A study examining the relationships between self-control, environmental care, behavioural resistance and sustainable behaviours

Does behavioural resistance explain the relation between self-control and sustainable behavior, and what is the influence of environmental care?

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Abstract

Objective: In order to prevent climate change, individuals should harm the environment as little as possible. Although sustainable behaviour clearly includes a self-regulating component in which an individual has to refrain from short-term temptations in order to achieve a long-term goal, the relationship between self-control and sustainable behaviour has been little investigated. The current study examined i) the link between trait self-control and sustainable behaviour, ii) whether this could (partially) be explained by behavioural resistance, and iii) whether environmental care moderated the relationship between self-control and behavioural resistance.

Design: The study contained a cross-sectional design. An online survey was used (N = 230).

Results: Individuals with high trait self-control experienced less behavioural resistance and in turn displayed more sustainable behaviour. Environmental care did not affect the relationship between self-control and behavioural resistance.

Conclusion: The current study has contributed to existing literature by expanding knowledge in the fields of self-control and sustainable behaviour. More research needs to be done to investigate relevant moderators and contributors, in order to better understand the reasons behind this relationship.

Key words: self-control; sustainable behaviour; pro-environmental behaviour; behavioural resistance; environmental concern; environmental care

Introduction

According to the Intergovernmental Panel of Climate Change (IPCC) the effects of climate change are increasingly showing. This has negative consequences for the health of humans, animals and ecosystems (IPCC, 2014). In order to limit these detrimental effects, political action is needed. However, individual behaviour change is also hugely important (e.g., Varela-Candamio, Novo-Corti, Garcia-Alvarez, 2018; Kollmuss & Agyeman, 2002). Many studies have tried to determine the relevant factors that predict sustainable behavior, which refers to behaviour that harms as little as possible or even benefits the environment (e.g., Steg, & Vlek, 2009; Kollmuss, et al., 2002). Examples of such factors are motivation, values, knowledge and locus of control (e.g., Kollmuss, et al., 2002; Heeren, Singh, Zwickle, Slagle, McCreery, 2016). The results are, however, inconclusive. For instance, some studies show that education about sustainability can be very effective as means of an intervention (Varela-Candamio, et al., 2018), while other studies emphasize the flaws of enhancing knowledge (Heeren, et al., 2016;

Kollmus, et al., 2002). Indeed, education has been unable to promote pro-environmental behaviours as effectively as it promotes pro-environmental attitudes (e.g., Rendondo, & Puelles, 2017; Heeren, et al., 2016).

Apparently, many individuals fail to translate their pro-environmental attitudes into sustainable behaviours, a phenomenon called the attitude-behaviour gap (e.g., Kennedy, Beckley, McFarlane, & Nadeau, 2009; Kollmuss, et al., 2002; Redondo & María Puelles, 2017). This might be understandable, taking into account that sustainable behaviours do not necessarily lead to immediate pleasure. In fact, most of them require refrainment from short-term attractive temptations (e.g. taking a long, hot shower) in order to achieve long-term pro-environmental goals (e.g., saving water). This difficulty to achieve long-term goals has in other contexts (e.g., health, academic achievement) been linked to having low trait self-control (e.g., Moffitt, Poulton, & Caspi, 2013; Nordgren, & Chou, 2011), an essential human characteristic that allows us to forego immediate gratifications for delayed ones and a necessary ability for achieving long-term goals of health, well-being, interpersonal relationships and performance (e.g., Gillebaart & Kroese, 2018; De Ridder, Lensvelt-Mulders, Finkenauer, Stok, & Baumeister, 2012). Therefore, self-control might also be a potential factor to consider in the field of sustainable behaviour.

Self-control, however, has received only little attention in studies about sustainable behaviour. Literature search shows only two studies investigating this relationship. In the first study, Kerret, Orkibi, and Ronen (2016) tested a model in which environmental hope determined whether individuals would show sustainable behavior. They found that the model was only applicable to individuals who displayed high trait self-control, in comparison to people with low trait self-control. The second study demonstrated that behavioural inconsistencies in several life spheres (concerning fast food, alcoholic beverages, pre-cooked meals, and diet products) also decreases the likelihood to display sustainable behaviour. Since individuals with low trait self-control have been shown to display more behavioural inconsistencies, the authors emphasize the importance of enhancing self-control, suggesting that "education about the environment has not been completely successful because not all the learners have the necessary self-control to implement what they learn" (Redondo, & Puelles, 2017).

To summarize, self-control seems to play a role in the relationship to sustainable behavior, as shown by initial evidence (Kerret, et al., 2016; Redondo, & Puelles, 2017). However, only two studies investigated this relationship, so more research needs to be done. Therefore, the current study will examine the relationship between self-control and sustainable behaviour, hypothesizing that individuals with high trait self-control show more sustainable

behaviour (hypothesis 1). Moreover, it will be examined whether behavioural resistance (partially) mediates the relationship between self-control and sustainable behaviour (hypothesis 2), and whether environmental care moderates the relationship between self-control and behavioural resistance (hypothesis 3, see Figure 1).

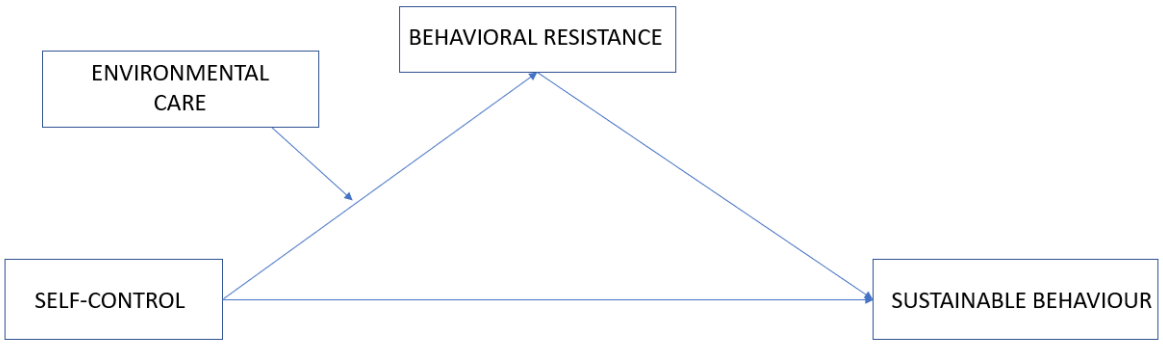

Figure 1. Model of the relationships between self-control, environmental care, behavioural resistance and sustainable behaviour

