

Review

## Explaining the Paradox: How Pro-Environmental Behaviour can both Thwart and Foster Well-Being

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**Abstract:** Although pro-environmental behaviour is often believed to be difficult, aggravating, and potentially threatening one's quality of life, recent studies suggest that people who behave in a more pro-environmental way are actually more satisfied with their lives. In this manuscript, we aim to explain this apparent paradox by reviewing theoretical arguments and empirical evidence for both sides of the coin: why would acting pro-environmentally decrease one's well-being, and why would it increase one's well-being? We conclude that part of the answer lies in a different view on what well-being entails, and more specifically, whether the focus is on hedonic well-being (*i.e.*, feeling pleasure) or eudaimonic well-being (*i.e.*, feeling meaningful).

**Keywords:** well-being; pro-environmental behaviour; environmental sustainability

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### 1. Introduction

*Set your heart on doing good. Do it over and over again, and you will be filled with joy. A fool is happy until his mischief turns against him. And a good man may suffer until his goodness flowers.*

*Buddha*

Whether the topic is the extinction of fish [1], the emission of greenhouse gasses [2], or the degradation of natural resources [3], most researchers and politicians agree that the transition to an environmentally sustainable society is an important goal in the coming years. As defined at the Oslo

symposium on Sustainable Consumption [4], a sustainable society is as a society in which “the use of goods and services [...] respond to basic needs and bring a better quality of life, while minimising the use of natural resources, toxic materials and emissions of waste and pollutants over the life cycle, so as not to jeopardise the needs of future generations”. For an effective transition to such a sustainable society, it is important that, next to technological and policy developments, individuals change their behavioural patterns to reduce their environmental impact [5,6].

Unfortunately, behaving in a pro-environmental way is often perceived as difficult, aggravating, and potentially threatening one’s quality of life [7–11], thus as something one would not do out of self-interest: “While frugality may be accepted as a necessary feature of the future it is usually portrayed as an onerous undertaking, one requiring personal sacrifice of the highest order. People, it is argued, are being asked to give up a modern, high-technology existence for an austere, bleak but needed substitute” ([12], p. 216). The perception that pro-environmental behaviour has negative effects on well-being has made it difficult to make big and concrete steps towards transition. But is this perception accurate?

As the definition of sustainability already shows, engaging in sustainable behaviour is actually meant to “bring a better quality of life” of individuals in the long run [4]. Following this definition, pro-environmental behaviour can thus only be called sustainable if it does not threaten human well-being. Indeed, this is also one of the basic premises in the World Happiness Report [13], in which it is claimed that “the quest for happiness is intimately linked to the quest for sustainable development” (p. 3). According to the World Happiness Report, it should be perfectly possible to adopt lifestyles and technologies that improve happiness and reduce human damage to the environment at the same time. A few empirical studies support this claim and even suggest that behaving in a pro-environmental way may lead to an increase in well-being. For example, consuming in a pro-environmental way was found to be related to greater personal well-being [7], higher overall life-satisfaction [14], and more happiness [15]. However, as these results are all based on correlational research, causality cannot be implied.

In sum, there seem to be two opposing views on the relationship between pro-environmental behaviour and well-being: on the one hand, behaving pro-environmentally is believed to decrease individual well-being, while on the other hand it is believed to increase individual well-being. By reviewing theoretical arguments for both positions, we will examine whether, when, and in what way pro-environmental behaviour can affect the well-being of those who engage in it.

## 2. Defining Well-Being

Before we can make any inference about the effect of pro-environmental behaviour on well-being, we first need to be clear on what well-being actually is. The discussion on the definition of well-being and what kind of life one should lead to “become happy” goes back to ancient philosophy, and is still going on today. This discussion usually boils down to two distinct views on what well-being entails: the hedonic *versus* the eudaimonic view [16]. Below, we will first define both types of well-being and next discuss possible effects of pro-environmental behaviour on these two types of well-being.

### 2.1. Hedonic Well-Being

Hedonic well-being has its roots in the ancient philosophy of Aristippus, who taught that “the goal of life is to experience the maximum amount of pleasure, and that happiness is the totality of one’s hedonic moments” ([16], pp. 143,144). The experiences to which “hedonic moments” refer can range

from a narrow focus on physical pleasures and displeasures (Aristippus, in [17]) to a broad focus on the presence of benefits and absence of suffering in general (Bentham, in [17]).

Psychologists studying hedonic well-being mainly use a broad definition of this concept, which includes both physical and cognitive preferences and pleasures (Kubovy, 1999, in [16]). Within this broad definition, not only physically pleasant moments such as having a nice dinner, but also cognitively pleasant moments such as the attainment of a goal can contribute to hedonic well-being.

## 2.2. Eudaimonic Well-being

In contrast to the hedonic focus on the subjective experience of pleasure, the eudaimonic view on well-being defines being well as “living well” or “pursuing the right ends” [18]. This view on well-being has its roots in Aristotle’s *Nicomachian Ethics*, where he describes eudaimonic living as using “one’s best human capacities by actively pursuing virtues and excellences” (In [18], p. 143). These virtues and excellences refer to concepts like courage, generosity, wisdom and being fair; things that are intrinsically worth pursuing and do not derive their worth from the external benefits they can bring. Following Aristotle’s view on well-being, someone would only be classified as having high eudaimonic well-being if this person is doing virtuous things for the right reasons—the right reasons being that the person is deliberately choosing to act virtuously and is not doing so out of external temptation or coercion, or out of ignorance [18]. Importantly, to meet Aristotle’s criteria of eudaimonia, doing the right thing for the right reasons does not have to give a good feeling.

