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Motivating individuals for social transition: The 2-pathway model and experiential strategies for pro-environmental behaviour

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ABSTRACT

Many ecological economists advocate the need to evolve beyond capitalism if we want to flourish as a society as well as respect the safe boundaries of our planet. While becoming clearer of the shape and underlying value-structure of such a new system, we also need to think about how we can motivate people to take part in such a major social transition. This paper tackles this question by critically evaluating the underlying hedonistic-normative assumptions of current mainstream models for pro-environmental behaviours (PEB). In a self-determination theory perspective on human motivation and well-being, the paper proposes a 2-pathway model of PEB that integrates a relational pathway for environmental motivation. Based on insights from neurobiology and psychology, this paper advances current PEB theories and lays the groundwork for a new category of environmental interventions: experiential strategies. Thus, the 2-pathway model provides important theoretical insights into the link between mindfulness and sustainable lifestyles, as well as the interface between environmental behaviours and well-being. By recognising and investing in the relational capacities of individuals, we might be able to promote a society that prioritises self-actualisation over self-interest.

1. Introduction

The belief that a society is best off if everybody maximises their own interest has strong cultural roots in over a century of modern economic thought, cultivating the perspective that humans are rational economic agents known as the Homo economicus (O'Rourke and Lollo, 2015; Wilson, 2015). Since its beginnings as a transdiscipline in 1989, promoters of ecological economics have worked hard to break through this cultural heritage by proposing alternative constructs such as the co-operative Homo reciprocans, the social decision-maker Homo psychologicus or the nature-attuned Homo ecologicus (Becker, 2006; Bina and Vaz, 2011; Janssen and Jager, 2000). In his outlook of the greatest challenges for ecological economists in the next 30 years, Costanza claims that we need a radical social shift:

> "The dominant existing 'western' culture is based on a consumerist worldview with maximizing growth of the economy (GDP) as the primary path to change and improvement. Significant change will require alternative worldviews and selection pressure to speed the transition. How might this happen?"
> (Costanza, 2020, p. 4)

Many scholars describe with urgency that the paradigm of capitalism must give way to other ideas if we want to achieve a long-term sustainable economy that operates within safe ecological boundaries (Costanza, 2020). One such possible way to reach a world in equilibrium is by degrowth to a steady-state economy (Blauwhof, 2012; Kallis et al., 2012; Neill, 2012; Rees, 2020). Yet the design of any economic system that turns its back to the neoclassical ideas of consumerism and profit-maximisation involves many challenges, but particularly one: what we, the sum of human agents in a global society, value and thrive for determines the trajectory of our cultural evolution (Wilson, 2015).

The conventional perspective is that individuals and their behaviours are to a large extent pre-determined by the context in which they live in (Baum and Gross, 2017; Steg and Vlek, 2009; Swim et al., 2011). However, more recent advances in the study of social transformations challenge this perspective and reinforce the crucial position of individuals as agents of change by collaboratively influencing institutions and systems (O'Brien, 2015). With the complex processes of social transformation in mind, O'Brien (2018) proposes a social change framework (see Fig. 1).

This framework reverses the assumption that behaviours are shaped by the various layers of contextual factors by placing the personal sphere at the periphery:

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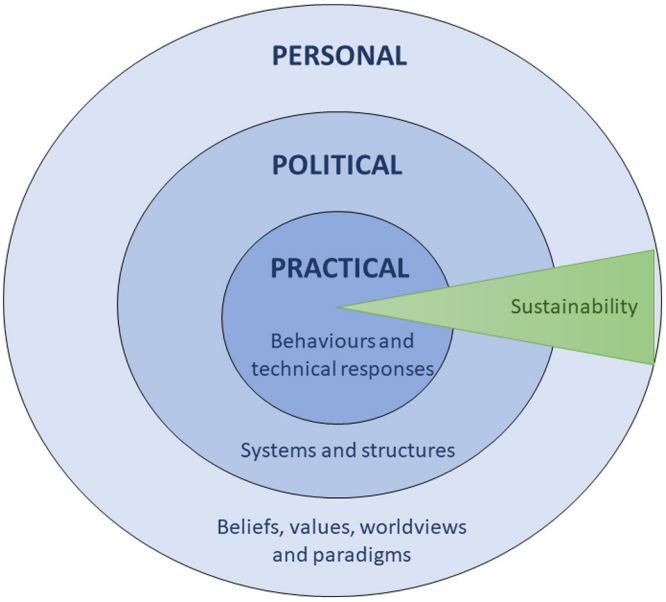

Fig. 1. Three spheres of social transformation and their dynamic relationships (O'Brien, 2018).

> "The personal sphere is represented as the outermost because, while it is not deterministic, it does have a pervasive, often subconscious impact on the political and practical spheres, which in turn shape the context in which worldviews are reproduced or transformed." (O'Brien, 2018, p. 157)

O'Brien (2018) postulates that in order to prevent the ecological crisis and to transition to a sustainable society, change strategies must involve all three spheres of transformation and encourage people to rediscover themselves as agents of change rather than mere 'objects to be changed'. An example for such an agent-driven cultural change is the globally rising counter-consumerism-movements, where people voluntarily choose to simplify their lifestyle and create new community structures (Swim et al., 2011). The observation that individual behaviour change is intimately connected with structural change also is in line with the findings of collaborative economy researchers (O'Rourke and Lollo, 2015).

Ecological economists have become increasingly aware of the opportunities that the personal sphere provides for social transformation. Some have started to engage in the discussion around the worldviews, values and ethical principles on which a post-capitalist society should be built on (Becker, 2006; Bina and Vaz, 2011; Murtaza, 2011; Washington and Maloney, 2020). For example, Murtaza (2011) delineates the value-structure of a 'wisdom economy' where human beings strive for self-actualisation instead of self-interest. Bina and Vaz (2011) explore the principles of virtue ethics and advocate the moral imperative of reviving responsibility as a virtue that can reconnect humans with the nature around them. Washington and Maloney (2020) and Becker, 2006 advocate an economic system that overcomes the anthropocentric worldview (Becker, 2006; Washington and Maloney, 2020). While on a philosophical level, these are indispensable visions for a post-capitalist society, the authors refrain from providing implementation strategies to achieve such a deep transformation.