Behavioural resistance and environmental care

Multiple studies have linked high trait self-control to positive life outcomes like better health and higher academic achievements (e.g. Tangney, Baumeister, & Boone, 2004; Moffitt et al., 2011). It is expected that this might be because individuals with high trait self-control are faster at identifying self-control dilemmas, and are therefore better at anticipating on them (Gillebaart, Schneider, & De Ridder, 2016). Indeed, research shows that individuals with higher trait self-control report experiencing fewer self-control dilemmas, in which they are confronted with a conflict between their impulsive desires and long-term goals (Hofmann, Luhmann, Fisher, Vohs, & Baumeister, 2014). Additionally, Gillebaart, & Kroese (2018) showed that individuals with high trait self-control experience less behavioural resistance and are therefore more successful at achieving their goal. "Behavioural resistance is defined as the extent to which people perceive the behaviours or actions they need to perform in order to reach their goal as unpleasant. It is not related to their appreciation of the focal goal, but rather of the means through which they are going to reach that goal: someone can be very positive about environmental conservation, while at the same time resent waste recycling" (Gillebaart & Kroese, 2018).

Although behavioural resistance is a relatively new factor in the field of self-control, it could potentially also be a relevant variable in sustainable behaviour, where reasons such as 'laziness, lack of interest, inconvenience, and effort' are found to be behavioural barriers (e.g.,

Diekman & Preisendoerfer, 1992, Blake, 1999; Quimby, Angelique, 2011). In this current study, it is therefore hypothesized that behavioural resistance explains the relationship between self-control and sustainable behaviour (hypothesis 2). However, in contrast to the behaviours targeted in the study of Gillebaart & Kroese (2018; e.g., healthy eating, physical activity, household chores), sustainable behaviours are not (always) counteracted by an outlook on personal gain. For example, recycling your waste does not give you an attractive benefit in return, like physical activity would get you in shape. Therefore, instead of personal gain, other factors must be involved why individuals would want to take part in sustainable behaviour.

Blake (1999) suggested that psychological barriers to sustainable behaviour are especially influential in people that do not have a strong environmental concern. Indeed, people who do have a strong concern for and interest in environmental issues (e.g. Kollmuss, et al., 2002; López-Mosquera, Lera-López, & Sánchez, 2015), as well as people who show strong emotional involvement with nature, are more likely to act in a sustainable manner (e.g., Kals, Schumacher, & Montada, 1999; Kollmuss, et al., 2002; Barbaro, & Pickett, 2016; Paswan, Guzmán, & Lewin, 2017; Klaniecki, Leventon, & Abson, 2018). Along these lines, it is expected that environmental care, *the experience of both environmental concern and emotional involvement with nature,* acts as a moderator in the relationship between self-control and behavioural resistance. Specifically, it is hypothesized that the (negative) relationship between self-control and behavioural resistance is stronger when individuals show a high amount of environmental care (hypothesis 3). By the same token, we expect that people who are not concerned with environmental issues would experience more behavioural resistance towards sustainable behaviours, *regardless* of their level of self-control. That is, as they do not have a long-term goal to act upon, the role of self-control is not relevant for this group of people. Thus, we expect that the relation between self-control and behavioural resistance is moderated by environmental care, where it becomes apparent only for people with higher levels of environmental care.

In sum, the purpose of the current study is to enhance scientific understanding of the role of self-control in sustainable behaviour. This is very relevant due the lack of (high-quality) evidence of this relationship and the societal importance of sustainable behaviour in terms of climate change. Specifically, it will be examined whether behavioural resistance explains the relationship between self-control and sustainable behaviour, and whether environmental care moderates the relationship between self-control and behavioural resistance.

Method

Participants

In total, 373 participants took part in the study, of which 74 participants were excluded who did not complete the whole survey. Another 47 participants were excluded from analysis based on the fact that they did not live on their own, a criterion that was deemed important since most of the sustainable behaviours tested referred to house-hold activities. The final sample consisted of 252 participants (*M* = 32,92, *SD* = 18,14). Most participants were well educated (31% = University of applied sciences, 56,4% = University or higher level, 12, 6% = other educational level).

The number of participants in the final sample was in accordance with the required sample size to find a small/medium effect. According to the study of Fritz and MacKinnon (2007), that examined required sample size based on a power of 0.8, one hundred and fifteen (N = 115) participants are required when a mediator is included in the study. This amount should be doubled when there is also a moderator involved. This means that this study design required a total of approximately two hundred and thirty (N = 230) participants.

Design and procedure

The study had a cross-sectional design. The independent variable was self-control, the dependent variable was sustainable behaviour, the mediator was behavioural resistance and the moderator was environmental care.

An online survey was used to perform the research, created with the programme Qualtrics. Beforehand, a pilot study was done. Four female and two male participants completed the whole questionnaire. This way it could be tested whether the data would be saved correctly; whether the survey contained unclear or grammatically incorrect language; and how long it took to finish the survey. Based on the pilot study, a few modifications were made.

After the pilot study, the survey was posted online. Participants were recruited via social media (e.g. Facebook, LinkedIn, WhatsApp). The survey was accessible by smartphone, computer or tablet. When participants clicked on the link that sent them to the survey, they first received an informed content, which explained that data would only be used for educational means; that the answers could not be traced back the participant itself; that participants could exit at any time and that the survey would take 10 to 15 minutes to complete. Participants who agreed with the informed consent were sent to the questionnaire.