Building on Aristotle’s view, psychologists studying eudaimonic well-being generally define it as a way of living that is focused on what is intrinsically worthwhile to human beings [18], as realizing valued human potentials [16], or as striving to realize one’s personal potential [19,20]. An important distinction between these psychological perspectives and the original definition by Aristotle is that although the latter does not imply that *doing* good also *feels* good, the psychological definitions do assume such a relationship. However, the “good feeling” of eudaimonic psychology refers to a deeper and higher sense of well-being—concepts such as having a purpose in life [19]—than the pleasure related emotions relevant for hedonic well-being, as discussed above.

## 2.3. The Relationship Between Hedonic and Eudaimonic Well-Being

Hedonic and eudaimonic well-being are often seen as two distinct visions of what well-being entails. It is even argued that pursuing a hedonic life of immediate gain of pleasure and avoidance of pain diverts people from living a “good”, eudaimonic life [18]. Although most people will agree that having a good feeling is not the same as leading a good life, the two concepts are not mutually exclusive. For example, feeling good can lead to doing good, such as acting in a more pro-social way [21], and the other way around, doing good also gives a good feeling [22], also referred to as “warm glow” [23,24]. Following Ryff [25], we will use the type of positive feelings as the criterion to distinguish hedonic and eudaimonic well-being: hedonic well-being in this review refers to fleeting positive emotions such as pleasure, while eudaimonic well-being in this review refers to deeper positive emotions such as feeling meaningful.

## 3. Pro-Environmental Behaviour and Well-Being

As mentioned in the introduction, the relationship between pro-environmental behaviour and well-being appears to be twofold; on the one hand, behaving pro-environmentally is believed to decrease

individual well-being, while on the other hand, behaving pro-environmentally is believed to increase individual well-being. We propose that a possible explanation for these conflicting findings can be found in the different views on what well-being entails. More specifically, while behaving in a pro-environmental way may decrease hedonic well-being, it may increase eudaimonic well-being. Therefore, we will discuss the effect of pro-environmental behaviour on hedonic and eudaimonic well-being in separate sections. We will start with discussing why and how behaving in a pro-environmental way may affect hedonic well-being, and then discuss why and how behaving in a pro-environmental way may affect eudaimonic well-being.

### 3.1. Pro-Environmental Behaviour and Hedonic Well-Being

#### 3.1.1. Goal Attainment and Well-Being

“We can only do so much” is an often-heard reason to not act pro-environmentally. Environmental conditions will only improve when a large group of people adopts pro-environmental behaviours, so people may have the impression that their personal contribution will not be sufficient to save the planet. Furthermore, improvements in environmental conditions go slowly and result from complex interactions. The positive effects of one’s individual pro-environmental behaviours on the condition of the earth are thus uncertain, complex, and situated in the future—in contrast to the personal benefits of environmentally harmful behaviour such as car use, which are certain, simple, and immediate [26]. Therefore, people who engage in pro-environmental behaviour at the current moment cannot easily envision or experience the actual effects of their behaviour on the condition of the earth. This gap between pro-environmental behaviour and its positive environmental outcomes makes it difficult for people to judge the usefulness and effectiveness of personal engagement in pro-environmental behaviour.

Difficulty to judge the usefulness and effectiveness of one’s behaviour may have negative consequences for the hedonic well-being of people who engage in pro-environmental behaviour. The pursuit of goals that are perceived to be unattainable can lead to psychological distress and reduced well-being [27–29], and uncertainty about the usefulness and effectiveness of one’s behaviour makes it unclear whether and when the goal—in this case to protect the environment—will be attained. Research indeed showed that volunteers in environmental organizations experience reduced hedonic well-being when they feel they fail to attain their goal. More specifically, they feel angry or sad because of the bad state nature is in, the feeling they are not doing enough, and the idea that not enough people are doing their bit [30].

So why would anyone voluntarily choose to pursue a goal that cannot be attained, and on top of all, that makes them feel bad in the process? The critical point here is that goal pursuit reduces hedonic well-being only if the goal is *perceived* to be unattainable. And despite the uncertainty about whether and when the results will become visible, most people do feel they can effectively contribute to the protection of the environment [30]. One of the reasons people still feel their contribution can be worthwhile, is that “big” goals such as protecting the environment are typically reframed into smaller sub goals: to eventually protect the environment, we for instance first have to reduce our own energy consumption. By reframing a big goal into smaller, attainable goals, people get motivated to engage in this behaviour [31] and derive hedonic well-being from their engagement [29]. Indeed, environmental volunteers indicated they felt satisfied and proud when the specific environmental projects they worked on were successful [30], even though the overarching goal of protecting the environment was

not attained yet. So although the pursuit of an unattainable goal may lead to decreased hedonic well-being, pro-environmental behaviour does not have to be dedicated to an unattainable goal, and therefore does not have to decrease hedonic well-being.

### 3.1.2. Consumption and Well-Being

Increasing personal consumption and national economic growth has long been seen as one of the most effective ways to increase the well-being of citizens [32–35]. Indicators such as the Gross National Product (GNP) are used to see how well a country is doing, based on the assumption that the more people can consume, the higher their well-being. Following this assumption, Ekins [33] even proposed that the possession and consumption of more hedonic products is seen as the “surest perceived route to personal happiness” (p. 244) and well-being. This would mean that putting a halt to increases of consumption, or to even decrease our consumption to more sustainable levels would be detrimental for our well-being—a pro-environmental lifestyle such as *voluntary simplicity* would be noble, but miserable.

