Why making plans to study for your exams could be harmful:

The relationship between making aversive plans, agency and wellbeing, and the moderating role of perfectionism

Shannen T.H. Pieper

Faculty of Behavioral and Social Sciences, Utrecht University, Utrecht.

Social, Health and Organizational Psychology

Dr. Caroline Schlinkert

July 14, 2020

Words: 6796

Contact: s.t.h.pieper@students.uu.nl, c.schlinkert@uu.nl

This document may be made publicly accessible.

Abstract

When you have a lot of tasks to do, planning them out seems like a very logical decision. This paper is focused on the possible negative effects of making aversive plans. The study is focused on exploring the relationship between making aversive plans, agency, and wellbeing, and the moderating role of perfectionism. 212 participants were recruited for our study. Our hypothesis that making aversive plans had a negative effect on wellbeing was not supported. However, we did find that people that thought of a fun plan, had higher feelings of agency than those who thought of an aversive plan. We also found significant results for the effect of agency on wellbeing. Higher feelings of agency predicted a more positive body image and better psychological wellbeing, as well as less psychosomatic symptoms and lower life stress. Lastly, we found no support for a moderating role of perfectionism.

Keywords: implementation intentions, agency, aversive plans, wellbeing, perfectionism, body image, psychological wellbeing, psychosomatic symptoms, life stress

Introduction

Imagine being a university student. It is midterms week. Next to having to study for three exams, you also have to prepare a poster presentation, and finish up writing an essay. On top of that, you set the bar very high for yourself, making it an extremely stressful week. While you would love to just leave your responsibilities behind, these are things you know you *must* do. So why does it sometimes seem so hard to get started?

Wieber and Gollwizter (2010) state that one of the main reasons for individuals to not act on goals is that a person must overcome an initial reluctance. Initial reluctance results from a trade-off between attractive long-term consequences and less attractive short-term consequences. For example, I would much rather go out with my friends than spending the night studying for my exams. These trade-offs can be found in many areas of day-to-day life (Wieber & Gollwitzer, 2010). Earlier research states that aversive tasks are a predictor of procrastination (Van Eerde, 2003; Steel; 2007). Nevertheless, you know that you must study to pass those exams. To assure that you will complete all of your tasks, you start by making plans.

One of the most popular tools to make successful plans are implementation intentions. Forming implementation intentions is a self-regulation technique used to increase goal attainment by using the format ‘’if situation Y is encountered, then I will perform goal-directed response Z!’’ (Gollwitzer, 1999). The effectiveness of this method has been proven throughout different fields of study (Gollwitzer & Sheeran, 2006; Adriaanse, Vinkers, De Ridder, Hox, & De Wit, 2011; Sheeran & Orbell, 2000). Implementation intentions have for instance been shown to help people maintain a healthy diet, exercise more, commit to testicular or breast self-examinations, and can also be used in a wide array of life domains, like the consumer world, academic achievement, environmental protection, and goals related to showing prosocial

behaviours (Gollwitzer & Sheeran, 2006; Gollwitzer, 2014). Consequently, it might seem very logical to use implementation intentions especially for goals that you must do, but that you are not looking forward to.

However, a study by Smith, Ntoumanis, & Duda (2010) found that making implementation intentions for plans with controlled motive goals resulted in lower well-being rather than having those motives alone. Controlled motive goals were defined as goals that participants pursued due to external reasons (e.g. because they would feel ashamed, guilty or anxious if they didn't, or because someone else wanted them to). In other words, for people whose goals are regulated by guilt, shame, or pride, or by the influence of an external factor, planning may result in worse well-being (Smith, Ntoumanis, & Duda, 2010). Miquelon and Vallerand (2008) found similar results such that pursuing controlled motive goals lowered well-being. The effects of autonomy motive goals on well-being has also been studied. Autonomy motive goals were defined as goals that participants pursued because they are fun and enjoyable, or goals that are personally believed to be important. No negative effects of implementation intentions on well-being were found for autonomous motives (Miquelon & Vallerand, 2008; Smith et al., 2010). Thus, autonomy seems to be an important factor in determining why planning can have negative effects on well-being.

A factor closely related to autonomy is agency. Whereas autonomy is defined as ''the quality or state of being self-governing'' (Verhagen, 2000), agency refers to ''the experience of being in control both of one's own actions and, through them, of events in the external world'' (Haggard & Tsakiris, 2009, p. 242). These two concepts are often used interchangeably (Beyers, Goossens, Vansant, & Moors, 2003; Huang & Benson, 2013). We experience agency to the extent that we control voluntary actions. Wegner (2002) discovered that agency can be inferred

based on cognitions prior to action. This means that if I decide to go to the library on Wednesday to study for my exams, a sense of agency will arise if that is the end result. Cognitive representations of outcomes that are available are compared to the actual outcome, and a match between the two leads to a sense of agency (Blakemore, Wolpert, & Frith, 2002; Van der Weiden, Ruys, & Aarts, 2012). Thus, one may expect that agency increases when an action is planned ahead. However, Damen, Van Baaren, Brass, Aarts, & Dijksterhuis (2015) studied the extent of sense of agency in participants that had to form implementation intentions versus those that did not. Unexpectedly, their results show that participants that were required to plan their actions actually experienced less agency than those who did not plan their actions. Perhaps this decrease in feelings of agency is what causes making plans for aversive, yet obligatory, tasks such as studying for exams or finishing up an essay to not be as successful as the literature suggests.