Promoting change at the personal level requires an understanding of the most intimate motivations of human beings which only can be accomplished by taking a dive into the domain of psychology (Clayton et al., 2016). Yet, emotions, motivations and perceptions continue to be underrepresented in economic human agent modelling (Janssen and Jager, 2000). The field of environmental psychology, on the contrary, has fast progressed our understanding of pro-environmental behaviours (PEB) as well as their role in promoting personal well-being (Kasser, 2017; Swim et al., 2011). Both are primary goals of ecological economics (Costanza, 2020).

This paper follows the tradition of authors who, based on the recognition that economic growth and rising consumption levels do not provide the expected improvements in life quality, turned towards insights from psychology to explain human behaviour as driven by the desire to satisfy both material as well as non-material needs (Jackson and Marks, 1999; Max-Neef, 1995; Røpke, 1999). The self-determination theory (SDT) might be the most influential psychological theory combining both a psychological needs approach with a deeply nuanced understanding of human motivation (Ryan and Deci, 2017). Nevertheless, SDT has had limited impact on mainstream environmental psychology and ecological economics.

By adopting an SDT perspective, this paper aims to spark the discussion about how we can prepare human beings to become the transitioning force rather than remain passive receivers of environmental policies and behavioural adjustments. The following sections approach this question by first zooming into the individual level of PEB. In Section 2, we explore the common assumptions of mainstream environmental psychology and how they perpetuate the principles of utility theory: that humans are inherently selfish and take decisions with the goal to improve their own position, be this in a materialistic or hedonistic sense of increasing one's own pleasure through normative self-affirmation. In search for a more holistic perspective on human motivation, Section 3 compares this mainstream view to the SDT perspective. In Section 4, we propose a 2-pathway model of PEB which integrates mainstream models and a relational pathway underlying PEB. The next sections zoom out to the societal level and show how an increased awareness of the relational motivations for PEB allows us to bring a fresh perspective to the field. Section 5 proposes a new category of environmental interventions - experiential strategies - aimed at reinforcing the relational pathway of PEB and lending themselves theoretically to explain the link between mindfulness and sustainable lifestyles (Ericson et al., 2014). Section 6 demonstrates how the 2-pathway model of PEB provides insights into the intimate link between environmental behaviours and human well-being and is the first model that systematically applies an eudaimonic view on PEB. Finally, Section 7 concludes this paper by returning to Constanza's (2020) question quoted above.

2. The hedonistic-normative tenet of mainstream PEB theory

In environmental psychology, the most prominent theories explaining why people engage in pro-environmental activities are based on the assumption that people make deliberate choices, guided by their underlying values and personal norms (Steg and Nordlund, 2018). The theory of planned behaviour, the norm-activation-model and the value-belief-theory are leading theories in the field. For example, in energy-related literature on behaviour change, 82% of all publications regarding PEB are based on one, or a combination of these theories (Sopha et al., 2011). While it is not the intention of this paper to review each of those theories in detail, it is instructive to point out their common assumptions about the functioning of the human psychology.

Goal-framing theory summarises the reasoning processes regarding PEB in an integrated way (Lindenberg and Steg, 2013). The theory suggests that human thinking is organised in a modular way and is oriented along three overarching goals, guiding individuals in their behavioural decisions. The *hedonic* goal is the most instinctive and stands for an individual's drive for positive emotions and avoidance of negative emotions. The other two goals involve social aspects such as increasing one's own resources in comparison to others (gain goal) and the pursuit of group interests (normative goal). By this theory, PEB involve a conflict between the normative goal on the one hand, and the hedonic and gain goals on the other. Because in most people, the normative goal-frame is found to be the weakest, it tends to be the first to

collapse when the behaviour demands personal investment, both financial or in terms of comfort (Steg et al., 2014).

The extent to which someone thrives for each goal depends on the person's underlying value set (Lindenberg and Steg, 2013). The normative goal frame, expressed by personal norms and the feeling of moral obligation to act pro-environmentally, is more developed in individuals with strong biospheric and altruistic values, summarised by Schwartz as self-transcendence values (de Groot and Thøgersen, 2018; Schwartz, 1992). The presence of such strong self-transcendence values also explains the development of an environmental self-identity, which has been determined as an important mediator between values and PEB (Van der Werff et al., 2013b). On the other hand, in individuals with strong self-enhancement values, the gain and hedonic goal frames tend to overrun their normative goals more frequently.

The goal-framing theory helps to understand the development of our intervention portfolio for PEB, because most strategies aim at reinforcing one goal frame that is then linked to the desired behaviour. For example, financial incentives target gain goals (e. g. deposit return schemes), reducing structural barriers helps minimise the costs in terms of hedonic goals (e. g. provide recycling containers) and persuasion reinforces normative goals (e. g. commitment to recycle) (Lindenberg and Steg, 2013). The reinforcement of the normative goal frame has increasingly been called the most efficient way to stimulate long-term PEB, because it seems intimately connected with the hedonic goal frame: when a person with strong environmental self-identity does not act in a pro-environmental way, this results in cognitive dissonance and feelings of guilt (Gatersleben and van der Werff, 2018; Van der Werff et al., 2013a). However, when an individual follows their moral obligation of acting pro-environmentally, this can create feelings of pride and confirmation of oneself as a 'good person' (Bolderdijk et al., 2013b; Venhoeven et al., 2016). This 'moral reward' from performing PEB also was found to create a physical sensation of 'warm glow' (Steg et al., 2016; Taufik et al., 2015; Van der Werff et al., 2013b; Venhoeven et al., 2016).