Studies indeed show that consumption can bring hedonic well-being. For instance, shopping is used as a way to reduce stress or negative emotions [36–39], purchasing products can provide a hedonic well-being boost [40,41], and consumption is linked to higher life satisfaction [42,43]. Since this literature suggests that consumption indeed increases hedonic well-being, it is often implied that consuming in a more sustainable way would thus lead to a decrease in well-being. But is this really the case?

Literature suggests it is not. First, sustainable consumption does not necessarily equate to consuming less [9,34], but rather to consuming differently [44]. Buying a pair of new shoes and buying a pair of second hand shoes both comes down to buying the same type of product: consuming the pro-environmental alternative still is consuming. The hedonic well-being derived from consuming can therefore still be derived from the consumption of pro-environmental alternatives [45].

Second, consumption is not the only way to gain hedonic well-being. Following Evans and Jackson [46], consuming less does not have to mean that one will also have less pleasurable experiences. The pleasurable experiences that are derived from consumption can be replaced by pleasure found in other domains—sometimes even by pro-environmental behaviour itself, as will be discussed in more depth below. So although consumption may bring hedonic well-being, sustainable consumption patterns do not have to decrease hedonic well-being.

### 3.1.3. Environmental Conditions and Well-Being

One of the arguments that is used to explain why pro-environmental action would bring more hedonic well-being is that pro-environmental behaviour leads to better environmental conditions, and people can live a more comfortable life under better environmental conditions [47,48]. This means that on the macro level, pro-environmental behaviour will increase hedonic well-being by enhancing the environmental conditions people live in.

There is indeed some evidence for this relationship. For example, nationwide pollution [49,50] and loss of biodiversity [51–53] have a negative effect on the well-being of inhabitants, lower CO<sub>2</sub> emission per unit GDP is related to higher well-being in countries [54], and mean life satisfaction is higher in countries that score higher on the Environmental Sustainability Index—although this effect is very small [55]. This literature indeed seems to suggest that, on the macro level, pro-environmental

behaviour could increase hedonic well-being by enhancing the environmental conditions people live in.

However, since all studies mentioned above are correlational, it is difficult to establish that better environmental conditions *lead to* increased hedonic well-being. Furthermore, the change in environmental conditions goes slowly, depends on the pro-environmental action of a large group of people, and environmental conditions also affect those who do not act pro-environmentally. Therefore, enhanced quality of the environment cannot explain why the well-being of specifically those people who act pro-environmentally will increase. To explain the relationship between pro-environmental behaviour and well-being on the individual (micro) level, other mechanisms might therefore be more suitable.

#### 3.1.4. Pro-Environmental Behaviour and Pleasure

An individual level mechanism that could explain how pro-environmental behaviour brings hedonic well-being is that pro-environmental products or behaviour can bring inherent pleasure. For instance, some people perceive organic food as tastier than non-organic food [56,57]. Thus for those who perceive organic food as tastier, eating organic food not only benefits the environment, but also brings pleasure. In line with this, pro-environmental behaviour is found to be intrinsically satisfying for some [8], and, as mentioned in the section on consumption and well-being, living a sustainable lifestyle is argued to be pleasurable in itself. As Evans and Jackson [46] describe, “living a sustainable lifestyle can provide for the pleasure and desire that is so central to consumption and accounts thereof. These pleasures, according to the respondents’ narratives, ranged from the ‘simple pleasures’ associated with energy saving rituals in the home through the creative indulgence involved in creating a ‘whole new garment’ by repairing old or broken clothing to wholesale shifts in the way that they eat (local, in-season, slowly and organic) or move (cycling and walking) leading to a changed relationship with the world around them in a manner that is innately pleasurable” (p. 16). If pro-environmental behaviour is indeed pleasurable to do, engaging in such behaviour will also increase hedonic well-being.

However, not all pro-environmental behaviours are perceived to be more pleasurable than their environmentally harmful counterparts, and some are even perceived to be *less* pleasurable. For instance, turning down the thermostat in during a cold winter day can be considered pro-environmental behaviour, but it may also lead to uncomfortably cold rooms [58]. In other words, not all pro-environmental behaviours are intrinsically satisfying or motivated by pleasant natural consequences [59]. Instead, pleasure or displeasure is often derived from by-products of the pro-environmental behaviour, such as “better taste” in the case of organic products, or “makes you feel cold” in the case of turning down the heat. Without these advantages or disadvantages, the example behaviours would not be more or less pleasurable than their non-sustainable counterparts; pro-environmental behaviour is thus not pleasurable per se.

Does this mean that we need to add pleasurable aspects to pro-environmental behaviours in order to increase hedonic well-being of those engaging in it? For example, should we make energy saving actions or recycling fun by incorporating it in a game [60]? Or should we make consuming in a pro-environmental way more comfortable by ensuring pro-environmental products are also of better quality? Although adding pleasurable or hedonic aspects to specific pro-environmental behaviours can increase the hedonic well-being derived from these behaviours, it may not be the most effective way to increase the well-being derived from pro-environmental behaviour in general. Adding hedonic aspects to behaviour only increases the hedonic well-being derived from that specific behaviour, and not the

hedonic well-being derived from other behaviours in the same category. Therefore, to increase the hedonic well-being derived from pro-environmental behaviour in this way, one would have to add hedonic aspects to all separate pro-environmental behaviours. As argued above, we do not think that this is necessary to increase the well-being derived from pro-environmental behaviour. First, pro-environmental behaviour in general can already provide hedonic well-being because it brings people a step closer to reaching a sustainable goal. Second, as we will discuss in more depth in the next section, pro-environmental behaviour can provide eudaimonic well-being because it is perceived as the ‘right’ course of action.