However, this is probably not the case for everyone, because not everyone might be equally vulnerable. Indeed, Koole and Schlinkert (in prep) note that the negative effects of implementation intentions are especially found among people with a lower ability to regulate stress (see also Kuhl, 1981). Perfectionism is marked by excessively high personal standards of performance (Frost, Marten, Lahart, & Rosenblate, 1990). Perfectionistic people have been found to evaluate themselves very strictly, focus on the negative aspects of performance, and experience little satisfaction (Hewitt, Flett, & Ediger, 1996). Adding to this, perfectionistic people often equate perfect performance with self-worth. This means that performances that are not perfect are interpreted as failures. As such, perfectionistic people experience lower wellbeing, because these behaviors and cognitions can generate stress (Hewitt et al., 1996).

The purpose of the present study was therefore to examine how aversive implementation intention-like planning influences well-being and whether this relationship is mediated by sense of agency. We were also interested in determining whether having traits of perfectionism has additional negative effects, because perfectionistic people are more prone to lowered feelings of wellbeing. The results of this study may benefit health interventions that make use of implementation intention, because it will give more insights into the boundary conditions of this intervention. Moreover, this study will contribute to existing literature on implementation intentions as it is, as very little attention is being brought to the negative effects of implementation intentions.

Research question and hypotheses

The aim of this study was to examine whether aversive implementation intention-like planning (aversive planning), which is defined as ‘’something that you are not looking forward to at all, an activity that you will perform reluctantly and that you would rather not begin with at all’’, lowers subjective experiences of wellbeing, and whether this relationship is mediated by feelings of personal agency. We assumed that this is especially the case for people who are less able to deal with stress. Aversive planning can induce stress by making people implement goals that are not completely integrated (Koole & Schlinkert, in press). We therefore examine whether perfectionism moderates the relationship between aversive planning and agency. Thus, the hypotheses are as follows.

First, we expected that aversive planning has a negative effect on wellbeing (hypothesis 1). Second, we expected that aversive planning has a negative effect on personal feelings of agency (hypothesis 2). Third, we expected that personal feelings of agency have a positive

relationship with wellbeing (hypothesis 3). This means that when one has low feelings of agency, one will also experience lower wellbeing. Fourth and last, we expected that perfectionism has a positive effect on the relationship between aversive planning and agency (hypothesis 4). This means that when for example aversive planning leads to lower feelings of agency, this effect is even stronger if one has high traits of perfectionism.

An overview of the hypotheses can be found in Figure 1.

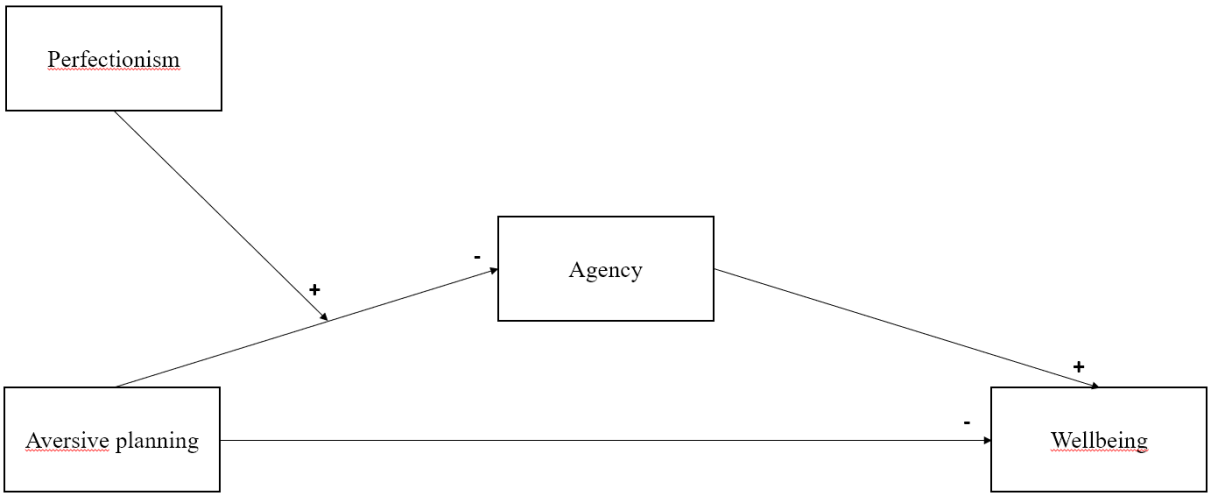


Figure 1. Hypothesized moderated mediation model.

Methods

Participants recruitment, sample determination and study design

Participants were recruited by promoting our study through Facebook, flyers, and personal contacts. This is considered to be a convenience sample (Saunders, Lewis, & Thornhill, 2012). Participants were primarily students of Utrecht University. We expected participants to be between 18 and 25 years old. Since most of the students in our study population are females, we expected more female participants than male participants.

At this moment, there is insufficient empirical evidence to determine a specific expected effect size. An estimated effect size of 0.07 was used in the calculations. This is in between a small and medium effect size (Cohen, 1988). Power-analysis (G*Power) for a linear multiple regression (fixed model, R^2 deviation from zero) indicates that a minimum sample size of 250 would be required with a power of 0.95, an alpha-level of 0.05 and three groups (see Appendix B for a screenshot). To ensure the highest probability of avoiding a Type II error, we aimed to recruit 250 participants. Ultimately, we recruited 257 participants, and included 212 participants in the analysis.

A 3 between x 2 between design was used with 3 experimental conditions (aversive plan IIs, aversive plan classic, fun plan classic) and 2 individual conditions (low perfectionism or high perfectionism). The dependent variables are wellbeing and agency.

