy eating practices had translated in higher body weight were more inclined to make plans for changing their diet. In addition, the strength of goal intentions also was predictive of the inclination to make plans for dietary change. As expected, intrinsic but not extrinsic motivation proved a significant predictor of implementation intentions, suggesting that individuals who have a self-chosen commitment to their goal have a higher chance of moving to the next stage of planning behavioral change. It also appeared that low (and not high) levels of action orientation were a significant predictor of spontaneous making of implementation intentions. These results thus demonstrate that motivational factors play a role in the making of plans for implementing a goal insofar a self-determined motivation for changing dietary habits is involved. They also demonstrate that individuals who possess good self-regulatory skills (individuals high in action orientation) do not necessarily engage in making implementation plans or, put differently, that individuals with poor self-regulatory skills (low in action orientation) are more inclined to make plans for initiating goal pursuit.

DISCUSSION

Previous studies on implementation intentions targeting healthy diet have shown that if-then plans are a powerful device to initiate goal-directed action in the domain of eating behavior (Armitage, 2004; Verplanken & Faes, 1999). The present

Table 2. Multiple regression of goal intention and implementation intention on intrinsic/extrinsic motivation and action orientation ($n = 142$)

	Goal intention				Implementation intention			
	β_{in}	β_{final}	ΔR^2	ΔF	β_{in}	β_{final}	ΔR^2	ΔF
Step 1			19%	10.52***			25%	11.62***
Gender	.15	.11			.09	.05		
BMI	.11	.10			.25**	.21**		
Unhealthy eating habits	.34***	.28***			-.13	-.12		
Goal intention	—	—			.41***	.36***		
Step 2			16%	10.84***			7%	4.66**
Intrinsic motivation		.19*				.16*		
Extrinsic motivation		.32***				.07		
Action orientation		.03				-.22**		
Total adjusted R^2		32%					29%	

* $p < .05$; ** $p < .01$; *** $p < .001$.

study investigated whether individuals with an interest in changing their dietary habits may engage spontaneously (i.e., without specific instruction or manipulation) in making implementation intentions and to what extent such plans are affected by motivation and self-regulatory skills. Adopting a two-stage view of the process of behavioral change we hypothesized that during the stage of goal setting only motivational factors would be important whereas during the volitional stage of making plans both intrinsic motivation and self-regulatory skills would be relevant. Our expectations regarding the factors involved in the motivational stage of goal setting were confirmed, whereas the results regarding the factors involved in the making of implementation plans demonstrated that intrinsic motivation and low (but not high) action orientation contributed to the formation of implementation intentions.

Motivation and Goal Intentions

With regard to the adoption of goals, our findings show that motivation indeed is a more important factor than self-regulatory skills in determining the strength of goal intentions for changing diet. Whether individuals possess skills that relate to translating intentions into action is, not surprisingly, not associated with the strength of the goal of changing one's diet. Moreover, as both intrinsic and extrinsic motivation proved significant predictors of goal intentions, it appears that during the initial stage of goal setting people may adopt goals for various reasons, either because they have a self-determined interest in changing their behavior or because they do what (they believe) is expected of them. It must be noted, however, that extrinsic motivation for changing one's diet proved a stronger predictor than intrinsic motivation (or any other variable for that matter), suggesting that the adoption of a healthy diet goal may be more influenced by external pressure than by a self-chosen commitment. This may not be without risk as striving for unwanted goals may not only increase the risk of failure but also contribute to feelings of alienation or depression (Baumann, Kaschel, & Kuhl, 2005).

Motivation and Implementation Intentions

With regard to making implementation intentions, our findings provide evidence for the role of intrinsic motivation during the volitional stage of goal pursuit. As expected, intrinsic, but not extrinsic, motivation contributed to making plans for initiating the achievement of goals, suggesting that a self-determined motivation continues to determine goal progress once a goal has been adopted. This is in line with a recent field experiment amongst cardiac patients who had the intention to eat two extra portions of fruit or vegetables per day, and showed that the experimental group who received instructions to formulate implementation intentions did not actually eat more fruits or vegetables compared to the control group (Jackson et al., 2005). The authors explain this finding from the extremely high motivation in this group of patients (as expressed in intention scores > 5.5 on a 1–7-point scale) and argue that motivated individuals may not need instructions for formulating implementation intentions because their motivation helps them to enact their goal by making spontaneous plans for implementing their goal.

The role of intrinsic motivation in making plans for implementing a healthy diet goal is particularly of interest because we controlled for the strength of goal intentions in our study. Previous research has demonstrated that implementation intentions especially benefit goal achievement when if-then plans are underpinned by strong goal intentions (Sheeran et al., 2005). Our study specifies this finding and shows that strong goal intentions that are accompanied by intrinsic motivation might be even more effective as strong goal intentions by themselves can either reflect intrinsic or extrinsic motivation for a goal.