### *3.2. Pro-Environmental Behaviour and Eudaimonic Well-Being*

In the section on consumption and hedonic well-being we argued that a more sustainable consumption pattern need not decrease hedonic well-being, since one can still reap the benefits of consumption in the form of pro-environmental alternatives, and one can replace “foregone” pleasurable experiences in the consumption domain by pleasurable experiences in other, more sustainable domains. Another often used argument for why a sustainable consumption pattern may even increase eudaimonic well-being, is that solely focusing on the pursuit of more consumer products detracts from well-being [32,61–64]. People who focus on the pursuit of wealth and possessions typically invest less time and effort in the pursuit of intrinsic goals such as self-actualization or participation in social communities [62,65], while it is the pursuit of these intrinsic goals that brings eudaimonic well-being. Therefore, it is often argued, there should be a positive relationship between pro-environmental behaviour and eudaimonic well-being [9,48,66]: shifting one’s focus from the pursuit of materialistic things like money and products, to the pursuit of non-materialistic things like close relationships, personal growth and finding a sense of meaning in life is not only more pro-environmental, but it also contributes to eudaimonic well-being. As we will argue in the following section, pro-environmental behaviour itself can even provide a source of meaning in life, thereby directly increasing eudaimonic well-being.

#### Doing Good and Well-Being

As we mentioned in the beginning of this review, eudaimonic well-being is derived from “living well” or “pursuing the right ends” [18]. Engaging in virtuous activities is thus expected to foster eudaimonic well-being. One of the reasons why doing the right thing could foster eudaimonic well-being is that it has a signalling function to oneself: if you are taking the effort to engage in good behaviour—even more so when doing this behaviour is effortful and voluntary—you must be a good person. Indeed, people’s self-worth is determined by how moral they perceive themselves to be [67,68]. Well-being thus, amongst others, depends on perceiving one’s actions as doing good instead of doing harm [69].

This positive link between well-being and doing good can also be inferred from research on pro-social behaviour. Spending money on others [70] or charity [23,24,71,72], volunteering [73–75] or helping others [76] are all examples of pro-social behaviour that brings eudaimonic well-being. These studies show that engaging in pro-social behaviour makes the doer feel good—even if the behaviour does not have a direct benefit for him or herself. In fact, if people engage in pro-social or good behaviour because of direct or indirect personal benefits such as monetary gain, social approval or job opportunities, its effect on eudaimonic well-being diminishes [73,77,78]. Thus, doing the right thing particularly contributes to eudaimonic well-being when the choice for the right behaviour is

intrinsically and autonomously motivated—or at least perceived to be so [18,79]. Therefore, Evans and Jackson [46] doubt whether the meaning that can be derived from pursuing a sustainable lifestyle will indeed be experienced by anyone who acts in a pro-environmental way; it is more likely that only those who *deliberately choose* for a pro-environmental lifestyle will gain eudaimonic well-being from their engagement.

Furthermore, in order to provide a sense of meaning and bring eudaimonic well-being, pro-environmental behaviour should also be seen as doing the right thing by those who engage in it. Pro-environmental behaviour has often been described as a form of pro-social behaviour [8,14,80,81] that can be driven by altruistic motives (e.g., the concern for the next generation, other species, or whole eco-systems) [82–84]. It is also argued that pro-environmental behaviours are typically classified as moral behaviour [80], and that the choice for pro-environmental behaviour is based, amongst others, on evaluations about what is the right or wrong thing to do [85]. In line with these theoretical claims, a national survey found that Americans strongly agreed that nature has intrinsic value and that humans have moral duties and obligations to animals, plants, and non-living nature such as rocks, water, and air [86]. Likewise, many people in the UK agreed that people have personal, social and moral responsibilities to address climate change [87].

Although this literature suggests that most people think behaving pro-environmentally is the right thing to do, not everybody may agree—as a recent study for instance shows, conservatives usually are less likely to perceive pro-environmental behaviour in terms of moral or good behaviour [88]. Whether one sees pro-environmental behaviour as “good” behaviour may depend on the norms and values upheld by the social groups one belongs to [89]. If pro-environmental behaviour is frowned upon by those who are important to you, it is less likely that you will see pro-environmental behaviour as good, and the other way around. However, an important factor for the extent to which you are likely to derive eudaimonic well-being from engagement in pro-environmental behaviour is the extent to which you internalized these group values and norms [90–92]. If your group members see pro-environmental behaviour as highly important, but you yourself did not internalize these norms yet, the group norms may work as an external pressure. So if you engage in pro-environmental behaviour because you believe your group values such behaviour, and not because you yourself value it, it is less likely that you will derive eudaimonic well-being from your engagement; as mentioned above, Aristotle only classifies someone as having high eudaimonic well-being if this person is doing virtuous things for the right reasons—the right reasons being that the person is deliberately choosing to act virtuously and is not doing so out of external temptation or coercion, or out of ignorance [18]. So, if people do not value environmental protection or do not think pro-environmental behaviour is the right thing to do, it is less likely that behaving in a pro-environmental way will add to their eudaimonic well-being. Therefore, particularly for those people who see pro-environmental behaviour as good, and for whom the choice for this behaviour is intrinsically and autonomously motivated, behaving in a pro-environmental way is likely to bring eudaimonic well-being.