Materials

For the planning exercise, there were three different sets of instructions. For the aversive plan with intentions condition, participants were asked to think of something they planned to do in the next two weeks, which they were not looking forward to. An activity that they would perform reluctantly, which they would have rather not started at all. They were then asked to write down their intended plan, as well as where, when (which day, what time) and how (which steps they have to take) they expected themselves to carry out their intended plan.

For the aversive plan without intentions condition, participants were asked to think of an activity that they planned to do within 2 weeks, which they were not looking forward to. An activity that they would perform reluctantly, which they would have rather not started with.

For the fun plan control condition, participants were asked to think of an activity that they planned to do within 2 weeks, which they were looking forward to. An activity that they would perform gladly, which they would have rather started with as soon as possible.

Agency was measured using a self-developed questionnaire. It consisted of 5 items. The items were as follows: ‘’When I think of this plan, I feel that others around me determine whether I will attain my goal or not’’, ‘’When I think of this plan, I feel like my actions are unpredictable’’’, ‘’When I think of this plan, I decide when I will start’’, ‘’When I think of this plan, I am responsible for the results’’, and ‘’When I think of this plan, I need the support of others to be successful’’. Answers were given on a 5-point Likert scale ranging from 1 (Disagree) to 5 (Agree). High scores on the agency scale indicate a high feeling of agency, while low scores indicate little to no feelings of agency. Cronbach’s α was determined to be .589.

Well-being was measured using the following questionnaires:

The WHO-5 (World Health Organization: Regional Office for Europe, 1998) was used to measure psychological well-being. It consisted of 5 items measuring positive mood (‘’I have felt cheerful and in good spirits’’), vitality (‘’I have felt active and vigorous’’), and general interest (‘’My daily life has been filled with things that interest me’’) on a 6-point Likert scale from 0 (At no time) to 5 (All of the time). This scale has shown high clinimetric validity, which refers to the degree to which psychological well-being is measured by this instrument. It is thus a sensitive and specific screening tool that can be applied across study fields (Topp, Østrgaard, Søndergaard, & Bech, 2015). Cronbach’s α was determined to be .824.

One subscale of the Symptom Checklist-90-Revised (SCL-90-R) was used, namely the somatization subscale which consists of 14 items (Derogatis, Lipman, & Covi, 1975). An

example item is: ‘’Headache’’. Items were answered on a 5-point Likert scale from 0 (Not at all) to 4 (Extremely). Cronbach’s α was determined to be 0.87.

Perceived stress was measured using the Self-regulation Inventory (SSI-K3; Kuhl & Fuhrmann, 2004). This scale measured perceived stress in life circumstances with 8 items regarding current demands (‘’My current life circumstances are very tough’’) and threats (‘’I must deal with big changes in my life’’). Answers were given on a 4-point scale from 1 (Not at all true) to 5 (Completely true). Cronbach’s α was determined to be .886.

The Body Image questionnaire (BIQ-20, English version of the FKB-20 by Clement & Löwe, 1996) was used to measure two dimensions of the body image. Both subscales consist of 10 items. The first subscale was vital body dynamics (VBD) and the second subscale was rejecting body evaluation (RBE). An example item of VBD was: ‘’I dare to take on physical challenges’’. An example item of RBE was: ‘’I sometimes feel disgusted by myself’’. Questions were answered on a 5-point Likert scale from 1 (Strongly disagree) to 5 (Strongly agree). Cronbach’s α ranged from .825 for VBD and .720 for RBE.

Perfectionism was measured using the Multidimensional Perfectionism Scale-Frost (MPS-F) (Frost, Marten, Lahart, & Rosenblate, 1990). This scale consisted of 6 subscales: concern over mistakes, doubts about actions, personal standards, parental expectations, parental criticism, and organization. An example item was: ‘’My parents expected perfection from me’’. Questions were answered on a 5-point Likert scale from 1 (Strongly disagree) to 5 (Strongly agree). Cronbach’s α was determined to be .918.

Mood was measured using the Profile of Mood States (POMS) scale (McNair, Lorr, & Droppleman, 1971). This scale consisted of 32 words that describe moods or feelings. An example item was ‘’Helpless’’. Participants were asked to rate how they feel at the moment on a

5-point Likert scale ranging from 1 (Absolutely not) to 5 (Absolutely). Cronbach's α ranged between .846 and .974. We used the POMS to do a mood check, which means that we investigated whether mood before and after the planning exercise was significantly different throughout the three experimental groups.

Participants were also asked several demographic questions. These included age, gender, educational level, history of physical and/or mental problems, height, weight, and whether they were a student or not.

Lastly, participants were asked how they found our survey, and how they would rate their experience with filling out the questionnaire.

Procedure

Participants were assessed online and face to face. They were randomly assigned to one of the three experimental conditions. Participants first read information about the experiment and were asked to provide active informed consent. Participants were required to actively click on an ''I agree'' button before starting the experiment. First, we asked participants to fill in the MPS-F and the POMS (Frost, Marten, Lahart, & Rosenblate, 1990; McNair, Lorr, & Droppleman, 1971). The participants were then asked to do the planning exercise.

After completing the exercise, participants had to fill in the agency scale, the well-being scales and the second POMS (World Health Organization: Regional Office for Europe, 1998; Derogatis, Lipman, & Covi, 1975; Kuhl & Fuhrmann, 2004; Clement & Löwe, 1996; McNair, Lorr, & Droppleman, 1971). The study was programmed in Dutch in Qualtrics Survey Software. Students of Utrecht University could receive 0.75 participant hours as compensation. Participants

that were not students of Utrecht University could join a giveaway of five gift sets. The complete study took about 30 to 45 minutes to complete.