As a result of these findings, mainstream environmental psychologists propose that besides removing contextual and structural barriers, the key to encourage long-term environmental behaviours is to reinforce the obligation-based intrinsic motivation by strengthening biospheric values and personal norms (Steg et al., 2014). Particularly the use of social norms, mainly in the form of social comparison and descriptive norms, has been shown to be effective in changing PEB (Dolan et al., 2012; Farrow et al., 2017). In the Comprehensive Action Determination Model, Klöckner (2013) validated this normative pathway of PEB in a meta-analysis of 97 articles and 59 independent data sets, showing that personal norms strongly influence the intention for PEB. The Comprehensive Action Determination Model further innovates by integrating habits and perceived behavioural control as significant predictors of PEB (Klöckner, 2013). Over the last decades, this hedonistic-normative view has grown to be the most influential (Steg et al., 2019; van den Born et al., 2018). As a recent example, the report of the IPCC reflects this perspective in one of its chapters dealing with lifestyle and behaviour change (Babiker et al., 2018).

While this is a reduced and simplified presentation of the large amount of research that environmental psychologists have produced on the internal factors of PEB (Baum and Gross, 2017; Steg and Vlek, 2009; Swim et al., 2011), it sets the scene for the following questions: does this perspective represent the human psyche in its completeness? Is this an objective assessment of human nature or does it, at the core, perpetuate the cultural philosophical inheritance of humans as ultimately self-interested beings? In this mainstream view of PEB, every action, even the most altruistic, can be traced back to the one or other self-interested motive – if it is not to gain something, like financial or social status (Lindenberg and Steg, 2013; Taufik and Venhoeven, 2018; Venhoeven et al., 2016) then it must be for some sort of 'feel good' reason, such as pride, self-affirmation as an environmentalist or 'good person', congruence with moral convictions and feelings of obligation, or simply the desire to experience a warm glow (Chatelain et al., 2018; Steg, 2016; Taufik and Venhoeven, 2018). These are important considerations in line with the consensus from evolutionary theory that altruism definitely exists on the level of actions that benefit others, independent of the nature of the motives for this behaviour which might well be selfish (impure altruism) (Wilson, 2015). However, other authors do not exclude the possibility that altruism may also exist on the psychological level, when actions are performed despite the risk of gaining no benefit at all or even being harmed (pure altruism) (Sober and Wilson, 2000). The strongest theory of pure altruism is the empathy-altruism hypothesis which after 40 years of empirical research, testifies a deeply relational motivation for altruistic actions (Batson et al., 2015; de Waal, 2008).

> "The likely source of altruistic motivation that we have considered is empathic concern. By empathic concern I mean an other-oriented emotional response elicited by and congruent with the perceived welfare of someone in need. Empathic concern is other-oriented in that it involves feeling for the other. It includes feelings of sympathy, compassion, tenderness, and the like."
> (Batson, 2008, p. 9)

In Batson's perspective, which also was backed by evolutionary theory arguments, purely altruistic actions are not based on the expectation of hedonistic pleasure but on the human 'nurturant impulse' (Batson et al., 2015) or 'altruistic impulse' (de Waal, 2008).

Like Wilson (2015), we could ask why it matters if someone acts pro-environmentally for selfish or selfless reasons, as long as the behavioural outcome is positive. However, for those who wish to accelerate the social transition towards a form of collective consciousness that can sustain a post-capitalist system, the question of what motivates people on a deeper psychological level is fundamental. Therefore, the following section contrasts the mainstream PEB theory perspective against the study of motivation from an SDT angle.

3. Motivation matters: beyond the dichotomy of intrinsic (vs) extrinsic

Besides improving the contextual and structural factors for environmental behaviours, environmental psychologists agree that motivations are crucial in directing and inhibiting behaviours as well as overcoming ability barriers for new behaviours (Swim et al., 2011). It has become common ground between researchers that intrinsically motivated PEB (by internal factors such as values, worldview, moral convictions) are more effective and long-lasting than extrinsically motivated behaviours (by external factors such as incentives, regulations) (Baum and Gross, 2017; Hedlund-de Witt et al., 2014; Steg and Vlek, 2009; Van Der Linden, 2015). This also is reflected in the insight that the positive spill-over of PEB across various domains depends on how strongly an individual adheres to pro-environmental values and norms via an environmental self-identity (Thøgersen and Crompton, 2009; Whitmarsh and O'Neill, 2010). A prominent view on motivation types was proposed by the creators of the goal-frame theory who posit that the activation of gain goals results in extrinsic motivation. For the normative and the hedonic goals, Steg et al. (2016) suggest a distinction of two types of intrinsic motivation: while activation of hedonic goals would be expressed as enjoyment-based intrinsic motivation, normative goals are seen as obligation-based intrinsic motivation (Steg et al., 2016). Because PEB rarely are associated with pleasure, the recommendation is to focus on strengthening the obligation-based intrinsic motivation which can benefit the hedonic goal frame indirectly (Van der Werff et al., 2013a).

The dichotomous view on environmental motivations appears to be incomplete when compared to the nuanced perspective on motivation provided by the SDT and summarised in Table 1 (Ryan and Deci, 2017). After decades of empirical research, SDT has established that motivation evolves along an autonomy-control continuum. Autonomous types

Table 1
The self-determination perspective on motivation with examples for their emotional expression in PEB, based on (Deci and Ryan, 2008; Pelletier et al., 1998; Ryan and Deci, 2000).

Behaviour continuum	Self-determined				Nonself-determined	
Motivation	Autonomous motivation			Controlled motivation		
	Intrinsic motivation		Extrinsic motivation		Amotivation	
Regulatory style	Intrinsic regulation	Integrated regulation	Identified regulation	Introjected regulation	External regulation	Non-regulation
Locus of causality	Internal	Internal	Somewhat internal	Somewhat external	External	Impersonal
Regulatory process	Interest, Enjoyment	Awareness, congruence	Importance, valuing	Self-control, Ego-involvement, internal rewards/ punishment	Compliance, external rewards/ punishment	Nonintentional, incompetence, lack of control
Example for emotional expression	It gives me pleasure	It feels meaningful to me/I care about it	I feel it is the right thing to do	I feel guilty/I am afraid of criticism	I get money for it/I don't want to be punished	I don't know why, it is a waste of time

of motivation flourish in an environment that satisfies the three basic needs for autonomy, competence and relatedness. When people are autonomously motivated, they feel a high degree of volition for the behaviour because they fully identify with the value of the activity. The regulation of their motivation has become internalised, which means it is congruent with one's sense of self. Not only intrinsic motivation can be classified as autonomous. In an environment that is supportive to an individual's basic needs, some extrinsic motivations also can become fully or partly internalised. On the other end, controlled motivation is based on external pressures, such as exerted by other people or institutions. In the case of introjected motivation, pressure is applied through internal control mechanisms when norms are followed without being fully accepted, e. g. feelings of guilt, shame, fear of disapproval or contingent self-esteem.