#### 4. Summary

Our aim was to examine whether, when, and in what way pro-environmental behaviour affects the well-being of those who engage in it. To fulfil this aim, we discussed the effect of pro-environmental behaviour on hedonic (*i.e.*, feeling pleasure) and eudaimonic (*i.e.*, feeling meaningful) well-being, respectively. The research discussed so far suggests that engaging in pro-environmental behaviour may

have especially negative consequences for hedonic well-being, but mainly positive consequences for eudaimonic well-being. However, the full story is more complicated.

#### *4.1. Pro-Environmental Behaviour and Hedonic Well-Being*

As we discussed, pro-environmental behaviour may decrease hedonic well-being for various reasons. Most importantly, protecting the environment may be unattainable, thereby making striving for this goal an onerous burden; living in a pro-environmental way can imply consuming less, thereby robbing people of the pleasure consumption can bring; and pro-environmental behaviour can be experienced as less comfortable and convenient than its environmentally harmful alternative. As we showed in this review, however, the role of these processes has to be nuanced.

Although uncertainty about the usefulness and effectiveness of one's pro-environmental behaviour could in theory detract hedonic well-being, people may still experience a sense of progress towards an environmental goal when the goal is reframed into smaller sub goals. So although the pursuit of an unattainable goal may lead to decreased hedonic well-being, pro-environmental behaviour does not have to be dedicated to an unattainable goal, and therefore does not have to decrease hedonic well-being.

With respect to the relationship between consumption and well-being, behaving in a pro-environmental way could imply that one has to miss out on some of the hedonic well-being that consumption brings. However, pro-environmental consumption and hedonic experiences in other, more sustainable, domains can replace the hedonic well-being that one "foregoes" by consuming in a more sustainable way. Cutting down or changing consumption out of pro-environmental considerations does therefore not necessarily have to lead to a decrease in hedonic well-being.

Lastly, pro-environmental actions can be less comfortable than their environmentally harmful counterparts, thereby leading to a decrease in hedonic well-being. On the other hand, however, there is also pro-environmental behaviour that is seen as more pleasurable or comfortable than its environmentally harmful counterparts. It is therefore not pro-environmental behaviour itself, but rather the by-products of pro-environmental behaviour that bring pleasure or displeasure. Therefore, to explain why pro-environmental behaviour itself would increase individual well-being—and not macro level well-being by increasing better environmental conditions—the focus should be on eudaimonic, instead of hedonic well-being.

#### *4.2. Pro-Environmental Behaviour and Eudaimonic Well-Being*

Although consumption may lead to an increase in hedonic well-being, solely focusing on the pursuit of more consumer products detracts from well-being, since people who focus on the pursuit of wealth and possessions typically invest less time and effort in the pursuit of more intrinsic goals such as self-actualization or participation in social communities. Therefore, shifting one's focus from the pursuit of materialistic things like money and products, to the pursuit of non-materialistic things like close relationships, personal growth and finding a sense of meaning in life is not only more pro-environmental, it may also contribute to eudaimonic well-being. Pro-environmental behaviour itself can even be a source of meaning in life, thereby directly increasing eudaimonic well-being.

As defined in the current review, eudaimonic well-being can be found in "living well" or "pursuing the right ends" [18], and pro-environmental behaviour is seen by many as moral or good behaviour [86]. However, for pro-environmental behaviour to lead to an increase in eudaimonic well-being, those who engage in it do have to see it as the right thing to do, and its engagement should be intrinsically and autonomously motivated. For those who do not see pro-environmental behaviour as right, or for those

who act in a pro-environmental way out of extrinsic reasons or ignorance, pro-environmental behaviour is thus less likely to add to eudaimonic well-being.

## 5. Conclusion

Pro-environmental behaviour in itself does not have to result in a decrease of personal well-being. As we showed in this literature review, processes through which pro-environmental behaviour is expected to have a detrimental influence on (hedonic) well-being can be nuanced; pro-environmental behaviour probably does not have the daunting influence on hedonic well-being it is often depicted to have. However, this does not warrant that pro-environmental behaviour will *thus* have a positive influence on well-being. The discussed literature suggests that for pro-environmental behaviour to lead to an increase in (eudaimonic) well-being, it is important that people see pro-environmental behaviour as the right thing to do, and have the feeling they want and freely choose to perform this behaviour.

For policies that are aimed at increasing pro-environmental behaviour and well-being, achieving this might be a hard nut to crack. However, this review does offer some general guidelines for how policy makers can increase the likelihood of a positive relation between pro-environmental behaviour and well-being. In line with Moller, Ryan and Deci [93], this review suggests that “forcing” people to act in a pro-environmental way by making it obligatory by law may be counterproductive if the aim of policies in the end is to increase well-being. For pro-environmental behaviour to increase well-being, it is important to convince people that their behaviour is right and meaningful, and stimulate people to choose this behaviour of their own free will [79,89]. Future research is therefore needed to examine how intrinsic and autonomous motivation for pro-environmental behaviour can best be generated, also for those who do not strongly value environmental protection at the moment, in order to form a positive link between pro-environmental behaviour and (eudaimonic) well-being.

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## Conflict of Interest

The authors declare no conflict of interest.