Self-regulatory Skills and Implementation Intentions

Our hypothesis regarding the role of self-regulatory skills in forming implementations stated that either low or high action orientation might facilitate the formation of implementation intentions as neither theory nor empirical evidence provides clear suggestions about the mechanisms of how action orientation relates to goal directed behavior. Our results provide clear evidence for the alternative hypothesis that individuals with low action orientation made more plans for initiating goal pursuit than those who reported to be highly action oriented. Put differently, high levels of action orientation did not

facilitate but even inhibited the making of implementation intentions. As suggested in the introduction, this finding may imply that individuals with high action orientation do not need plans to act upon their goals because their self-regulatory skills translate directly into goal-directed behavior—although our study does not allow for an explicit test of this assumption as we did not include measures of goal-directed strategies or changes in actual eating behaviors.

An alternative interpretation for the finding that individuals with high action orientation engaged less frequently in making implementation intentions relates to the nature of the plans we examined. The concept of implementation intentions by definition refers to plans for *initiating* goal pursuit. It may be that individuals with low action orientation, because of their focus on the present, are especially interested in strategies for immediate action without realizing the consequences in terms of efforts that are required for sustained action. Previous research has demonstrated that individuals low in action orientation may have a tendency to commit themselves to goals when they think this is expected from them, even when such goals are unrealistic (Brunstein, 2001). As healthy diet goals are in many cases not self-chosen but are pursued for reasons of complying to recommendations made by others (Fuhrmann & Kuhl, 1998), it may be that especially individuals with low action orientation are eager to act immediately upon their diet goals. It would be interesting to examine whether individuals with high action orientation would be more inclined to make a different type of plans, relating to the long-term strategy of staying on track once they have made some initial attempts for goal pursuit.¹ There is now increasing evidence that not so much the initiation of behavior is a difficult self-regulatory task, but maintaining that behavior for an extended period of time during which all kinds of frustrations and obstacles may interfere with prolonged goal-directed action (Rothman, 2000). It may be that dealing with difficulties during these later stages of goal pursuit requires a different type of action plan that specifies in what way individuals will cope with threats to their goal (so-called “coping plans;” Sniehotta et al., 2005). It makes sense that action-oriented individuals, because of their ability to make a link between their present state and their intended state, would be more capable of making that kind of plans. Recent studies have demonstrated that self-regulatory skills that relate to anticipating future obstacles and finding ways to deal with them are the most important factor in behavioral maintenance (Thoolen, De Ridder, Bensing, Gorter, & Rutten, 2008). Future studies should examine to what extent the making of coping plans is related to high levels of action orientation.

This study has several limitations that need to be addressed. First, we recruited a student sample of young people who may have not been very interested in changing their dietary practices even despite concerns about their eating habits. However, like many other European students (Wardle et al., 1997) the students in our sample exhibited rather unhealthy food practices. In addition, although we included only normal weight students about 7% was at the risk for developing overweight as they reported their BMI > 24. These figures demonstrate that even in a student sample changing dietary habits is a relevant problem. A second limitation relates to the cross-sectional design of our study which prevented us from making any causal interpretations about the nature of the relationship between motivation and self-regulatory skills on the one hand and goal intentions and implementation intentions on the other hand. Replication of our findings in either a prospective or an experimental design that allows for such causal interpretations is thus required. A third limitation lies in the way we measured implementation intentions. Although we adopted a procedure that has been employed in previous studies (Brickell et al., 2006; Sniehotta et al., 2005; Van Hooft et al., 2005; Ziegelmann et al., 2007)—specifically addressing when, where, and how components of implementing goals—the items we used do not rule out that elements of goal intentions were incorporated instead of a pure assessment of implementation intentions.² The measurement of implementation intentions by self-report is an issue that requires further consideration in future studies and should try to address the if-then structure of implementation intentions in a more straightforward manner. Notwithstanding these limitations, our study is one of the first that has examined the factors that determine whether or not people who are concerned about their dietary habits make plans for initiating goal pursuit. An intrinsic motivation for changing eating habits and a low level of action orientation, in combination with higher BMI and strong goal intentions, proved to be the

¹As a preliminary test for this assumption, we re-examined our data making a distinction between the “when/where” aspects of implementation intentions referring to plans that specify cues for immediate action and the “how” aspect referring to strategic considerations of pursuing one’s goal. This distinction allowed us to determine whether low action-oriented individuals with an extrinsic motivation would formulate their plans more in terms of “where/when” and high action-oriented individuals with an intrinsic motivation in terms of “how.” We indeed found a positive relationship between extrinsic motivation and the where/when components of implementation intentions (referring to the initiation of goal-directed behavior) in low action-oriented participants ($r(77) = .27^*$) but not in high action-oriented participants ($r(65) = .23, p = .067$). We also found a stronger relationship between the “how” component of implementation intentions in individuals reporting high action orientation ($r(65) = .31^{**}$) than in those reporting low action orientation ($r(77) = .22, p = .057$). We thank one of the reviewers for providing this suggestion as a preliminary test for our interpretation of the data.

²We thank one of the reviewers for his/her comments regarding this issue.

most important predictors of implementation intentions, suggesting that—insofar the role of low action orientation is concerned—spontaneous plans for initiating behavior change are particularly popular amongst individuals who have a tendency to act impulsively upon their goals. It remains to be determined to what extent these implementation intentions made by state-oriented individuals benefit them in attaining their dietary goals, as we do not know to what extent they are helpful in staying on track in achieving the challenging goal of dietary change.

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