

Meaning, Belonging and Well-being: The Socio-psychological Benefits of Engaging in Private Land Conservation

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Abstract

While the economic and ecological benefits of private land conservation (PLC) programmes are well known, their contribution to socio-psychological well-being is less understood. Thus we applied the concept of basic psychological needs (BPN) from self-determination theory (SDT) to document these well-being impacts and understand the experience of landowners engaged in PLC programmes in Tasmania, Australia. We developed and administered an online survey ($n = 193$) that adapted items from SDT scales and used SDT as a framework to code data derived from semi-structured landowner interviews ($n = 60$). The interviews explored the ways in which participation in PLC supported the three basic needs of autonomy (the need to act according to personal values and desires), competence (the need for perceived efficacy), and relatedness (caring relationships and social belonging). PLC programmes supported autonomy by helping landowners align private land management decisions with deeply held environmental values. These programmes fostered competence and relatedness by developing trust and shared purpose amongst the people engaged in PLC, enabling personal and social learning, and enhancing life purpose and belonging. The scale and longevity of PLC programmes, and thus, the ecological and economic benefits flowing from them, may be increased through attending to, documenting and communicating the well-being benefits of participation.

Keywords: intrinsic motivation, social capital, agri-environment, positive psychology, well-being

INTRODUCTION

Private land conservation (PLC) is the application of conservation strategies to land that is owned by private entities, such as individuals, families, for-profit businesses, or nonprofit organisations. PLC often takes place in the context of governmental or non-governmental education programmes, economic incentives, and regulatory mechanisms that are designed to encourage or enforce conservation outcomes (Drescher et al. 2017; Farmer et al. 2017). PLC can help

create protected areas, restore and replant vegetation, conserve threatened wildlife, protect waterways, and reduce soil erosion on private land (Holmes 2015; Cortés et al. 2019). Much PLC research has focused on the role of economic benefits in motivating participation in PLC (Putten et al. 2011; Iftekhar et al. 2014). However, recent research has indicated that landowners may be motivated by a broader range of socio-psychological benefits such as enhanced social capital, affiliation, meaning, belonging, and education (Selinske et al. 2017; Gooden and Grenyer 2019). While these socio-psychological benefits are known to support well-being, few studies (Saxby et al. 2018; Gooden and Grenyer 2019) have directly investigated the relationship between PLC and well-being.

Well-being and conservation

There are many definitions of human well-being. We consider well-being as a multi-dimensional concept encompassing life

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satisfaction, flourishing, happiness, and positive affect (Ryff and Keyes 1995; Lyubomirsky et al. 2011; Dodge et al. 2012). Despite a paucity of research on PLC and well-being, research on a range of other related activities suggests that PLC could benefit well-being. For example, time spent in nature (Caulkins et al. 2006) and interacting with plants (Husk et al. 2018; Quedstedt et al. 2018) enhances the feeling of connectedness to nature and place (Mayer et al. 2009; Capaldi et al. 2014), reduces stress (Wells and Evans 2003; Lovell et al. 2015), and promotes the feeling of self-efficacy (Caulkins et al. 2006; Charatsari et al. 2018). Furthermore, activities linked to PLC, such as volunteering, exercise (Morrow-Howell et al. 2003; O'Brien et al. 2011), and learning (Saxby et al. 2018; Charatsari et al. 2018) can improve well-being by: strengthening social relationships (Caulkins et al. 2006; O'Brien et al. 2011) and enhancing the feeling of collective identity and shared purpose (Coulhard et al. 2017). In addition, they can create opportunities to help others (Martela and Ryan 2016), pursue personally meaningful goals (Brown and Kasser 2005; Sheldon et al. 2010), and grow spiritually (O'Brien et al. 2011; Lovell et al. 2015).