## References and Notes

1. McIntyre, P.B.; Jones, L.E.; Flecker, A.S.; Vanni, M.J. Fish extinctions alter nutrient recycling in tropical freshwaters. *Proc. Natl. Acad. Sci. USA* **2007**, *104*, 4461–4466.
2. United Nations. Report of the Conference of the Parties on its Sixteenth Session, Cancun, Mexico, 29 November to 10 December 2010; FCCC/CP/2010/7/Add.1; United Nations Office: Geneva, Switzerland, 2011.
3. Baland, J.M.; Platteau, J.P. *Halting Degradation of Natural Resources: Is there a Role for Rural Communities?* Clarendon Press for FAO: Oxford, UK, 1996.
4. Norwegian Ministry of the Environment. *Symposium: Sustainable Consumption. 19–20 January 1994*; Norwegian Ministry of the Environment: Oslo, Norway, 1994.
5. Chiras, D.D. *Environmental Science*; Jones & Bartlett Learning: Sudbury, Canada, 2011.

6. IPCC (Intergovernmental Panel on Climate Change). *Climate Change 2007: Synthesis Report*; IPCC: Geneva, Switzerland, 2007.
7. Brown, K.W.; Kasser, T. Are psychological and ecological well-being compatible? The role of values, mindfulness, and lifestyle. *Soc. Indicators Res.* **2005**, *74*, 349–368.
8. De Young, R. Expanding and evaluating motives for environmentally responsible behavior. *J. Soc. Iss.* **2000**, *56*, 509–526.
9. Jackson, T. Live better by consuming less? Is there a “double dividend” in sustainable consumption? *J. Ind. Ecol.* **2005**, *9*, 19–36.
10. Kaplan, S. Human nature and environmentally responsible behavior. *J. Soc. Iss.* **2000**, *56*, 491–508.
11. O’Brien, C. Sustainable happiness: How happiness studies can contribute to a more sustainable future. *Can. Psychol.* **2008**, *49*, 289–295.
12. De Young, R. Some psychological aspects of living lightly: Desired lifestyle patterns and conservation behavior. *J. Environ. Syst.* **1990**, *20*, 215–227.
13. Helliwell, J.; Layard, R.; Sachs, J. *World Happiness Report*; Earth Institute, Columbia University: New York, NY, USA, 2012.
14. Xiao, J.J.; Li, H. Sustainable consumption and life satisfaction. *Soc. Indicators Res.* **2011**, *104*, 323–329.
15. Kasser, T.; Sheldon, K.M. What makes for a merry christmas? *J. Happiness Stud.* **2002**, *3*, 313–329.
16. Ryan, R.M.; Deci, E.L. On happiness and human potentials: A review of research on hedonic and eudaimonic well-being. *Annu. Rev. Psychol.* **2001**, *52*, 141–166.
17. Diener, E.; Napa Scollon, C.; Lucas, R.E. The evolving concept of subjective well-being: The multifaceted nature of happiness. *ACAG* **2003**, *15*, 187–219.
18. Ryan, R.M.; Huta, V.; Deci, E.L. Living Well: A self-determination theory perspective on eudaimonia. *Journal of Happiness Studies* **2008**, *9*, 139–170.
19. Ryff, C.D.; Keyes, C.L.M. The Structure of Psychological Well-being Revisited. *J. Pers. Soc. Psychol.* **1995**, *69*, 719–727.
20. Ryff, C.D.; Singer, B.H. Know thyself and become what you are: A eudaimonic approach to psychological well-being. *J. Happiness Stud.* **2008**, *9*, 13–39.
21. Aknin, L.B.; Dunn, E.W.; Norton, M.I. Happiness runs in a circular motion: Evidence for a positive feedback loop between prosocial spending and happiness. *J. Happiness Stud.* **2012**, *13*, 347–355.
22. Waterman, A.S.; Schwartz, S.J.; Conti, R. The implications of two conceptions of happiness (hedonic enjoyment and eudaimonia) for the understanding of intrinsic motivation. *J. Happiness Stud.* **2008**, *9*, 41–79.
23. Andreoni, J. Giving with impure altruism: Applications to charity and ricardian equivalence. *J. Polit. Econ.* **1989**, *97*, 1447–1458.
24. Andreoni, J. Impure altruism and donations to public goods: A theory of warm-glow giving. *Econ. J.* **1990**, *100*, 464–477.
25. Ryff, C.D. Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *J. Pers. Soc. Psychol.* **1989**, *57*, 1069–1081.
26. Vlek, C. Essential psychology for environmental policy making. *Int. J. Psychol.* **2000**, *35*, 153–167.