First, demographic questions were assessed regarding gender, age, educational level and

living situation. After that, the self-control scale was presented, which was followed by either the environmental care scale or the sustainable behaviour scale. These last two questionnaires were randomized to avoid order effects. The sustainable behaviour scale was always followed by the behavioural resistance scale. The last part of the survey contained the sustainable knowledge scale. The survey ended with a debriefing in which the goals and expectations of the study were laid out.

Constructs/materials

Below, the constructs are discussed in the same order as presented to the participants. The entire survey can be found in the appendix.

Demographic data. Gender, age, education and living situation were assessed. Answer categories for gender were i) man, ii) woman, iii) other. Age was an open question. Answer categories concerning education were: i) preparatory secondary vocational education (in Dutch: 'VMBO'), ii) school of higher general secondary education (in Dutch: 'Havo'), iii) pre-university education (in Dutch: 'VWO'), grammar school (in Dutch: 'Gymnasium'), v) University of applied sciences (in Dutch: 'HBO'), vi) University (Bachelor), vii) University (Master), viii) other. The question assessing current living situation gave two answer possibilities, namely: i) I live with my parents/caretaker or, ii) I live independently.

Self-Control Scale. Self-control was measured using the Self-Control Scale (13 items; Tangney, Baumeister, & Boone, 2004). An example item is: "I often act without thinking through all the alternatives". The items were answered on a five-point Likert scale (1 = not at all, 5 = very much). Nine items were reversed so that a higher score on the scale indicated a higher amount of self-control. The reliability of the scale was good (Cronbach's $\alpha = 0.80$).

Environmental care. In this study, environmental concern and emotional involvement with nature have been combined under the label of environmental care. Research has shown that environmental affection and environmental concern intercorrelate positively (Fransen, & Gärling, 1999). A measure of Environmental care was based on the Nature Relatedness Scale (NRS; 21 items; Nisbet, Zelenski, & Murphy, 2009) and the Environmental Concern Scale (ECS; 16 items; Weigel, & Weigel, 1978). A selection of 25 items was made that were applicable to the study context. Some original items were adjusted to fit into the broader context of climate change instead of pollution alone. Two sample items are: "I feel very connected to all living things and the earth" and "The federal government will have to introduce harsh means to halt pollution since few people will regulate themselves". All items were translated into Dutch, and a five-point Likert-scale was used (1 = disagree strongly, 5 = agree strongly). Nine

items were reverse coded, so that a higher score on the scale indicated a higher amount of environmental care. The reliability of the scale was good (Cronbach's $\alpha = 0.84$).

Sustainable behaviour Scale. Sustainable behaviour was assessed by the Pro-environmental Behaviour Scale (PBS; Whitmarsh & O'Neill, 2010), which contains 17 items. Car-, and social-related items were removed, for the reasons that not everyone owns a car and the study does not examine social factors, respectively. There were 11 items left, which were all translated into Dutch. An example item is: "I avoid eating meat". A four-point Likert scale was used to answers the items (0 = never, 3 = always). The reliability of the scale was good (Cronbach's $\alpha = 0.72$)

Behavioural resistance Scale. The Behavioural Resistance Scale was based on the same five activities that were measured in the PBS, namely: energy-saving behavior, travel choice, consumer behaviour, recycling and water-saving behaviour. For each activity, participants were asked to rate "how unpleasant" they find doing it, on a scale from 1 (not at all unpleasant) to 7 (very unpleasant)" (Gillebaart & Kroese, 2018). The reliability of the scale was questionable (Cronbach's $\alpha = 0.66$).

Sustainable Knowledge Scale. Environmental knowledge was measured by the Assessment of Sustainability Knowledge (ASK; 14 items; Horvath, Stewart, & Shea, 2013). Five items that were either unclear or irrelevant to the Netherlands were removed, leaving 9 items. An example item is: "The most significant driver in the loss of species and ecosystems around the world is?". Answer categories were: A) Overhunting/overharvesting, B) Conversion of natural space into human developments (farmland, cities, ect.), C) Acid rain, or D) Breeding of animals in zoos. The correct answer was B.

Results

The goal of the study was to examine whether there is a relationship between trait self-control and sustainable behavior (hypothesis 1), whether this relationship could (partially) be explained by behavioural resistance (hypothesis 2), and whether environmental care acts as a moderator between self-control and behavioural resistance (hypothesis 3). All hypotheses were tested with the aid of *Statistical Program for Social Sciences (SPSS).* In Table 1, correlations between the main variables can be found. As expected, trait self-control was positively related to sustainable behaviour ($r = .22.$, $p = .000$). Individuals with high trait self-control show more sustainable behaviour as compared to individuals with low trait self-control (hypothesis 1).

Table 1

Correlation matrix

	1	2	3	4
1. Self-control				
2. Environmental care	.17**			
3. Behavioural resistance	-.20**	-.33**		
4. Sustainable behavior	.22**	.56**	-.57**	-
M	3.25	3.56	2.87	2.52
SD	.60	.49	.76	.45

** p < .01

Mediation analysis

Hypotheses 2 was tested using a Preacher & Hayes macro for mediation analysis (Hayes, 2017). The independent variable was self-control, the dependent variable sustainable behavior and the mediator behavioural resistance (see Figure 1).

A small direct effect between self-control and sustainable behavior was found, *b* = .08, CI [.00, .16], which means that participants with a higher level of trait self-control showed more sustainable behavior. An small indirect effect of self-control and sustainable behaviour via behavioural resistance was also found, *b* = .08, CI [.03, .14]. The association between self-control and behavioural resistance was significant, *b* = -.26, CI [-.41, -.10]. Behavioural resistance to sustainable behaviour was significant, *b* = -.32, CI [-.39, -.26]. Behavioural resistance explained 51 percent of the relationship between self-control and sustainable behavior. In other words, participants with higher trait self-control experienced less behavioural resistance, which in turn was associated with more sustainable behavior.