Statistical analysis

All hypotheses were tested using IBM SPSS Statistics (Version 25.0). It was firstly expected that aversive planning has a negative effect on wellbeing. To test hypothesis 1, a multivariate analysis of variance (MANOVA) was used to examine the effect of experimental group on body image, psychological wellbeing, somatic symptoms and life stress. We decided to run a MANOVA instead of regressions, because there are multiple continuous dependent variables.

Second, it was expected that aversive planning has a negative effect on personal feelings of agency. To test hypothesis 2, we used a factorial ANOVA to compare feelings of agency between ‘aversive plan without planning’, ‘fun plan’ and ‘aversive plan with planning’ conditions.

Third, it was expected that personal feelings of agency have a positive relationship with wellbeing. To test hypothesis 3, we used multiple linear regressions to examine the effect of personal feelings of agency on wellbeing (N = 212).

Lastly, it was expected that perfectionism has a positive effect on the relationship between aversive planning and agency and thus acts as a moderator. To test hypothesis 4, a factorial analysis was used to examine the effect of experimental group on personal feelings of agency, moderated by traits of perfectionism. We were planning on testing the full moderated

mediation model using model 7 of PROCESS depending on whether we found significant effects.

Results

Manipulation check

We conducted a one-way ANOVA to compare the feeling of being obligated to complete the task between ‘aversive plan without planning’, ‘fun plan’ and ‘aversive plan with planning’ conditions. There was a statistically significant difference between groups ($F(2, 212) = 20.335$, $p > .001$. Pairwise comparisons showed that people in the ‘aversive plan without planning’ condition felt significantly more obligated to complete their task than people in the ‘fun plan’ condition ($p < .001$). People in the ‘aversive plan without planning’ condition felt slightly more obligated to complete their task than people in the ‘aversive condition with planning’ condition ($p = .029$). Lastly, people in the ‘fun plan’ condition felt significantly less obligated to complete the task than people in the ‘aversive plan with planning’’ condition ($p < .001$).

Mood check

We conducted two one-way ANOVAs to compare mood scores on the POMS between the experimental conditions. Results on the first POMS that was conducted before the manipulation showed no significant differences $F(50, 161) = .869$, $p = .717$. The second POMS that was conducted after the manipulation also showed no significant differences $F(49, 162) = 1.123$, $p = .291$. This means that there was no difference in mood levels between the experimental conditions before, as well as after the planning exercise.

Reliability analyses

We conducted a Cronbach’s Alpha reliability analysis for every scale that was used in the study. These reliability statistics can be found in Table 1.

Table 1. Reliability statistics

Section	Cronbach's Alpha	N of items
POMS Tension at T1	.874	6
POMS Tension at T2	.907	6
POMS Depression at T1	.913	8
POMS Depression at T2	.931	8
POMS Anger at T1	.859	8
POMS Anger at T2	.974	8
POMS Fatigue at T1	.909	6
POMS Fatigue at T2	.929	6
POMS Vigor at T1	.847	5
POMS Vigor at T2	.846	5
POMS Total at T1	.891	32
POMS Total at T2	.899	32
SSI-K3	.886	8
MPS	.918	29
WHO	.824	5
SCL-90-R	.870	14
FKB-20	.898	20
Agency	.589	5

All but one scale showed adequate results for research purposes. The Agency scale showed a Cronbach's alpha of .589, which is lower than the .7 cut-off for being acceptable for research purposes. A closer examination of the questionnaire item-total statistics indicated that alpha would increase to .611 if item 4 were removed. This item asked whether participants ''when I think of this plan, I am responsible for the results''. Consequently, this item was dropped from the questionnaire, and all subsequent analyses are based on participants' responses on the remaining four items.

Demographics of participants

We conducted a descriptive analysis to create an overview of the demographics of the participants. Our sample consisted 257 participants. However, 45 participants that did not get to the actual experiment were excluded, leaving us with a sample of 212 participants (*Mage* = 23.08, *SDage* = 14.03). 172 participants identified as female, 39 as male and 1 as other. Out of the 212 participants, 200 indicated that they were a student at the time of filling in the questionnaire, whereas 12 indicated that they were not a student. 198 participants indicated that they were attending a research university, 2 indicated that they were attending a university of applied sciences. 120 participants noted that they have (had) personal experience with physical complaints, whereas 92 did not. For psychological complaints, 100 participants noted that they have (had) experience with that, whereas 112 did not.

<u>Correlation matrix</u>

We made a correlation matrix of all the questionnaires that were used. The results can be seen in Table 2. As seen in the table, perfectionism significantly correlated with all the scales that were

used to measure wellbeing. This could mean that our sample size was perhaps more vulnerable than the general population, which could have an influence on the results. Perfectionism also correlated negatively with personal feelings of agency.

Table 2. Correlation matrix of all questionnaires.

	Variable	*N*	*M*	*SD*	1	2	3	4	5	6
1.	Fragebogen zum Körperbild	212	69.16	11.76	-					
2.	Symptom Checklist-90-Revised	212	1.52	0.50	-.432**	-				
3.	Multi dimensional Perfectionism Scale	212	77.82	15.96	-.478**	.322**	-			
4.	World Health Organisation-Five Well-being Index	212	18.62	4.70	.655**	-.511**	-.425**	-		
5.	Selbssteuerugsinventar-Kurz 3	212	2.22	0.84	-.524**	.466**	.470**	-.576**	-	
6.	Agency	212	14.81	2.89	.179**	-.184**	-.323**	.216**	-.248**	-

*$p < .05$. **$p < .01$.