27. Brunstein, J.C. Personal goals and subjective well-being: A longitudinal study. *J. Pers. Soc. Psychol.* **1993**, *65*, 1061–1070.
28. Emmons, R.A. Personal strivings: An approach to personality and subjective well-being. *J. Pers. Soc. Psychol.* **1986**, *51*, 1058–1068.
29. Wrosch, C.; Scheier, M.F.; Miller, G.E.; Schulz, R.; Carver, C.S. Adaptive self-regulation of unattainable goals: Goal disengagement, goal reengagement, and subjective well-being. *Pers. Soc. Psychol. B* **2003**, *29*, 1494–1508.
30. Eigner, S. The Relationship Between “Protecting the Environment” as a Dominant Life Goal and Subjective Well-being. In *Life Goals and Well-being. Towards a Positive Psychology of Human Striving*; Schmuck, P., Sheldon, K.M., Eds.; Hogrefe & Huber Publishers: Seattle, WA, USA, 2001; pp. 182–201.
31. Kirby, K.N.; Guastello, B. Making choices in anticipation of similar future choices can increase self-control. *J. Exp. Psychol.* **2001**, *7*, 154.
32. Burroughs, J.E.; Rindfleisch, A. Materialism and well-being: A Conflicting values perspective. *J. Consum. Res.* **2002**, *29*, 348–370.
33. Ekins, P. A Sustainable consumer society: A contradiction in terms? *Int. Environ. Aff.* **1991**, *3*, 243–258.
34. Sheth, J.N.; Sethia, N.K.; Srinivas, S. Mindful consumption: A customer-centric approach to sustainability. *J. Acad. Market. Sci.* **2011**, *39*, 21–39.
35. Zhong, J.Y.; Mitchell, V.W. A mechanism model of the effect of hedonic product consumption on well-being. *J. Consum. Res.* **2010**, *20*, 152–162.
36. Jackson, S.E.; Maslach, C. After-effects of job-related stress: Families as victims. *J. Organ. Behav.* **2007**, *3*, 63–77.
37. Kim, S.; Rucker, D.D. Bracing for the psychological storm: Proactive versus reactive compensatory consumption. *J. Consum. Res.* **2012**, *39*, 815–830.
38. Pierceall, E.A.; Keim, M.C. Stress and coping strategies among community college students. *Community college. J. Res. Pract.* **2007**, *31*, 703–712.
39. Urizar, G.G., Jr.; Milazzo, M.; Le, H.; Delucchi, K.; Sotelo, R.; Muñoz, R.F. Impact of stress reduction instructions on stress and cortisol levels during pregnancy. *Biol. Psychol.* **2004**, *67*, 275–282.
40. Babin, B.J.; Darden, W.R.; Griffin, M. Work and/or fun: Measuring hedonic and utilitarian shopping value. *J. Consum. Res.* **1994**, *20*, 644–656.
41. Clark, M.; Calleja, K. Shopping addiction: A preliminary investigation among Maltese university students. *Addict. Res. Theory* **2008**, *16*, 633–649.
42. Headey, B.; Muffels, R.; Wooden, M. Money does not buy happiness: Or does it? A reassessment based on the combined effects of wealth, income and consumption. *Soc. Indicators Res.* **2008**, *87*, 65–82.
43. Oropesa, R. Consumer possessions, consumer passions, and subjective well-being. *Sociol. Forum* **1995**, *10*, 215–244.
44. Welsch, H.; Kühling, J. Determinants of pro-environmental consumption: The role of reference groups and routine behavior. *Ecol. Econ.* **2009**, *69*, 166–176.

45. Although pro-environmental alternatives may act as replacements for the hedonic well-being “buying stuff” provides, the pro-environmental products themselves may be less comfortable than their environmentally harmful counterparts. We will come back to this point in the section on pro-environmental behaviour and pleasure.
46. Evans, D.; Jackson, T. *Sustainable Consumption: Perspectives from Social and Cultural Theory*; RESOLVE Working Paper 05-08; University of Surrey: Guildford, United Kingdom, 2008.
47. Clayton, S.; Brook, A. Can psychology help save the world? A model for conservation psychology. *Anal. Soc. Issues Public Policy* **2005**, *5*, 87–102.
48. Kasser, T. Psychological need satisfaction, personal well-being, and ecological sustainability. *Ecopsychology* **2009**, *1*, 175–180.
49. Arvin, B.M.; Lew, B. Life satisfaction and environmental conditions: Issues for policy. *Int. J. Global Environ. Issues* **2012**, *12*, 76–90.
50. Welsch, H. Environmental welfare analysis: A life satisfaction approach. *Ecol. Econ.* **2007**, *62*, 544–551.
51. Balmford, A.; Bond, W.; Cowling, R. Trends in the state of nature and their implications for human well-being. *Ecol. Lett.* **2005**, *8*, 1218–1234.
52. Kellert, S.R. *The Value of Life: Biological Diversity and Human Society*; Island Press: Washington DC, USA, 1996.
53. Winter, D.D.N.; Koger, S.M. *The Psychology of Environmental Problems*; Lawrence Erlbaum: Mahwah, NJ, USA, 2003.
54. Zidanšek, A. Sustainable development and happiness in nations. *Energy* **2007**, *32*, 891–897.
55. Bonini, A.N. Cross-national variation in individual life satisfaction: Effects of national wealth, human development, and environmental conditions. *Soc. Indicators Res.* **2008**, *87*, 223–236.
56. Zanolli, R.; Naspetti, S. Consumer motivations in the purchase of organic food: A means-end approach. *Brit. Food J.* **2002**, *104*, 643–653.
57. Radman, M. Consumer Consumption and Perception of Organic Products in Croatia. *Brit. Food J.* **2005**, *107*, 263–273.
58. Where the specific threshold between a comfortable and an uncomfortable temperature lies may depend on culture and personal experience.
59. Bolderdijk, J.W.; Lehman, P.K.; Geller, E.S. Encouraging Pro-environmental Behaviour with Rewards and Penalties. In *Environmental Psychology. An Introduction.*; Steg, L., van den Berg, A.E., de Groot, J.I.M., Eds.; BPS Blackwell: West Sussex, UK, 2013; pp. 233–242.
60. See for instance the website of “The fun theory”, which shows examples of how “good” behaviour is also made fun to do. Available online: <http://www.thefuntheory.com/> (accessed on 10 December 2012).
61. Bauer, M.A.; Wilkie, J.E.B.; Kim, J.K.; Bodenhausen, G.V. Cuing consumerism: Situational materialism undermines personal and social well-being. *Psych. Sci.* **2012**, *23*, 517–523.
62. Csikszentmihalyi, M. If we are so rich, why aren't we happy? *Am. Psychol.* **1999**, *54*, 821–827.
63. Kasser, T. *The High Price of Materialism*; MIT Press: Cambridge, MA, USA, 2002.
64. Richins, M.L.; McKeage, K.K.R.; Najjar, D. An exploration of materialism and consumption-related affect. *Adv. Consum. Res.* **1992**, *19*, 229.