Some authors defend the view that obligation-based motivation is intrinsic even after appreciating the SDT literature (Van der Werff et al., 2013a). Based on Ryan and Deci's motivation continuum, however, the feeling of obligation would be located somewhere along the extrinsic motivation scale, depending on the regulatory processes energising the motivation. If the feeling of obligation is based on guilt, pride or anxiety-avoidance, the behaviour would fall on the side of controlled motivation. However, if the obligation is expressed as a sense of responsibility, righteousness and loyalty to personal values, the behaviour could categorise as autonomous. Table 1 summarises the SDT view on motivation and exemplifies how this motivation would be expressed on the level of PEB.

The notion of obligation-based intrinsic motivation does not allow for differentiation between such motivational nuances. From an SDT perspective, obligation-based motivation could not be intrinsic for two logical reasons. Following a behaviour perceived as morally right does not mean that it is automatically intrinsic, because first, much of this moral framework is transmitted in the process of socialisation. Second, someone could follow a behavioural codex without fully integrating this norm into the sense of self. In simple words, if someone behaves in a certain way because of internal pressures such as the notion that they 'should do it' or because they 'would feel guilty/ashamed if not', the judgement still is measured against external standards, i.e. through a self-imposed external conditionality. This also explains why PEB encouraged by normative reasoning are so easily compromised in favour of other conflicting interests. However, once a socially transmitted goal comes to be fully absorbed by the self, based on relational support and a sense of deeper awareness, it could classify as fully integrated extrinsic motivation (as if intrinsic).

While SDT has not been on the radar of mainstream environmental psychologists, it has successfully been applied to predict differences in individual's motivation towards the environment and behavioural performance (Kaplan and Madjar, 2015; Legault and Pelletier, 2000; Pelletier, 2002; Pelletier et al., 1998; Pelletier et al., 1999). SDT researchers provided empirical evidence that individuals with a more self-determined motivation towards the environment show a higher number and frequency of PEB, they maintain those behaviours over a longer period of time and they even continue to engage in behaviours when those become more effortful and require personal sacrifice (Green-Demers et al., 1997; Pelletier et al., 2011; Seguin et al., 1998). One example of a successful environmental intervention based on SDT principles is the EcoTeam program with volunteers in 17 countries. The program was effective in improving and maintaining PEB even two years after the end of the program (Thøgersen, 2005). On the other hand, the SDT also serves to explain heightened levels of consumption in individuals with stronger extrinsic goals and materialistic values, if they perceive the purchase of goods and services as a way to improve autonomy and competence or to satisfy the need to belong (Swim et al., 2011).

Because this paper is preoccupied with the question of how we can ignite the transition to a well-being society where people pursue self-actualisation over self-enhancement (Murtaza, 2011), the creation of a

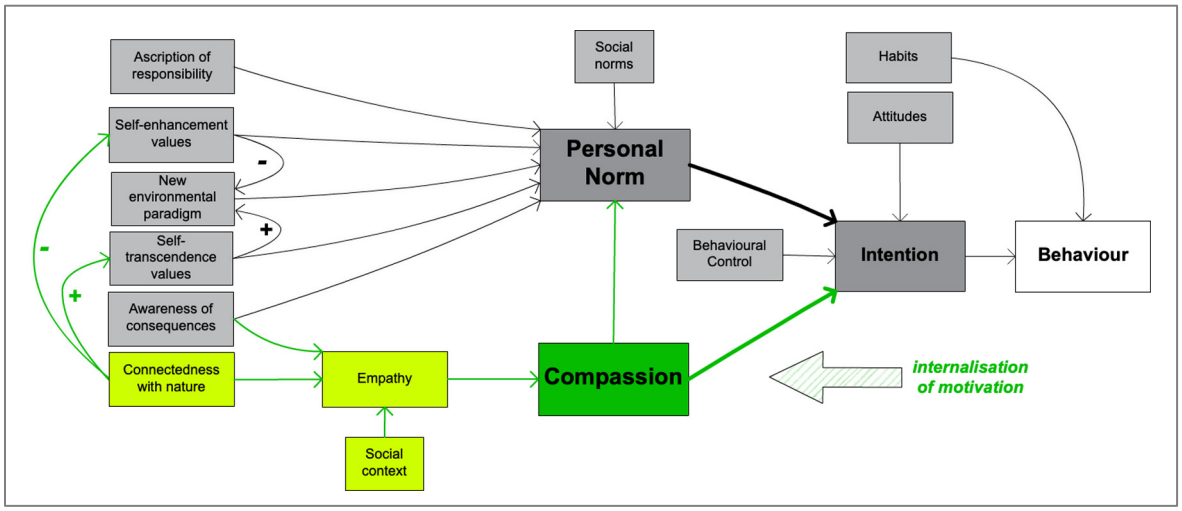

Fig. 2. The 2-pathway model of PEB. Grey elements have been adopted from the Comprehensive Action Determination Model (Klöckner, 2013). Green elements show the relational pathway proposed in this paper. With increased activation of the relational pathway (connectedness with nature-empathy-compassion) the motivation for the behaviour becomes more internalised. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

new model for PEB that incorporates the principles of SDT seems long overdue. Therefore, the following section proposes a 2-pathway model of PEB which applies SDT as its integrative framework and provides empirical evidence for each of its theoretical assumptions.

4. A 2-pathway model of PEB: integrating the relational pathway

A 2-pathway model (as proposed in Fig. 2) offers a theoretical expansion to the Comprehensive Action Determination Model which was selected as the baseline because it successfully integrates the most important PEB theories, while also acknowledging the power of habits (Klöckner, 2013). The core innovation of the 2-pathway model is that in addition to the normative pathway for PEB there also is a relational pathway based on connectedness with nature, empathy and compassion. In the following, we discuss empirical evidence for each of the theoretical steps of the 2-pathway model.