Hypothesis 1

A multivariate analysis of variance (MANOVA) was used to examine the effect of aversive planning on body image, psychological wellbeing, somatic symptoms, and life stress in students ($N = 212$).

Findings showed that there were no significant effects of group on wellbeing, $F(4, 207) = 2.209$, $p = .069$, partial $\eta^2 = .041$. Thus, hypothesis 1 cannot be supported.

Hypothesis 2

A factorial ANOVA was conducted to compare feelings of agency between 'aversive plan without planning', 'fun plan' and 'aversive plan with planning' conditions. There was a significant main effect for group $F(2, 212) = 4.131$, $p = .017$.

Planned contrast analysis showed that people in the 'fun plan' condition had more feelings of personal agency than those in the 'aversive plan without planning' condition, $p = .010$. There were no significant differences between the 'aversive plan without planning' and 'aversive plan with planning' conditions, as well as the 'fun plan' and 'aversive plan with planning' conditions. Thus, hypothesis 2 can be partly supported. The results are displayed in Figure 2.

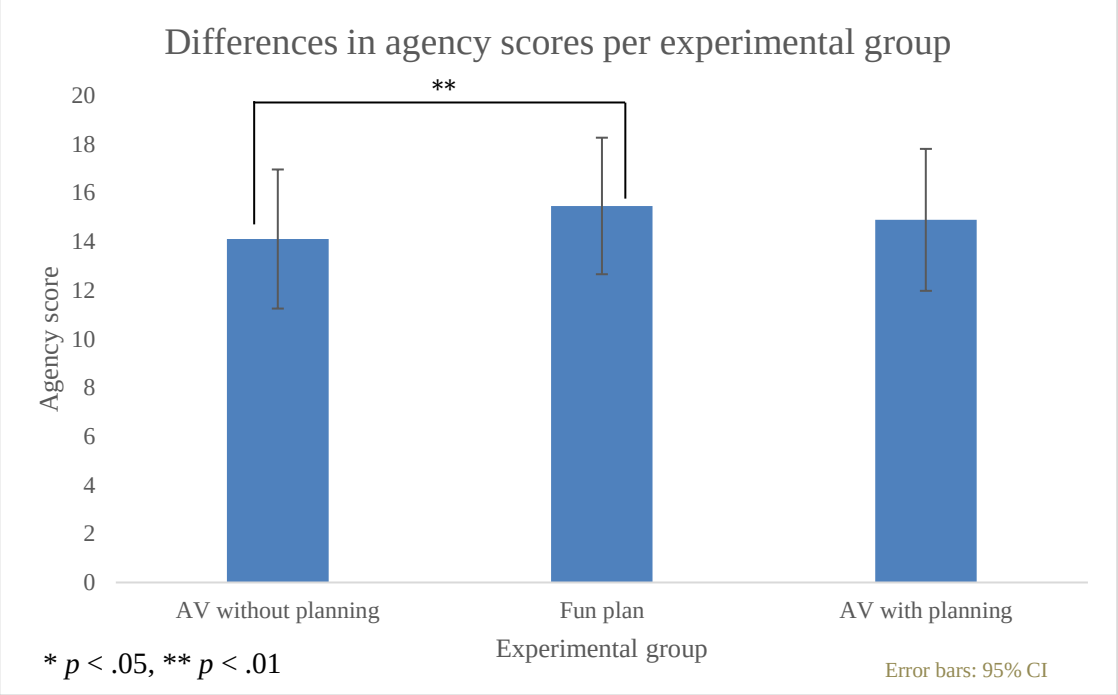


Figure 2. Agency scores of participants per experimental group.

Hypothesis 3

To estimate the proportion of variance in wellbeing that can be accounted for by feelings of agency, we performed multiple standard simple regressions, where sense of agency was the continuous predictor of the four measures of subjective wellbeing (body image, psychological wellbeing, psychosomatic symptoms and life stress). We decided against a MANOVA to test this hypothesis, as the dependent variable is continuous and performing a median split to make it categorical could influence the results.

In combination, feelings of agency significantly predicted body images scores, $\beta = .282$, $t(206) = 3.469$, $p = .001$. Feelings of agency also explained a significant proportion of variance in body image scores, $R^2 = .080$, $F(1, 139) = 12.032$, $p = .001$. These results show participants with higher feelings of agency also reported significantly higher (i.e., more positive) body images scores.

To estimate the proportion of variance in psychological well-being that can be accounted for by feelings of agency, a standard simple regression analysis was performed.

In combination, feelings of agency significantly predicted psychological wellbeing scores, $\beta = .285$, $t(206) = 3.502$, $p = .001$. Feelings of agency also accounted for a significant 8.1% of the variability in psychological wellbeing, $R^2 = .081$, $F(1, 139) = 12.267$, $p = .001$. These results show that participants with higher feelings of agency reported significantly higher (i.e., more positive) psychological wellbeing scores.

To estimate the proportion of variance in somatization symptoms that can be accounted for by feelings of agency, a standard simple regression analysis was performed.

Feelings of agency significantly predicted psychosomatic symptoms, $\beta = -.253$, $t(206) = -3.086$, $p = .002$. Feelings of agency accounted for a significant 6.4% of the variability in somatic

symptoms, R^2 = .064, F (1, 139) = 9.526, p = .002. These results show that participants with higher feelings of agency also indicated significantly lower (i.e., less) somatic symptoms.

To estimate the proportion of variance in perceived stress that can be accounted for by feelings of agency, a standard simple regression analysis was performed.