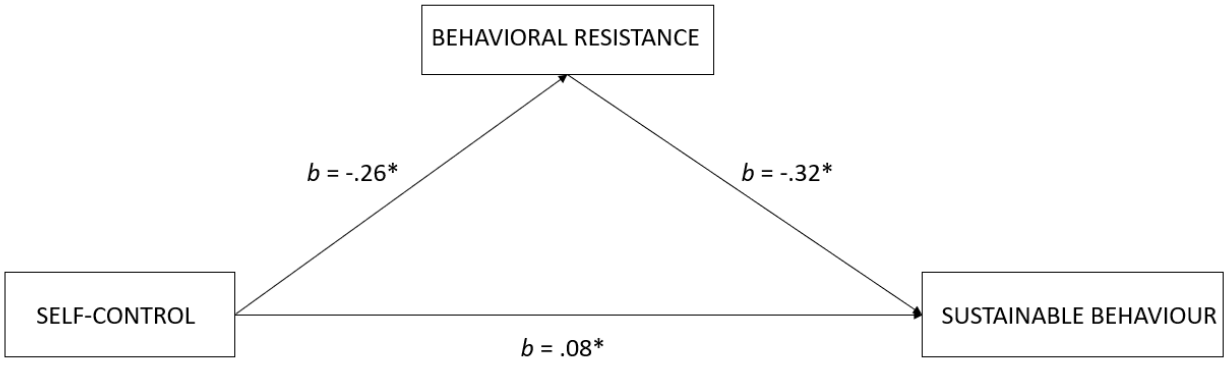

Figure 1. Mediation analysis, *p < .05

Moderated mediation analysis

Using a Preacher & Hayes (Hayes, 2017) macro, a moderated mediation analysis was performed to test hypothesis 3. The independent variable was self-control, the dependent variable sustainable behaviour, the mediator behavioural resistance and the moderator environmental care. The moderated mediation would be proven by a significant interaction between self-control and environmental care on behavioural resistance. This significant effect was not found, b = -.15, CI [-.43, .14].

Additional analysis

An additional analysis was performed to examine the role of knowledge of environmental issues. Since the moderated mediation model was not significant, knowledge may have acted as a contributing factor that should have been taken into account. A moderated mediation analysis was performed with a Preacher & Hayes macro (Hayes, 2017). The independent variable was self-control, the dependent variable sustainable behaviour, the mediator was behavioural resistance and the moderator was environmental care. Knowledge was included as covariate.

A significant effect of knowledge on sustainable behaviour was found b = .10 CI [.05, .15]. However, knowledge did not have a significant effect on behavioural resistance b = -.05, CI [-.16, .05]. The interaction between self-control and environmental care on behavioural resistance remained non-significant, b = -.14, CI [-.43, .14]. All participants scored relatively low on the knowledge scale, with a maximum score of 9/19 (M = 8.04 , SD = .93).

Discussion

The current study examined the relationship between self-control and sustainable behaviour and whether this relationship could be (partially) explained by behavioural resistance. Additionally, it was investigated whether environmental care affected the relationship between self-control and behavioural resistance. The results show that there is a direct relationship between trait self-control and sustainable behaviour, and that this relationship can be partially explained by behavioural resistance. In other words, participants with higher trait self-control experienced less behavioural resistance, and in turn displayed more sustainable behavior. Environmental care did not show any effects on the relationship between self-control and behavioural resistance.

Since the amount of research done in the field of sustainable behaviour is limited, the current

study has made an important contribution to the existing literature. Building on initial research that suggested a link between self-control and sustainable behaviour (Kerret et al., 2016; Redondo, et al., 2017), the current study has for the first time examined this relationship explicitly. In line with the expectations, a relation between trait self-control and sustainable behaviour was found. Moreover, the new line of research regarding self-control and behavioural resistance has also been expanded. The current study supports the earlier finding that individuals with high trait self-control might not solely be good at refraining from short-term temptations, but also experience less resistance towards goal-directed behaviours compared to individuals with low self-control (Gillebaart, & Kroese, 2018). Interestingly, the results from this study broaden these findings by showing that behavioural resistance also plays a role when there is no personal benefit involved, as in the case of environmental-friendly behavior.

It is, however, not yet clear what the reason is behind the decreased behavioural resistance of individuals with high self-control. The current study was not able to expand knowledge in this area, as, in contrast to the expectations, environmental care did not seem to affect the relationship between self-control and behavioural resistance. An explanation for the lack of an effect could be that the measurement of environmental care lacked reliability or validity, since the scale was developed based on two other scales. However, the validity of both scales seem to be well-studied (Nisbet, et al., 2009; Weigel, et al., 1978), and the large Cronbach's alpha found in this study indicates that the reliability of the scale is good. Moreover, the large alpha confirms earlier findings that environmental concern and affection are indeed linked together (Fransen & Gärling, 1999). However, since the scale used in the current study is based on self-report, and is thus vulnerable to social desirability, it would perhaps be wise to use a more objective measurement in future research. Examples are pet ownership, vegetarianism, fair trade and organic purchasing habits, or the number of activities in nature per week (Nisbet, et al., 2009).

An alternative explanation could be that environmental care simply is not a relevant factor in relation to self-control and behavioural resistance. After all, having environmental concern and affection does not exclude the possibility of people feeling resistance towards a particular sustainable behaviour. As the definition of behavioural resistance states: "*Behavioural resistance is not related to people's appreciation of the focal goal, but rather of the means through which they are going to reach that goal*: someone can be very positive about environmental conservation, while at the same time resent waste recycling" (Gillebaart, & Kroese, 2018). Since the line of research regarding behavioural resistance is quite new, underlying mechanisms of the relationship between self-control and behavioural resistance

have not been established yet and more research is needed to enhance knowledge in this field. As an example, we recommend investigating the role of locus of control, which refers to individuals beliefs about the causal relationship between their own behaviour and life outcomes (Rotter, 1966), and has in earlier studies been linked to sustainable behaviour (e.g., Hines, Hungerford, & Tomera, 1986; Kollmuss, et al., 2002). Interestingly, locus of control has as well been linked to self-control, meaning that before a person applies any specific self-controlling skill, he must believe that his or her outcomes will lead to the desired outcome (Rosenbaum, 1980). The link between locus of control and sustainable behaviour is especially interesting since some people might feel like climate change is too big of a problem to be able to act on it individually. More knowledge of potential moderators and contributing factors could lead to starting points for future interventions, aimed at behaviour change in the context of climate issues.