65. Kasser, T.; Ryan, R.M. A dark side of the American dream: Correlates of financial success as a central life aspiration. *J. Pers. Soc. Psychol.* **1993**, *65*, 410.
66. Myers, D. The social psychology of sustainability. *World Futures* **2003**, *59*, 201–211.
67. Dunning, D. Self-image motives and consumer behavior: How sacrosanct self-beliefs sway preferences in the marketplace. *J. Consum. Psychol.* **2007**, *17*, 237–249.
68. Sachdeva, S.; Iliev, R.; Medin, D.L. Sinning saints and saintly sinners: The paradox of moral self-regulation. *Psych. Sci.* **2009**, *20*, 523–528.
69. Grant, A.M.; Campbell, E.M. Doing good, doing harm, being well and burning out: The interactions of perceived prosocial and antisocial impact in service work. *J. Occup. Organ. Psychol.* **2007**, *80*, 665–691.
70. Dunn, E.W.; Aknin, L.B.; Norton, M.I. Spending money on others promotes happiness. *Science* **2008**, *319*, 1687–1688.
71. Harbaugh, W.T.; Mayr, U.; Burghart, D.R. Neural responses to taxation and voluntary giving reveal motives for charitable donations. *Science* **2007**, *316*, 1622–1625.
72. Liu, W.; Aaker, J. The happiness of giving: The time-ask effect. *J. Consum. Res.* **2008**, *35*, 543–557.
73. Meier, S.; Stutzer, A. Is volunteering rewarding in itself? *Economica* **2008**, *75*, 39–59.
74. Steger, M.F.; Kashdan, T.B.; Oishi, S. Being good by doing good: Daily eudaimonic activity and well-being. *J. Res. Pers.* **2008**, *42*, 22–42.
75. Wheeler, J.A.; Gorey, K.M.; Greenblatt, B. The beneficial effects of volunteering for older volunteers and the people they serve: A meta-analysis. *Int. J. Aging Hum. Dev.* **1998**, *47*, 69–79.
76. Weinstein, N.; Ryan, R.M. When helping helps: Autonomous motivation for prosocial behavior and its influence on well-being for the helper and recipient. *J. Pers. Soc. Psychol.* **2010**, *98*, 222.
77. Bolderdijk, J.W.; Steg, L.; Geller, E.S.; Lehman, P.K.; Postmes, T. Comparing the effectiveness of monetary *versus* moral motives in environmental campaigning. *Nature Clim. Change* **2012**, doi:10.1038/nclimate1767.
78. Krishna, A. Can supporting a cause decrease donations and happiness? The cause marketing paradox. *J. Consum. Psychol.* **2011**, *21*, 338–345.
79. Ryan, R.M.; Deci, E.L. Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *Am. Psychol.* **2000**, *55*, 68–78.
80. Thøgersen, J. Recycling and morality: A critical review of the literature. *Environ. Behav.* **1996**, *28*, 536–558.
81. Turaga, R.M.R.; Howarth, R.B.; Borsuk, M.E. Pro-environmental behavior. *Ann. N.Y. Acad. Sci.* **2010**, *1185*, 211–224.
82. Bamberg, S.; Hunecke, M.; Blöbaum, A. Social context, personal norms and the use of public transportation: Two field studies. *J. Environ. Psychol.* **2007**, *27*, 190–203.
83. Steg, L.; de Groot, J.I.M. Environmental Values. In *The Oxford Handbook of Environmental and Conservation Psychology*; Clayton, S., Ed.; Oxford University Press: Oxford, UK, 2012; pp. 81–92.
84. Stern, P.C.; Dietz, T.; Kalof, L. Value orientations, gender, and environmental concern. *Environ. Behav.* **1993**, *25*, 322–348.
85. Lindenberg, S.; Steg, L. Normative, gain and hedonic goal frames guiding environmental behavior. *J. Soc. Iss.* **2007**, *63*, 117–137.

86. Leiserowitz, A.A.; Kates, R.W.; Parris, T.M. Do global attitudes and behaviors support sustainable development? *Environment: Science Policy Sustainable Development* **2005**, *47*, 22–38.
87. Lorenzoni, I.; Nicholson-Cole, S.; Whitmarsh, L. Barriers perceived to engaging with climate change among the UK public and their policy implications. *Global Environ. Change* **2007**, *17*, 445–459.
88. Feinberg, M.; Willer, R. The moral roots of environmental attitudes. *Psychol. Sci.* **2012**, *20*, 1–7.
89. Kahan, D. Fixing the communications failure. *Nature* **2010**, *463*, 296–297.
90. Ryan, R.M.; Deci, E.L. Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemp. Educ. Psychol.* **2000**, *25*, 54–67.
91. Thøgersen, J. Norms for environmentally responsible behaviour: An extended taxonomy. *J. Environ. Psychol.* **2006**, *26*, 247–261.
92. Villacorta, M.; Koestner, R.; Leles, N. Further validation of the motivation toward the environment scale. *Environ. Behav.* **2003**, *35*, 486–505.
93. Moller, A.C.; Ryan, R.M.; Deci, E.L. Self-determination theory and public policy: Improving the quality of consumer decisions without using coercion. *J. Public Policy Mark.* **2006**, *25*, 104–116.

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