Feelings of agency significantly predicted life stress, β = -.320, t(206) = -3.985, p < .001. Feelings of agency accounted for a significant 10.3% of the variability in life stress, R^2 = .103, adjusted R^2 = .096, F (1, 139) = 15.879, p = <.001. This shows that participants with higher feelings of agency reported significantly lower (i.e., less) life stress scores.

Thus, hypothesis 3 can be supported.

Hypothesis 4

A factorial analysis was used to examine the effect of aversive planning on personal feelings of agency, moderated by traits of perfectionism (N = 212).

Findings showed that there was a significant main effect of perfectionism on personal feelings of agency F(1, 212) = 33.920, p < .001. There was no main effect of experimental group on personal feelings of agency F(2, 212) = .011, p = .989, and there was no interaction effect between experimental group and perfectionism F(2, 212) = .390, p = .677. Thus, this hypothesis cannot be supported. Because of this, we also did not test the full moderated mediation model with PROCESS.

Discussion

The present study investigated the relationship between making aversive plans, agency and wellbeing, and the moderating role of perfectionism. Previous studies suggest that making plans

ahead of time could lower feelings of agency, which in turn could lower wellbeing. We attempted to gain more knowledge about how these factors play together. The study was divided into four hypotheses. First, we expected that aversive planning has a negative effect on wellbeing. Findings showed no significant effects of experimental group on wellbeing. This means that there was no difference in wellbeing scores between the three experimental groups, which is not in line with our first hypothesis.

Second, we expected that aversive planning would have a negative effect on personal feelings of agency. Results showed a significant main effect of experimental group on agency. People in the 'fun plan' condition reported higher feelings of personal agency than those in the 'aversive plan without planning' condition, which is only partly in line with our second hypothesis. There were no differences between the 'fun plan' and 'aversive plan with planning', as well as the 'aversive plan without planning' and 'aversive plan with planning' conditions. We had expected a difference especially between the 'aversive plan without planning' and 'aversive plan with planning' conditions.

Third, we expected that personal feelings of agency have a positive relationship with wellbeing. This means that when one has low feelings of agency, one will also experience lower wellbeing. Results indeed confirmed this hypothesis in the sense that higher sense of agency indicates less life stress, less psychosomatic symptoms, higher psychological wellbeing and a more positive body image. Thus, a higher sense of agency predicts a higher subjective wellbeing. This is in line with our third hypothesis.

Lastly, we expected that perfectionism has a positive effect on the relationship between aversive planning and agency. Findings showed a significant main effect of perfectionism on agency, but no significant effects of experimental group on agency, and no interaction effect

between experimental group and perfectionism. Thus, this is not in line with our fourth hypothesis.

There could be multiple explanations as to why we did not find some of our hypothesized results. First of all, our sample size was smaller than the sample size we calculated beforehand using G*Power. This results in a lower power than used in the calculation, which leads to a lesser chance of finding the hypothesized effects. Adding to this, data was collected during a global pandemic. Studies show that the pandemic has a negative effect on wellbeing (Sibley et al., 2020; Kachanoff, Bigman, Kapsaskis, & Gray, 2020; Ahmed et al., 2020). This might have also influenced our results.

Secondly, we did not use an attention check for our survey, even though the estimated time to fill it in was over 30 minutes. Because of this, we could not control for participants that carelessly filled in their answers. Some evidence shows that at least 5 percent of respondents answer carelessly, and this percentage can be as high as 60 percent (Kung, Kwok, & Brown, 2018). Analysis of the response duration of our sample resulted in an average response duration of 23 minutes, which is a lot less than the estimated duration of Qualtrics. This could have had detrimental effects on the findings and conclusions of the analyses. Additionally, we did include a question about how participants would rate their experience filling in the questionnaire, and overall ratings were quite low.

An overall limitation of our study is that the reliability statistic for our self-developed questionnaire to measure agency was quite low. This means that some of the items were not representatives of the domain of agency. However, even though the reliability of the agency questionnaire was on the lower side, several significant results in our study did have to do with agency. Thus, further studies could look into developing or using a validated agency scale.

Another overall limitation of our research is that we did not make a clear distinction for what is categorized as a fun and aversive plan. For example, in our results several participants mentioned activities such as working out or studying in all three conditions. Of course, what someone deems to be fun or aversive is very personal, and this should be controlled for in future studies.

We did find significant results for the effect of agency on wellbeing. Although the explained variance was quite low, possibly due to low reliability of the agency scale, this is quite a promising result. In this study, higher levels of personal feelings of agency predicted more positive body images and psychological wellbeing scores, and less psychosomatic symptoms and life stress. Earlier research shows that agency indeed has a great impact on life satisfaction, which in itself improves life satisfaction (Welzel & Inglehart, 2010). Further studies could delve deeper into this specific relationship, perhaps to uncover ways to boost feelings of agency, which would possibly result in improved wellbeing.

We also learned that in our sample, thinking of fun plans resulted in higher feelings of agency in comparison to thinking of aversive plans. This contradicts an earlier finding by Kuhl and Beckmann (1994), who concluded that poor goal integration (due to planning) reduced motivation for pleasurable activities. Damen et al. (2015) also found that prior planning reduced emotional experience of acting and feelings of responsibility. A possible explanation for this could be that while we did ask participants in these two conditions to think about their plans, in no actual planning in the form of implementation intentions occurred. Tonietto & Malkoc (2016) indeed also found that roughly scheduling activities preserves the free flow of action, which restricts alienation from goals.

Conclusion

To conclude, we have found no evidence to support our expectations of aversive plans lowering wellbeing and agency, as well as the moderating role of perfectionism. We did find support that indicates that higher levels of agency predict higher wellbeing. By following up on the limitations of the present study, perhaps future research could give more definitive answers especially with regards to the role of agency.