Some additional methodological concerns are noted as well. First, the survey may have been completed mostly by individuals who care for and are interested in sustainable behaviour. Yet, our data showed that the environmental care scale was normally distributed, with a wide range. Second, behavioural resistance is a relatively new construct, and the measurement of it has not been established yet. Since the Cronbach's alpha was relatively small in the current study, it is recommended to further investigate the validity and reliability of the scale, and to examine whether a better, alternative scale should be created. Third, the current study contains a cross-sectional design, due to which no causal implications can be made. Furthermore, since the survey relied on self-report measurement, social desirability could have influenced the results. In order to limit these influences however, it was explicitly noted in the survey that it was more important to report the actual answer instead of the answer that seemed morally correct. Social desirability might be especially common in the case of sustainable behaviour, however, since most people know that it is important to act sustainable in order to limit climate change. Future research should therefore attempt to measure sustainable behaviour in a more objective way. As an example, energy saving behaviour could be tracked by using an energy meter (e.g., Huebner, Cooper, & Jones, 2013). A disadvantage of adopting this method is that the measurements are very domain-specific, which raises the question whether the results are generalizable to other pro-environmental behaviours. The large Cronbach's alpha in the current study suggests, however, that sustainable behaviours are intercorrelated.

Future research

As mentioned above, little is known about the underlying mechanisms and contributing factors

regarding the relations between self-control, behavioural resistance and sustainable behaviour. Although we did find a link between these variables in this study, our proposed moderator (environmental care) did not seem to affect this model. Due to this, no answer can yet be given to the question of *why* individuals with high trait self-control perceive less behavioural resistance and in turn show more sustainable behaviour. It was therefore already recommended to investigate environmental care further using a more objective measurement, and to examine the role of locus of control. However, other theories could also contribute to the understanding of the relations between self-control, behavioural resistance and sustainable behaviour. As an example, perhaps that people with high trait self-control use more adaptive reappraisal techniques than people with low self-control (e.g. they construe consuming less meat as a way to learn new recipes, or they view taking the car less as a way to exercise more). Earlier studies already showed a link between self-control and reappraisal, leading to more success in reaching a long term goal (e.g., Maier, & Hare, 2019; Giuliani, Calcott, & Berkman, 2013). Possibly, the same pathway also contributes to the link between self-control and behavioural resistance. Further research is needed to gain more insight in the reasons why individuals with high trait self-control experience less behavioural resistance and in turn show more sustainable behaviour.

Summarized, this study shows that individuals with high trait self-control experience less behavioural resistance and therefore display more sustainable behaviour. More research needs to be done to investigate relevant moderators and contributors, in order to better understand the reasons behind this relationship. For now, the current study has contributed to existing literature by expanding knowledge in the fields of self-control and sustainable behaviour. Understanding which factors play a role in sustainable behaviour is essential in order to limit the negative impact human behaviour can have on the health of the earth and its ecosystems.

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Appendix - Questionnaire

Informed consent

Lees onderstaande informatie goed door voordat je verder gaat

Beste participant,

Hierbij ben je uitgenodigd om deel te nemen aan een onderzoek van de Universiteit Utrecht, uitgevoerd door Lotte Boer. Het doel van dit onderzoek is om meer inzicht te krijgen in achterliggende factoren die bijdragen aan duurzaam gedrag. Het onderzoek bestaat uit een aantal vragenlijsten en duurt ongeveer tien tot vijftien minuten.

Deelname is op vrijwillige basis en je kunt het onderzoek op ieder gewenst moment beëindigen. De gegevens worden vertrouwelijk en anoniem behandeld en alleen gebruikt voor wetenschappelijke doeleinden. De gegevens zullen daarom niet herleidbaar zijn tot jou als persoon.

Mochten er vragen bestaan omtrent het onderzoek, dan kunt je contact opnemen via m.c.boer@students.uu.nl.
Je hebt alle informatie gelezen en stemt ermee in dat je gegevens gebruikt zullen worden voor het onderzoek.

- Ik ga akkoord
- Ik ga niet akkoord

Demografische gegevens

Wat is je geslacht?
- Man
-Vrouw
-Anders

Wat is je leeftijd?
Open vraag

Wat is je hoogst genoten opleiding?
Ben je momenteel bezig met een opleiding? Klik dan het niveau van deze opleiding aan.
-VMBO
-Havo
-VWO
-Gymnasium
-HBO
-Universiteit (bachelor)
-Universiteit (master)
-Anders, namelijk:

Wat is je huidige woonsituatie?
-Ik woon bij mijn ouders/voogd
-Ik woon zelfstandig

Trait self-control

Tangney, J. P., Baumeister, R. F., & Boone, A. L. (2004). High self-control predicts good adjustment, less pathology, better grades, and interpersonal success. *Journal of Personality*, *72*(2), 271-324.

De volgende uitspraken gaan over hoe je tegen jezelf aankijkt. Geef aan in hoeverre de uitspraken op jou van toepassing zijn (1 = helemaal niet op mij van toepassing; 5= heel erg op mij van toepassing)

1 – Ik kan verleidingen goed weerstaan
2 – Ik vind het moeilijk om met slechte gewoontes te stoppen
3 - Ik ben lui
4 – Ik zeg ongepaste dingen
5 – Ik doe weleens dingen die slecht voor me zijn als ze leuk zijn
6 – Ik weiger dingen die slecht voor me zijn
7 – Ik zou willen dat ik meer zelfdiscipline had
8 – Mensen zeggen dat ik een ijzeren zelfdiscipline heb
9 – Pleziertjes weerhouden me er soms van mijn (huis)werk af te krijgen
10 – Ik heb moeite met concentreren
11 – Ik kan goed werken aan lange termijn doelen
12 – Soms kan ik mezelf er niet weerhouden iets te doen, zelfs als ik weet dat het verkeerd is
13 – Ik doe vaak dingen zonder goed na te denken over mogelijke alternatieven

Reversed scoring: 2 3 4 5 7 9 10 12 13

Environmental care

Emotional involvement

Nisbet, E. K., Zelenski, J. M., & Murphy, S. A. (2009). The nature relatedness scale: Linking individuals' connection with nature to environmental concern and behavior. *Environment and Behavior*, *41*(5), 715-740.