Connectedness with nature is defined as “a stable state of consciousness comprising symbiotic cognitive, affective, and experiential traits that reflect, through consistent attitudes and behaviours, a sustained awareness of the interrelatedness between one's self and the rest of nature” (Zylstra et al., 2014, p. 126). SDT researchers argue that nature relatedness is a basic human psychological need (Baxter and Pelletier, 2018). A breadth of research shows that a strong connectedness with nature is associated with higher motivation and effectiveness to behave in a pro-environmental way (Mei and Mackay, 2018; Whitburn et al., 2019). So far, most attention has been given to the cognitive concepts of connectedness with nature, such as the Connectedness to Nature scale or the Inclusion of Nature in Self scale (Martin and Czellar, 2016; Mayer and Frantz, 2004). While the cognitive aspects of connectedness with nature were shown to be crucial to encourage perspective taking with natural entities, research on the emotional aspects of connectedness with nature has lagged behind in its application. However, in environmental philosophy, emotions such as awe, love, wonder and deep reverence for nature have been discussed as strongly associated with environmental ethics and ways to encourage sustained feelings of care, responsibility and protectiveness of nature (Perkins, 2010). Indeed, Perkins found that the Love and Care for Nature scale was a stronger predictor of people's willingness to make sacrifices for the environment than the cognitive scales. Similar to Perkins, other authors also refer to feelings of relatedness and love for nature as a crucial way to explain and encourage PEB on a sustained basis (Kay, 2002; Livingstone, 2019; Wilson, 2017).

In the proposed 2-pathway model, connectedness with nature has three theoretical links with other concepts. It was shown to decrease self-enhancement values while strengthening self-transcendence values, particularly biospheric values (Pereira and Forster, 2015; Whitburn et al., 2019). This explains why connectedness with nature also was found to enhance beliefs in the new environmental paradigm (Perrin and Benassi, 2009). Furthermore, the emotional expression of connectedness with nature also sparks feelings of love and empathic concern for nature (Dong et al., 2020; Perkins, 2010).

Empathy: The growing body of research on empathy in the fields of biology and neuroscience add further evidence that empathic concern is a ‘phylogenetically ancient capacity’ humans share with other animals such as mammals and birds, and motivates altruistic behaviours (de Waal, 2008). The relationship context between the helper and the one in need partly explains the strength of the empathic concern and expression of altruistic behaviour (Maner and Gailliot, 2007). The most basic form of empathy arises when we are affected by another's emotional state and share this affective experience of others (de Waal, 2008; Singer and Lamm, 2009). For humans, it also involves the ability to cognitively understand the cause of other's emotions and actively take the other's perspective (de Waal, 2008). The development of empathy is dependent on a person's social context, as it is best developed when the social environment during early childhood, throughout adolescence and adulthood is supportive. Early developmental conditions as well as the current social environment of an individual might explain variations in empathy (Decety, 2010).

Several researchers have pointed out a strong link between empathy and PEB, provided that there is awareness of the consequences of the behaviour. Geller (1995) created the hypothesis that ‘actively caring’ is linked to environmental behaviour and attitudes. This hypothesis was validated in an empirical experiment which showed that sympathy, a subscale of empathy linked to the motivation to help others, mediates the relationship between personal control and environmentally friendly behaviour (Allen and Ferrand, 1999). In a field experiment, researchers showed that encouraging farmers to take the perspective of other farmers in their community, described as empathy nudging, had positive effects on their water conservation decisions (Czap et al., 2015).

Other authors have gone a step further and provided evidence that empathy with nature exists. While empathy with nature might not be identical to empathy with humans, their degree of interrelation seems to be dependent on an individual's relationship to nature (Czap and Czap, 2010; Tam, 2013). Empathy with nature can be classified into

two different types, induced and dispositional empathy. Researchers showed that by confronting participants of an experiment with pictures of suffering animals, they increased their biospheric and reduced their egoistic concern for the environment (Schultz, 2000; Sevillano et al., 2007). In another experiment, participants exposed to videos of the whaling industry and of environmentalists successfully saving those whales showed higher intentions to help protecting whales. Berenguer (2007) proposed a model where higher levels of empathy are associated with stronger environmental attitudes and behaviour, moderated by the effects of evoking empathy with a natural object such as a bird or tree. To summarise, induced empathy is the kind of empathic concern which arises spontaneously from taking the perspective of natural elements in distress.

However, when empathy with nature appears to be a distinguishing characteristic of a person, it qualifies as dispositional empathy which is defined as "the dispositional tendency to understand and share the emotional experience of the natural world" (Tam, 2013, p. 93). In this case, empathy would not only be linked to negative emotions, but also to positive emotions such as joy for a successfully protected natural element. Further research on empathy with nature could open doors to gain new insights for conservation science and PEB theories (Guergachi et al., 2010; Tam, 2013). Empathy with nature might explain the gender gap in environmental action, as women are found to show a generally higher level of motivation for empathic behaviours than men (Klein and Hodges, 2001). It also could explain why many individuals turn away from environmental problems when they feel unable to help, because they experience an empathic over-arousal which contrasts with the lack of self-efficacy and collective efficacy (Chen, 2015; Hoffmann, 2008; Jugert et al., 2016).

Compassion: empathy alone does not result in helping behaviours, but it is a first step towards it (de Vignemont and Singer, 2006; Singer and Lamm, 2009). For example, when we run to help someone who fell, or embrace a friend who is crying, we probably don't do it because it makes us a 'good person'. Instead, based on our empathic ability to expand our sense of self and connect with the distress of this person, we are driven by an instinctive motivation to sooth and help, which defines an act of compassion (Strauss et al., 2016). Compassion is related to, but distinct from, empathy because of its link to prosocial motivation and the feeling of positive intrinsic reward when experiencing compassion for others (Kim et al., 2009). Compassion is associated with the release of hormones generating feelings of happiness, namely oxytocin, dopamine and serotonin, as well as the reduction of stress hormones such as cortisol (Esch and Stefano, 2011; Keltner, 2010). Oxytocin was discovered as a crucial factor in pro-social and altruistic behaviours and its involvement in ecological behaviours has been discussed and needs further research (Marsh et al., 2015).