References

Adriaanse, M. A., Vinkers, C. D., De Ridder, D. T., Hox, J. J., & De Wit, J. B. (2011). Do implementation intentions help to eat a healthy diet? A systematic review and meta-analysis of the empirical evidence. *Appetite*, *56*(1), 183-193.

Ahmed, M. Z., Ahmed, O., Aibao, Z., Hanbin, S., Siyu, L., & Ahmad, A. (2020). Epidemic of COVID-19 in China and associated Psychological Problems. *Asian journal of psychiatry*, 102092.

Beyers, W., Goossens, L., Vansant, I., & Moors, E. (2003). A structural model of autonomy in middle and late adolescence: Connectedness, separation, detachment, and agency. *Journal of youth and adolescence*, *32*(5), 351-365.

Blakemore, S., Wolpert, D. M., & Frith, C. D. (2002). Abnormalities in the awareness of action. *Trends in Cognitive Science*, *6*(6), 237-242.

Clement, U., & Löwe, B. (1996). Validation of the FKB-20 as scale for the detection of body image distortions in psychosomatic patients. *Psychotherapie, Psychosomatik, Medizinische Psychologie*, *46*(7), 254-259.

Cohen J. E. (1988). Statistical Power Analysis for the Behavioral Sciences. Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Damen, T. G., Van Baaren, R. B., Brass, M., Aarts, H., & Dijksterhuis, A. (2015). Put your plan into action: The influence of action plans on agency and responsibility. *Journal of personality and social psychology*, *108*(6), 850.

Derogatis, L. R., Lipman, R. S., & Covi, L. (1975). Symptom Checklist SCL-90-R. *Clinical Psychometric Research. Baltimore*.

Frost, R. O., Marten, P., Lahart, C., & Rosenblate, R. (1990). The dimensions of perfectionism. *Cognitive therapy and research*, *14*(5), 449-468.

Gollwitzer, P. M. (1999). Implementation intentions: strong effects of simple plans. *American psychologist*, *54*(7), 493.

Gollwitzer, P. M. (2014). Weakness of the will: Is a quick fix possible?. *Motivation and Emotion*, *38*(3), 305-322.

Gollwitzer, P. M., & Sheeran, P. (2006). Implementation intentions and goal achievement: A meta-analysis of effects and processes. *Advances in experimental social psychology*, *38*, 69-119.

Haggard, P., & Tsakiris, M. (2009). The experience of agency: Feelings, judgments, and responsibility. *Current Directions in Psychological Science*, *18*(4), 242-246.

Hayes, A. F. (2012). PROCESS: A versatile computational tool for observed variable mediation, moderation, and conditional process modeling.

Hewitt, P. L., & Flett, G. L. (1991). Perfectionism in the self and social contexts: Conceptualization, assessment, and association with psychopathology. *Journal of Personality and Social Psychology*, *60*(3), 456-470.

Huang, J. P., & Benson, P. (2013). Autonomy, agency and identity in foreign and second language education. *Chinese Journal of Applied Linguistics*, *36*(1), 7-28.

Kachanoff, F., Bigman, Y., Kapsaskis, K., & Gray, K. (2020). Measuring two distinct psychological threats of COVID-19 and their unique impacts on wellbeing and adherence to public health behaviors.

Koole, S.L., & Schlinkert, C. (2019). The Pitfalls of Planning: An Integrative Review of Harmful Effects of Implementation Intentions. *Unpublished material, University of Amsterdam, Amsterdam*.

Kuhl, J. (1981). Motivational and functional helplessness: The moderating effect of state versus action orientation. *Journal of personality and social psychology*, *40*(1), 155.

Kuhl, J., & Beckmann, J. (1994). Alienation: Ignoring one's preferences. *Volition and personality: Action versus state orientation*, 375-390.

Kuhl, J., & Fuhrmann, A. (2004). Self-Regulation-Inventory: SSI-K3 (Short Version): Scoring Key. *Unpublished material, Universität Osnabrück, Osnabrück*.

Kung, F. Y., Kwok, N., & Brown, D. J. (2018). Are attention check questions a threat to scale validity?. *Applied Psychology*, *67*(2), 264-283.

McNair, D.M., Lorr, M., & Droppleman, L.F. (1971). *Manual for the Profile of Mood States. Educational and Industrial Testing Services.*

Miquelon, P., & Vallerand, R. J. (2008). Goal motives, well-being, and physical health: An integrative model. *Canadian Psychology/Psychologie canadienne*, *49*(3), 241.

Powers, T. A., Koestner, R., & Topciu, R. A. (2005). Implementation intentions, perfectionism, and goal progress: Perhaps the road to hell is paved with good intentions. *Personality and Social Psychology Bulletin*, *31*(7), 902-912.

Saunders, M., Lewis, P. & Thornhill, A. (2012) "Research Methods for Business Students" 6th edition, Pearson Education Limited.

Sheeran, P., & Orbell, S. (2000). Using implementation intentions to increase attendance for cervical cancer screening. *Health Psychology*, *19*(3), 283.

Sibley, C. G., Greaves, L. M., Satherley, N., Wilson, M. S., Overall, N. C., Lee, C. H., ... & Houkamau, C. A. (2020). Effects of the COVID-19 pandemic and nationwide lockdown on trust, attitudes toward government, and well-being. *American Psychologist*.

Smith, A., Ntoumanis, N., & Duda, J. (2010). An investigation of coach behaviors, goal motives, and implementation intentions as predictors of well-being in sport. *Journal of Applied Sport Psychology*, *22*(1), 17-33.