The Nature Relatedness Scale; 19 items; 5-point Likert Scale ranging from 1 (disagree strongly) to 5 (agree strongly)

De stellingen hieronder gaan over het milieu en de mate waarin je je verbonden voelt met de natuur. Geef voor iedere stelling aan in hoeverre die voor jou van toepassing is (1 = helemaal niet mee eens; 5 = helemaal mee eens).

Nature Relatedness - Self

1 – De connectie die ik voel met de natuur en het milieu is een deel van mijn spiritualiteit

My connection to nature and the environment is a part of my spirituality

2 – Mijn connectie met de natuur is een belangrijk deel van wie ik ben

My relationship to nature is an important part of who I am

3 – Ik voel me heel erg verbonden met alle levende dingen en de aarde

I feel very connected to all living things and the earth

4 – Ik ben niet onafhankelijk van de natuur, maar een deel van de natuur

I am not separate from nature, but a part of nature

5 – Ik denk altijd aan de manier waarop mijn daden invloed hebben op het milieu

I always think about how my actions affect the environment

6 – Ik ben me erg bewust van milieuproblemen

I am very aware of environmental issues

7 – Ik denk veel na over dierenleed

I think a lot about the suffering of animals

8 – Zelfs als ik in de stad ben, ben ik me bewust van de natuur om me heen

Even in the middle of the city, I notice nature around me

9 – Mijn gevoelens over de natuur hebben geen invloed op de manier waarop ik mijn leven leid

My feelings about nature do not affect how I live my life

Nature Relatedness – Perspective

1 – Mensen hebben het recht om natuurlijke bronnen op elke gewenste manier te gebruiken

Humans have the right to use natural resources any way we want

2 – Dieren, vogels en planten hebben minder rechten dan mensen

Animals, birds and plants have fewer rights than humans

3 – Sommige diersoorten zijn simpelweg bedoeld om uit te sterven

Some species are just meant to die out or become extinct

4 – De staat van niet-menselijke soorten is een indicator voor de toekomst van mensen

The state of nonhuman species in an indicator of the future for humans

Nature Relatedness – Experience

1 – De gedachte aan diep in de natuur leven, ver weg van de beschaving, is angstaanjagend

The thought of being deep in the woods, away from civilization, is frightening

2 – Mijn ideale vakantieplek zou een afgelegen natuurgebied zijn

My ideal vacation spot would be a remote, wilderness area

3 – Ik geniet ervan om buiten te zijn, zelfs al is het slecht weer

I enjoy being outdoors, even in unpleasant weather

4 – Ik zoek niet vaak de natuur op

I don’t often go out in nature

5 – Ik geniet ervan om in de aarde te graven en vuile handen te krijgen

I enjoy digging in the earth and getting dirt on my hands

6 – Ik ben me bewust van de natuur waar ik ook ben

I take notice of wildlife wherever I am

Reversed scoring: 9, 10, 11, 12, 14, 17

Environmental concern

Weigel, R., & Weigel, J. (1978). Environmental concern: The development of a measure. *Environment and behavior*, *10*(1), 3-15.

Environmental Concern Scale: 6 items; five-point Likert Scale ranging from "strongly agree" to "strongly disagree"

De stellingen hieronder gaan over klimaatverandering. Het is de bedoeling dat je voor elke stelling aangeeft in hoeverre je het eens bent met de uitspraak (1 = helemaal niet mee eens; 5 = helemaal mee eens).

1 – De overheid zal harde maatregelen moeten introduceren om klimaatverandering tegen te gaan, aangezien weinig mensen hun eigen gedrag zullen aanpassen

The federal government will have to introduce harsh measures to halt pollution since few people will regulate themselves

2 – Ik ben bereid om persoonlijke offers te maken om klimaatverandering tegen te gaan, zelfs al lijkt het niet direct iets op te leveren

I'd be willing to make personal sacrifices for the sake of slowing down pollution even though the immediate results may not seem significant

3 – Klimaatverandering heeft geen duidelijk effect op mijn leven

Pollution is not significantly affecting my life

4 – Scholen zouden les moeten geven over het behoud van de natuur

Courses focusing on the conservation of natural resources should be taught in the public schools

5 – Hoewel er op dit moment milieuvervuiling bestaat, zal de natuur er zelf weer voor zorgen dat het weer goed komt

Although there is continual contamination of our lakes, streams, and air, nature's purifying processes soon return them to normal

6 – Omdat de overheid beschikt over goede inspectie en handhaving, is het erg onwaarschijnlijk dat klimaatverandering verergert

Because the government has such good inspection and control agencies, it's very unlikely that pollution due to energy production will become excessive

Reversed scoring: 3, 5, 6

Sustainable behaviour

Whitmarsh, L., & O'Neill, S. (2010). Green identity, green living? The role of pro-environmental self-identity in determining consistency across diverse pro-environmental behaviours. *Journal of Environmental Psychology*, *30*(3), 305-314.

Pro-environmental Behavior Scale: 11 items; 3-point Likert scale (0 = never, 3 = always)

De volgende stellingen gaan over duurzaam gedrag. Het is de bedoeling dat je per activiteit aangeeft hoe vaak je dit gedrag vertoont.
Omdat vaak gezegd wordt dat duurzaam gedrag heel belangrijk is, krijgen veel mensen het gevoel dat ze meer zouden moeten doen dan dat ze in werkelijkheid doen.
Ons onderzoek gaat er echter niet om of mensen duurzaam gedrag vertonen of niet, maar kijkt naar de factoren die ervoor zorgen dat mensen wel of geen duurzaam gedrag vertonen. **Probeer daarom goed na te denken over wat je echt doet en vindt, en niet over wat je denkt dat goed is.** Er zijn geen goede of foute antwoorden.