The fact that in some people, pro-environmental actions are strongly motivated by feelings of connectedness with nature, empathic concern, and genuine love and care towards nature makes these into actions of compassion rather than of moral duty. Supporting this observation, a recent study supports a causal pathway between compassion and pro-environmental tendencies (Pfattheicher et al., 2016). And as an example for the reverse effect, researchers showed that one significant psychological barrier to environmental protection is that compassion dilutes when the number of victims increases, also known as 'compassion fade' (Markowitz et al., 2013). The fact that many environmental problems happen on a larger scale involving many victims, including people, animals and plants makes it harder to establish a direct connection. This partly explains why anthropomorphisms such as 'mother earth' help to improve connectedness with nature and PEB (Liu et al., 2019; Tam et al., 2013).

Internalisation of motivation: the normative pathway and the relational pathway do not stand in isolation or opposition to each other, but rather work in a complementary way. In most PEB, both pathways are activated and function as an intertwined system. Frequent activation of the relational pathway and feelings of empathy have the potential to reinforce the integrity of the normative pathway and give personal norms a deeper emotional base to stand on. This is based on the discovery that the evolution of morality was only possible because of prosociality (Burkart et al., 2018; Manner and Gowdy, 2010). The main difference between the pathways is the degree of internalisation of the motivation for PEB, suggesting that the more the relational pathway is activated, the more internalised the motivation becomes. This can be supported theoretically by applying the three basic psychological needs for self-determination to the 2-pathway model.

In the model, the need for competence is represented by the factor of perceived behavioural control, defined as the "perceived ability to perform the behaviour, which depends on beliefs about the presence of factors that may facilitate or hinder that behaviour" (Steg and Nordlund, 2018, p. 219). This resembles the SDT concept of competence and self-efficacy (Ryan and Deci, 2000). Perceived behavioural control, or competence, is mainly acquired by education and information. Meyer (2015) provided evidence that higher levels of education cause an increase in the performance levels of PEB. Environmental knowledge seems to indirectly affect pro-environmental intentions by increasing motivation and decreasing psychological barriers (Gkargkavouzi et al., 2019). However, competence alone does not guarantee effective pro-environmental behaviours (Kollmuss and Agyeman, 2002). Competence must be accompanied by a sense of autonomy and relatedness to result in intrinsic motivation or a highly integrated extrinsic motivation. Here lies the crucial difference between the normative and the relational pathways of the 2-pathway model.

The sense of autonomy, supported by choice and self-direction, increases when a behaviour is initiated by a person's volition rather than by external control (Ryan and Deci, 2017). We argue that when the motivation to act has its origin in empathic concern and compassion, this conveys an ultimate feeling of autonomy. Sympathetic feelings such as love and care, can only arise from within an individual and cannot be forced by moral obligations or social pressure. They are also primary feelings underlying the process of relationships and bonding. If a person feels highly connected to nature and consciously or unconsciously performs PEB because of their perceived bond and empathic concern with nature, this also contributes to the satisfaction of their need for relatedness. Relatedness is the need to feel belongingness and connectedness with others (and nature) and has a special importance in the SDT framework:

> "Yet perhaps most important of all is relatedness, which is what brings people into dispositions of caring. The larger their spheres of relatedness, the more people identify with and are mindful of concerns that are less self-focused and defensive. The more they identify with others and with concerns beyond themselves, the more intrinsic aspirations become salient, which […] conduces toward greater need satisfaction and wellness both for others and for themselves."
> (Ryan and Deci, 2017, p. 648)

Appealing to this type of intrinsic motivation based on "people's hard-wired biological capacity to care about others and the environment" (Van Der Linden, 2015, p. 613) might be a more effective approach to transform people into Homines ecologici who Becker (2006) defines by three characteristics: i) their relations with nature are based on sympathy and respect, ii) they orientate their own creativity upon the creativity found in nature and iii) they build their relationships with nature on the basis of personal experience and encounters with nature. To summarise, the more the relational pathway for PEB is activated, the more this behaviour fulfils the three basic psychological needs for self-determination. Consequently, the more connectedness with nature and empathy with nature play into behavioural intentions, the more internalised, robust and sustainable the behaviours (and personal norms) become (Jax et al., 2018).

We recognise the theoretical nature of these ideas and therefore the need for empirical validation and further refinement of the linkages in

the model. This includes the way in which the relational pathway interacts with the normative pathway and how each of the elements of the relational pathway impacts on other factors such as attitudes, habits and behavioural control. Nevertheless, we hope that this model provides a framework for a range of new research questions which could help to improve the outcome of environmental interventions. For example, we could study the extent to which the relational pathway might explain the positive spill-over of PEB. Another issue, particularly interesting for ecological economists, might be the need to revise the fundamental assumptions for warm glow in PEB. While conventional warm glow theories put emphasis on hedonic self-interest and moral reward to explain altruistic actions, they may underestimate the role of selfless social and relational motivations such as empathy and compassion (Manner and Gowdy, 2010). This is in line with the discovery by psychologists that the warm glow is strongest when a person shows helping behaviour in a situation where the moral responsibility to act is low (Erlandsson et al., 2016). Similarly, neuroscientists showed that the decision-making over charitable donation is mediated by the brain areas involved in social and relational processes, which are responsible for affiliative reward mechanisms and for the release of oxytocin (Moll et al., 2006).

5. A new class of environmental interventions: experiential strategies

Most behaviour change strategies target the practical sphere of social transformation by applying actions and interventions that directly improve the desired behavioural outcome (O'Brien, 2018). This can be done through psychological strategies, or by altering the context of the individual via structural strategies and green nudging (Abrahamse and Matthies, 2018; Klöckner and Verplanken, 2019; Schubert, 2017; Steg and Perlaviciute, 2015; Steg and Vlek, 2009). Besides the practical level, important improvements for the environment have been achieved by initiatives on the political level, such as new laws and regulations, implemented by a whole network of institutions in charge of environmental protection. However, because this paper is preoccupied with the personal transformation, this section discusses how the 2-pathway model can inform new strategies to achieve changes on a deeper psychological level.