Steel, P. (2007). The Nature of Procrastination: A Meta-Analytic and Theoretical Review of Quintessential Self-Regulatory Failure. *Psychological Bulletin*, *133*, 65 – 94.

Tonietto, G. N., & Malkoc, S. A. (2016). The calendar mindset: scheduling takes the fun out and puts the work in. *Journal of Marketing Research*, *53*(6), 922-936.

Topp, C. W., Østergaard, S. D., Søndergaard, S., & Bech, P. (2015). The WHO-5 Well-Being Index: a systematic review of the literature. *Psychotherapy and psychosomatics*, *84*(3), 167-176.

Van der Weiden, A., Ruys, K. I., & Aarts, H. (2012). A matter of matching: how goals and primes affect self-agency experiences. *Journal of Experimental Psychology: General*, *142*(3), 954-966.

Van Eerde, W.A. (2003). A Meta-Analytically Derived Nomological Network of Procrastination. *Personality and Individual Differences*, *35*, 1401 – 1418.

Verhagen, H. J. (2000). *Norm autonomous agents* (Doctoral dissertation, Stockholm Universitet).

Wegner, D. M. (2002). *The illusion of conscious will*. Cambridge, MA: The MIT Press

Welzel, C., & Inglehart, R. (2010). Agency, values, and well-being: A human development model. *Social indicators research*, *97*(1), 43-63.

WHO. (1998). Wellbeing Measures in Primary Health Care/The Depcare Project. WHO Regional Office for Europe: Copenhagen.

Wieber, F., & Gollwitzer, P. (2010). Overcoming procrastination through planning.

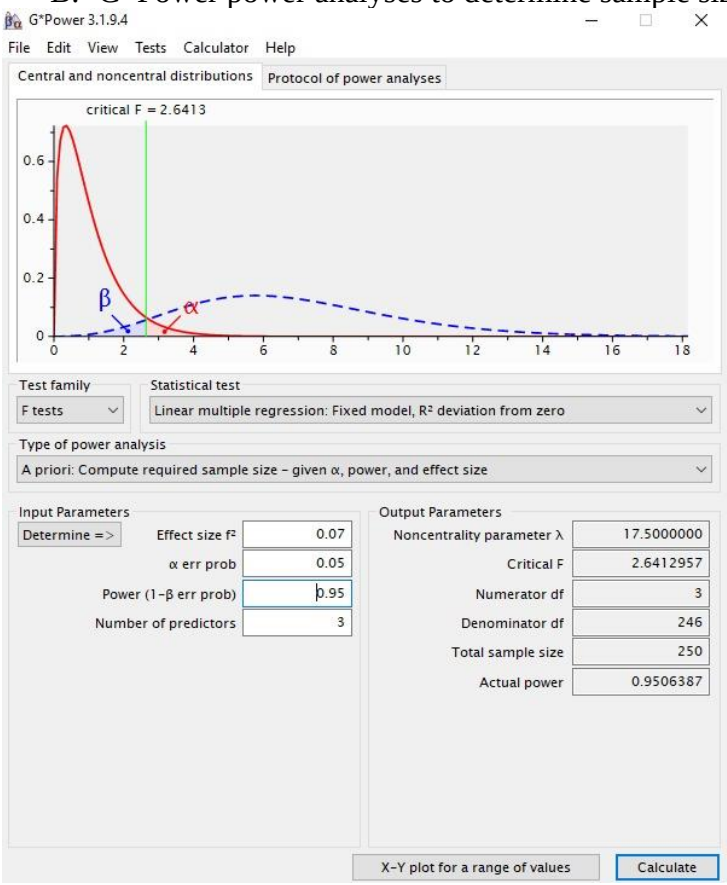
Appendix

A. Agency questionnaire

When I think of this plan, …

- I feel that others around me determine whether I attain my goal or not
- I feel like my actions are unpredictable
- I decide when I will start
- I am responsible for the result
- I need the support of others to be successful

B. G*Power power analyses to determine sample size



C. All instructions planning task

Aversive plan with IIs task

Screen 1: For this questionnaire we are interested in knowing how people make plans in their daily lives. We would like to ask you to think of something that you plan to do in the next two

weeks, but you are not looking forward to it at all. An activity that you will perform reluctantly and that you would rather not begin with at all.
Screen 2: Write down your plan here:
Screen 3: Where exactly do you intend to perform this plan?
Screen 4: When (what day, what time) exactly do you intend to perform this plan?
Screen 5: Describe the steps that you have to take to perform this plan:
Screen 6: To what degree do you feel obligated to perform your plan? To what degree do you feel stressed when you think about your plan? To what degree do you look forward to beginning with your plan?

Aversive plan task

Screen 1: For this questionnaire we are interested in knowing how people make plans in their daily lives. We would like to ask you to think of something that you plan to do in the next two weeks, but you are not looking forward to it at all. An activity that you will perform reluctantly and that you would rather not begin with at all.
Screen 2: Write down your plan here:
Screen 3: To what degree do you feel obligated to perform your plan? To what degree do you feel stressed when you think about your plan? To what degree do you look forward to beginning with your plan?

Fun plan task

Screen 1: For this questionnaire we are interested in knowing how people make plans in their daily lives. We would like to ask you to think of something that you plan to do in the next two weeks, which you are extremely looking forward to. An activity that you will perform with pleasure and that you want to start as soon as possible.
Screen 2: Write down your plan here:
Screen 3: To what degree do you feel obligated to perform your plan? To what degree do you feel stressed when you think about your plan? To what degree do you look forward to beginning with your plan?