1 – Ik zet lampen uit wanneer ik deze niet gebruik
Turn off lights you're not using
2 – Wanneer ik een korte afstand moet afleggen, ga ik te voet, met de fiets of met het openbaar vervoer
Walk, cycle, or take public transport for short journey's
3 – Ik doe mijn best om zo min mogelijk te vliegen
Cut down on the amount you fly
4 – Ik koop milieuvriendelijke producten
Buy environmentally-friendly products
5 – Ik eet biologisch voedsel dat lokaal is geproduceerd
Eat food which is organic, locally-grown or in season
6 – Ik eet geen vlees
Avoid eating meat
7 – Ik koop bewust producten met weinig verpakking
Buy products with less packaging
8 – Ik recycle mijn afval
Recycle
9 – Ik hergebruik of repareer producten (zoals kleding) in plaats van dat ik ze weggooi
Reuse or repair items instead of throwing them away
10 – Ik bespaar water door korter te douchen
Save water by taking shorter showers
11 – Ik draai de waterkraan dicht terwijl ik mijn tanden poets
Turn off the tap while you brush your teeth

Behavioural resistance.

Whitmarsh, L., & O'Neill, S. (2010). Green identity, green living? The role of pro-environmental self-identity in determining consistency across diverse pro-environmental behaviours. *Journal of Environmental Psychology*, *30*(3), 305-314.

Gillebaart & Kroese. 2018. 'Don't mind if I do': The role of behavioural resistance in self-control's effects on behavior. *Manuscript in preparation.*

Het volgende onderdeel gaat over dezelfde gedragingen. Het is nu de bedoeling dat je aangeeft in hoeverre je het uitvoeren van die activiteit als vervelend ervaart.

We willen je er graag aan herinneren dat het belangrijk is om goed na te denken over wat je echt doet en vindt, en niet over wat je denkt dat goed is. Ons onderzoek gaat er niet om of mensen duurzaam gedrag vertonen of niet, maar kijkt naar de factoren die ervoor zorgen dat mensen wel of geen duurzaam gedrag vertonen. Er zijn dus geen goede of foute antwoorden.

Hieronder staan een aantal verschillende activiteiten weergegeven. Geef per activiteit aan in hoeverre je het uitvoeren van die activiteit als vervelend ervaart (1 = helemaal niet vervelend; 7 = heel erg vervelend)
Staan er activiteiten tussen die je nooit doet?
Probeer jezelf dan in te beelden dat je de activiteit onderneemt, en denk na over het gevoel dat dit bij je oproept.

Energy-saving behavior

1 – Het uitzetten van lampen die je niet gebruikt
Turn off lights you're not using

Travel choice

2 – Korte afstanden te voet, met de fiets of het openbaar vervoer afleggen
Walk, cycle, or take public transport for short journey's

3 – Zo min mogelijk gebruik maken van het vliegtuig
Cut down on the amount you fly

Consumer behavior

4 – Het kopen van milieuvriendelijke producten
Buy environmentally-friendly products

5 – Het kopen van biologisch, lokaal voedsel
Eat food which is organic, locally-grown or in season

6 – Geen vlees eten
Avoid eating meat

7 – Het bewust kopen van producten met weinig verpakking
Buy products with less packaging

Recycling

8 – Het recyclen van afval

Recycle

9 – Het hergebruiken of repareren van producten (zoals kleding) in plaats van ze weggooien

Reuse or repair items instead of throwing them away

Water-saving behavior

10 – Kort douchen om water te besparen

Save water by taking shorter showers

11 – De kraan uitzetten terwijl je je tanden poetst

Turn off the tap while you brush your teeth

Environmental knowledge

Horvath, N., Stewart, M. and Shea, M. (2013). "Toward instruments of assessing sustainability knowledge: assessment development, process, and results from a pilot survey at the University of Maryland", Journal of Sustainability Education, Vol. 5, No. May.

Assessment of Sustainability Knowledge: 10 items

Dit is het laatste onderdeel van dit onderzoek.

De volgende vragen toetsen de mate van kennis die je hebt over het milieu. Selecteer bij elke vraag het beste antwoord. Let op, bij sommige vragen zijn meerdere antwoorden goed!

1. Waarom is het belangrijk om afval te recyclen?

(Meerdere antwoorden mogelijk)

-Recyclen vermindert het verlies van biodiversiteit

-Recyclen kost over het algemeen minder energie dan het produceren van nieuwe producten

-Recyclen vermindert de hoeveelheid afval dat naar stortplaatsen gaat

-Geen van bovenstaande antwoorden is juist (recyclen is geen efficiënte manier om om te gaan met afval)

1. Why is it important to recycle?

(Choose all that apply)

- Recycling decreases the amount of habitat lost due to resource extraction

-Recycling typically takes less energy to process recycled materials than to use new materials

-Recycling cuts down on the amount of trash that goes into landfills

-None of these (recycling of not an efficient way of dealing with our wastes)

2. Wat zijn potentiële effecten van klimaatverandering?

(Meerdere antwoorden mogelijk)

-Verlies van biodiversiteit

-Minder hevige weersomstandigheden

-Uitbreiding van de woestijnen

-Daling van de zeespiegel

2. What are the potential effects of global climate change?

(Choose all that apply)

-Loss of habitats

-Less severe weather

-Expansion of deserts

-Decrease in sea level

3. Wat is de meest belangrijke factor voor het verlies van diersoorten en ecosystemen?

A – Overbejaging/overbevissing

B – Het gebruiken van natuurgebieden voor menselijke doeleinden (landbouwgrond, stedenbouw, ect.)

C – Zure regen

D – Het fokken van dieren in dierentuinen

3. The most significant driver in the loss of species and ecosystems around the world is?

A – Overhunting/overharvesting

B – Conversion of natural space into human developments (farmland, cities, ect.)