Environmental researchers increasingly advocate the importance of the personal sphere for the success of environmental program, particularly the need to reinforce altruistic and biospheric values (Baum and Gross, 2017; Bolderdijk et al., 2013a; Bolderdijk, Steg, et al., 2013; Steg et al., 2014). SDT researchers have called for interventions that could enhance people's self-determination and internalised motivation towards the environment (Green-Demers et al., 1997; Pelletier et al., 2011). However, concrete ideas are rather scarce. Based on the insights provided by the 2-pathway model and in line with Becker's (2006) observation that the *homo ecologicus* builds the relationship with nature from personal experiences, we would like to propose a new category of interventions: experiential strategies.

Experiential strategies always activate the relational pathway of PEB and often exert positive influence across other elements of the 2-pathway model. They comprise interventions which aim to physically, cognitively, and affectively stimulate meaningful experiences in relation to oneself, others and nature. We would like to demonstrate two cases that qualify as experiential interventions, and are associated with a strong influence on the personal sphere:

Nature exposure: being in nature has been shown to promote personal well-being and sustainable behaviours (Annerstedt van den Bosch and Depledge, 2015; Beery and Wolf-Watz, 2014; Bratman et al., 2015; Ives et al., 2018; Ryan et al., 2010; Rosa and Collado, 2019; Tyrväinen et al., 2014; Zylstra et al., 2014). People who frequently expose themselves to, and interact with, nature generally show higher levels of connectedness with nature (Bruni et al., 2017; Guiney and Oberhauser, 2009; Ives et al., 2018; Monroe, 2003; Otto and Pensini, 2017; Richardson and McEwan, 2018; Zelenski et al., 2015; Zylstra et al., 2014). Many highly committed environmental activists report that they have been exposed to intense and unsupervised encounters with nature during childhood (van den Born et al., 2018). The interaction with virtual nature might partially allow for some of the benefits of being in real nature, but cannot substitute the exposure to real nature without psychological and physical costs (Kahn et al., 2009).

Some countries pioneer with policies and programs that encourage nature exposure. Germany sponsors young adults to take a gap year for ecological volunteering with government-approved organisations as part of the federal Act on the Promotion of Youth Voluntary Services (Bundes-Freiwilligendienst, 2020). With the UN Decade for Biodiversity program, the German government awards best practice examples of 'Social Nature' projects (UN-Dekade, 2020). The US launched the 'Every Kid in a Park initiative' which allows 4th-graders and their families free access to any of the national parks in the country (Whitehouse, 2015). Several US states invest heavily in outdoor recreation with an array of funding programs through various enabling mechanisms such as taxes, oil and gas revenue and government bonds (Pohl and Lawson, 2017). One example is Colorado that awarded 13.5 Million US-Dollar from Lottery proceeds to invest in programs that connect children from all social backgrounds with the outdoors (GOCO, 2016). Other state initiatives involve building in- and outdoor environmental literacy programs for schools (Torlakson, 2015), state licensing for outdoor early learning and child care programs (Ranker et al., 2017), declaration of a public land days in Montana, Nevada and Colorado, as well as the 'Unlocking Public Lands' Program in Montana that compensates private land owners for providing recreational access where no legal public access to public land exists (Montana.gov 2020). Furthermore, citizen's active involvement in environmental science projects worldwide has not only benefited scientists but also helped to engage citizens with their natural environment (Dickinson et al. 2012; Wals et al. 2014). Finally, nature exposure is becoming central to public health strategies, with increasing recognition of the benefits of urban green spaces for mental health, as well as growing support for wilderness and horticultural therapy (Bratman et al. 2015; Heizer 2019; Soga et al. 2017). In the UK, the National Health Service England allows nature-related community groups to qualify for social prescribing as part of the Comprehensive Model for Personalised Care (NHS England 2019).

Mindfulness is an experiential strategy which has documented effects along most elements of the 2-pathway model and provides deep transformative effects on the inner dimensions of individuals (Wamsler 2019). Just to name a few, mindfulness was found to counter habits (Brown and Ryan 2003; Vago and Silbersweig 2012), enhance self-transcendental values and decrease self-enhancement values (Dhandra 2019; Ericson et al. 2014; Garland et al., 2015), promote a more egalitarian view and reduce social dominance (Panno et al. 2018), increase behavioural attention and awareness (Amel et al. 2009; Hölzel et al. 2011), improve self-efficacy (Gilbert and Waltz 2010), as well as develop and refine social skills such as empathy and compassion (Böckler et al. 2018; Donald et al. 2018; Schutte and Malouff 2011; Singer and Engert 2019). Mindfulness meditation and the adoption of a mindful lifestyle have been suggested to strengthen the human-nature connection (Aspy and Proeve 2017; Ericson et al. 2014; Schutte and Malouff 2018). Finally, mindfulness also enhances self-determination because it is associated with autonomous regulation and greater vitality (Ryan and Deci 2008).

Due to its positive effect on health and well-being (Brown et al. 2007; Carmody and Baer 2008; Creswell 2017; Goyal et al. 2014; Keng et al. 2011), public and private health providers in several countries have started sponsoring mindfulness courses and app subscriptions in Germany, the US and the UK (Gawande et al. 2019; Guardian 2013; Ichwillmeditieren 2016; NHS UK 2018). Both in the US and the UK, hundreds of schools trained teachers to practice mindfulness with their students (MAPPG 2015; NYT 2019; PsychologyToday 2019) and several companies discovered mindfulness as a management and well-being

practice (Forbes 2019). While these are first successes for the secular mindfulness movement in the West, policies such as those endorsed by the Mindfulness All-Party Parliamentary Group in the UK are needed for a wide spread of high-quality mindfulness training into the different sectors of society. The group launched a Mindfulness Initiative to develop policy recommendations for governments, focussing on the sectors health and education, the workplace and the criminal justice system (MAPPG 2015). In the years since founding, the initiative rapidly grew beyond the UK and politicians worldwide started engaging with mindfulness (Bristow 2018).