C – Acid rain

D – Breeding of animals in zoos

4. Welke activiteit draagt het meeste bij aan duurzaamheid?

A – Het recyclen van producten

B – Het hergebruiken van producten

C – Het aanschaffen van nieuwe producten, om zo de economie te stimuleren

D – Het verminderen van de consumptie van producten

4. Of the following, which contributes the most to sustainability?

A – Recycling products

B – Reusing products

C – Buying the newest products to increase economic development

D – Reducing consumption of products

5. Welke van de hieronder beschreven factoren hebben een negatieve impact op het klimaat?

(Meerdere antwoorden mogelijk)

-Bevolkingsomvang

-De hoeveelheid producten die per persoon gebruikt worden

-Het gebruik van technologie, bedoeld om de negatieve impact op het klimaat te verminderen

5. What factors influence human population's impact on Earth's resources?

(Choose all that apply)

-Size of the population

-Amount of materials used per person

-Use of technology that lessens our impact

6. De beste manier om de lokale economie te ondersteunen is om producten te kopen bij:

(Kies het beste antwoord)

A – Grote winkelketens

B – Markten en winkels die lokaal geproduceerde producten verkopen

C – Lokale winkels en restaurants

6. The best way to support a local economy is to buy goods (groceries, clothing, toiletries, ect.) at

A – large chain stores

B – farmer's markets and stores that sell locally-produced goods

C – locally-owned stores and restaurants

7. De volgende stellingen gaan over water. Geef aan welke stellingen waar zijn.

(Meerdere antwoorden mogelijk)

-Het aantal mensen dat toegang heeft tot schoon drinkwater zal toenemen in de volgende twee decennia

-Waterreserves worden sneller opgemaakt dan dat de natuur ze kan aanvullen

-Er zijn veel mensen in andere landen die geen toegang hebben tot schoon drinkwater, waardoor ze vervuild water moeten drinken

-Klimaatverandering vormt geen dreiging voor de beschikbaarheid van water

7. Which of the following statements about water is/are true?

(Choose all that apply)

-The number of people who have access to clean drinking water will increase over the next two decades

-Globally, freshwater reserves (aquifers) are used faster than they are replenished

-Many people around the world do not have access to clean drinking water, so their only option is to drink contaminated water

-Global warming does not threaten to decrease freshwater reserves

8. Stel je voor dat we voor elk product 'de werkelijke prijs' zouden betalen: alle kosten die komen kijken bij het produceren van een product. Welke van de onderstaande factoren zouden in 'de werkelijke prijs' meegenomen worden?

(Meerdere antwoorden mogelijk)

-De kosten van de grondstoffen om het product te maken

-De kosten van de milieuschade die ontstaat door de productie

-De transportkosten

-De kosten voor de gezondheidszorg voor de mensen die het product gemaakt hebben

8. Imagine we had to pay for all the costs associated with the manufacturing of the goods we use every day. What would go into calculating the true costs of a product?

(Choose all that apply)

-The cost of raw materials to make the product

-The cost of environmental damage caused by production

-The cost to transport that product from its manufacturing location to your location

-The cost of health care for employees who manufacture the product

9. Zet de hieronder beschreven activiteiten op volgorde op basis van hun impact op het milieu.
Noem eerst de activiteit met de grootste impact op het milieu, en als laatste de activiteit met de minste impact op het milieu.

1 - Een oplader met mobiele telefoon twaalf uur in het stopcontact laten zitten

2 – Een McDonalds hamburger eten

3 – Een McDonalds kip-sandwich eten

4 – Met het vliegtuig van Nederland naar Amerika reizen

A – 1, 3, 2, 4

B – 4, 1, 2, 3

C – 4, 3, 2, 1

D - 4, 2, 3, 1

9. Put the following list in order of the activities with the largest environmental impact to those with the smallest environmental impact

1 – Keeping a cell phone charger plugged into an electrical outlet for 12 hours

2 – Eating one McDonals quarter-pound hamburger

3 – Eating one McDonals chicken sandwich

4 – Flying in a commercial airplane from Washington DC to China

A – 1, 3, 2, 4

B – 4, 1, 2, 3

C – 4, 3, 2, 1

D - 4, 2, 3, 1

Scoringssystem:

"Based on the knowledge and input of Office of Sustainability staff members and campus faculty members, individual question answers were deemed "correct" if they were reflective of greater sustainability knowledge and "incorrect" if they were reflective of less sustainability knowledge. Surveys were scored accordingly with respondents receiving one point for each "correct" answer; there was no loss of points for incorrect answers. Some questions had more than one correct answer; therefore, the total number of possible points was 31. Each assessment received a raw score, which was then converted to a percentage (called "sustainability score" from here on). Recall that this assessment is designed to test sustainability knowledge, as determined by respondent's responses over the full set of questions."

Debriefing

Je bent aan het einde gekomen van het onderzoek. Hartelijk dank voor je deelname. De resultaten zijn opgeslagen en je kunt het scherm afsluiten.

Doel van het onderzoek

Het doel van dit onderzoek is om meer inzicht te krijgen in de rol van zelfcontrole op duurzaam gedrag. Specifiek wordt getoetst of mensen met een hoge mate van zelfcontrole meer duurzaam gedrag vertonen. Daarbij wordt gekeken of de mate waarin mensen (bepaalde) duurzame activiteiten als vervelend ervaren deze relatie (deels) kan verklaren. Onderzoek heeft namelijk uitgewezen dat mensen met een hoge mate van zelfcontrole

doelgerichte gedragingen als minder vervelend ervaren dan mensen met een lage mate van zelfcontrole. Bovendien wordt gemeten wat de invloed is van het ervaren van een hoge mate van bezorgdheid en affiniteit met het milieu.

Indien je vragen hebt naar aanleiding van het onderzoek, of interesse in de onderzoeksresultaten, dan kun je contact opnemen via m.c.boer@students.uu.nl.

Nogmaals hartelijk dank voor de deelname.
Met vriendelijke groet,
Lotte Boer