Experiential strategies are no 'quick fix' way to change a specific set of environmental behaviours. Contrary to one-off strategies, experiential strategies fertilise the ground for the seeds of social change in the long-term. They permeate all sectors of society but particularly departments concerned with health, education, science, social equality, climate change and nature conservation. In a time when we are facing the "extinction of experience" and the "loss of human-nature interactions" (Soga and Gaston 2016), policy makers need to be made aware of the urgency to actively reintegrate into human experiences what we always took for granted. As can be seen in the examples above, experiential strategies often find their place at the interface of environment and well-being, two areas which are becoming recognised as inseparable (Jax et al. 2018). The following section discusses how the 2-pathway model perspective progresses the core assumptions of human and planetary well-being in our society.

6. Implications of the 2-pathway model for human well-being

To evolve as a sustainable global society "we must choose policies with the welfare of the whole world in mind. […] We must become planetary altruists" (Wilson 2015, p. 149). Necessarily, this involves certain restrictions on today's generation and the self-interest of its members (Becker 2006). In a capitalist system that is based on the hedonic assumption that happiness is the consequence of one's own maximisation of physical and cognitive pleasure, well-being would naturally decline if we enforced a sustainable lifestyle. Paradoxically, an increasing number of publications show the opposite effect and that PEB and selflessness are linked to higher levels of well-being (Hanley et al. 2017; Kasser 2017; Venhoeven et al. 2013). Researchers further disentangled this connection by showing that particularly those subscribing to an intrinsic orientation of happiness, such as stoicism or a virtue-based notion of the good life, showed higher life-satisfaction when engaging in green behaviours (Binder et al. 2020). This supports the theoretical arguments for a stronger integration of virtue-ethics into our economic system (Bina and Vaz 2011) and for environmental policies that favour eudaimonic well-being (van den Born et al. 2018; Venhoeven et al. 2013).

Eudaimonia, a Greek word for happiness or human flourishing, is a central concept of virtue ethics (Hursthouse and Pettigrove 2018). It can only be achieved by living a good life dedicated to the pursuit of excellence, virtue and self-realization (Waterman et al. 2010). SDT researchers add that to achieve eudaimonic well-being, individuals have to live in a physical and social environment that is supportive to attaining their three basic psychological needs (Ryan and Deci 2001; Ryan et al. 2008). Happiness in the hedonic sense of maximizing pleasure becomes a non-imperative consequence of a meaningful life.

We can see why eudaimonic well-being blends in well with the concept of a sustainable society. However, in the PEB literature, authors are quick in limiting the application of the eudaimonic well-being concept to the moral aspects of environmental behaviour (Taufik and Venhoeven 2018; Venhoeven et al. 2013). This narrow view on eudaimonia tends to neglect the relational aspects that form a fundamental prerequisite of eudaimonic well-being (Ryan et al. 2008; Ryff 2014). Our well-being does not only depend on meaningful relationships with others, but also benefits from relations with the natural world (Baxter and Pelletier 2018; Eigner 2001; Hanley et al. 2017; Howell et al. 2011; Pritchard et al. 2019; Zelenski and Nisbet 2014). The 2-pathway model successfully integrates both the moral and the relational motivations for PEB, and how together, they enable greater well-being by satisfying all needs for self-determination. This also invites us to suggest that the active pursuit of relational goals might be a missing cornerstone to make the goal-framing theory by Lindenberg and Steg (2013) work more effectively towards human well-being.

Because the 2-pathway model is based on the SDT framework, it is the only model representing a true eudaimonic interpretation of environmental behaviours. Kasser (2017) previously argued for a SDT perspective to explain the link between PEB and well-being, advocating that environmental interventions should incorporate the basic needs approach to make them more long-lasting and beneficial for human flourishing. When people act pro-environmentally with a higher degree of self-determination, this is more likely to enhance the positive feedback loop between PEB and well-being (Aknin et al. 2012; Kasser 2017). The 2-pathway model shows very clearly that to attain long-term well-being in a post-capitalist society, we need to apply experiential strategies in order to develop more harmonious human-nature relationships which no longer separate society from nature (Muradian and Pascual 2018).

In times where feelings of fear dominate over scientific arguments, an experiential approach to motivate environmental behaviours is promising because it builds on non-scientific forms of knowledge and the human capacity to deeply care about others and nature (Muradian and Pascual 2020). Mindfulness is one such example of a non-western practice that has proven to deeply transform people's intrinsic values and sense of well-being. This is especially the case when mindfulness is practiced with the intention to enhance eudaimonic mental states and to develop meaning in life, which shows the great value of the 2-pathway model for explaining the link between mindfulness and PEB (Garland et al. 2015).

7. Conclusion

For a successful transition towards a post-capitalist system inhabited by Homines ecologici (Becker 2006), the long-inherited convictions about how we can reach happiness must change. People must become active agents who, by means of their roles within small institutions (families, friends) as well as larger organisations (companies, governments), drive this social transition as a collective. We discussed Costanza's (2020) question (how might this happen?) by first showing the insufficiency of current models for PEB to capture the relational potential of human existence. Based on a detailed review of human motivation, we then proposed a new 2-pathway model that builds on the evolutionary evidence that human beings have an inherent ability and need to connect, love and care. The relational pathway holds a phenomenal force of transformation because it is inherently intrinsic to human nature and provides long-lasting well-being.

Based on this new perspective of humans as relational beings, we can start to build an economic system and environmental policies that recognise relational values. We can innovate our environmental interventions and apply strategies that support changes on the personal level of values and worldviews. Experiential strategies aim to restore relational capacities and promote long-lasting well-being. When we activate the relational pathway for PEB, we help people to transcend self-interest and find a deeper sense of happiness known as eudaimonia. To reach an economic system that is based on self-actualisation, society as a whole must realise that by running on the hedonic treadmill in a never-ending pursuit of "happiness" we destroy the very foundation for what we need to live a truly fulfilling life: our capacity to deeply care about others and nature.

Declaration of Competing Interest

None.

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