Understanding the impacts of PLC on well-being may not only help enhance social development in communities involved in conservation (Biedenweg and Gross-Camp 2018; Woodhouse and McCabe 2018), but may also inform the design, delivery, scale, and communication of conservation programmes (Cetas and Yasué 2016). Promoting well-being benefits may attract a larger and more diverse cohorts of landowners to PLC (Kusmanoff et al. 2016; Yasué and Kirkpatrick 2018). In addition, framing the benefits of PLC to include well-being may lead to more enduring conservation projects (Burton and Paragahawewa 2011; Cetas and Yasué 2016). This is because programmes that are designed and framed to foster autonomous motivations such as helping others or contributing to collective goals can enhance resolve and commitment (van der Linden 2015; Cooke et al. 2016). Conversely, emphasising self-interest and external rewards such as payments can thwart internal motivation (Ezzine-de-Blas et al. 2018; Chervier et al. 2019).

Self-determination Theory

To explore how engaging in PLC may enhance well-being, we applied self-determination theory (SDT). A psychological theory of motivation, SDT is supported by decades of theoretical and empirical research in many fields (Deci and Ryan 2008), and has been effectively applied in rural contexts to explore motivations for innovation (Lioutas and Charatsari 2018; Saxby et al. 2018) and involvement in education programmes (Charatsari et al. 2017). SDT differentiates between autonomous and non-autonomous forms of motivation. Autonomous forms of motivation include intrinsic and some extrinsic motivations (i.e., identification and integration) that are consistent with personal beliefs and values (Pelletier et al. 1998; Supplementary Materials I, see MTES items). In contrast, non-autonomous motivation consists of other types of extrinsic motivations (i.e., introjection, external

or amotivation) that are not fully internally endorsed, such as guilt, shame, reward attainment, or punishment avoidance (Pelletier et al. 1998).

SDT also suggests that humans have three basic psychological needs (BPN): 1) autonomy (need to be a causal agent of one's life and act in harmony with integrated self); 2) competence (need to control the outcome and experience mastery); and 3) relatedness (need for social belonging, trust, reciprocity and connection, and care to and from others). People in social contexts that support these needs have enhanced autonomous motivation (Deci and Ryan 2000, 2008). Furthermore, people who make daily decisions to pursue autonomous aspirations or who are in social contexts that support autonomous motivation have enhanced well-being (Black and Deci 2000; Deci and Ryan 2008; Sheldon and Krieger 2014). In addition, people who spend their time pursuing activities consistent with more self-transcendent values (Schwartz et al. 2012), such as benevolence (care for friends and family) or universalism (care for *all* people and other species) have enhanced well-being (Kasser and Ryan 1996; Sheldon and Elliot 1999) compared to those pursuing non-autonomous aspirations and self-enhancing goals, such as power or wealth.

An increasing number of studies have related SDT to conservation (Cetas and Yasué 2016; Ezzine-de-Blas et al. 2018). However, few studies have used SDT and the BPN framework to connect the impacts of a conservation intervention to well-being (Saxby et al. 2018). Here we used SDT and specifically BPN to identify the well-being benefits that result from engaging in PLC in Tasmania, Australia. We used surveys and semi-structured interviews with landowners to determine the motivations for engaging in these programmes, and the experiences and consequences of participating in PLC. Surveys allowed us to rank the relative importance of different motivations for engaging in PLC for a larger pool of participants. Interviews allowed us to better understand the contextual factors that affected people's experience of engaging in PLC.

METHODOLOGY

Approval for the study was granted by the Tasmanian Social Sciences Human Research Ethics Committee (H0016128). Full details of survey and interview sample characteristics and background to PLC in Tasmania have been published elsewhere (Yasué and Kirkpatrick 2018; Yasué et al. 2019).

We investigated diverse PLC programmes in Tasmania that can be categorised broadly into three types: 1) conservation covenants, which are voluntary agreements with government that are written into private land titles, providing long-term legal restrictions on land use (Iftekhar et al., 2014); 2) stewardship programmes (Sobels et al. 2001); and 3) educational programmes (McDonald 2001) that encourage landowners to support wildlife on their properties. One educational programme ('Land for Wildlife') targeted larger property owners (>2 ha, primarily in a peri-urban or rural context) and another ('Gardens for Wildlife') targeted smaller properties

(primarily in urban or suburban contexts). All programmes (other than Gardens for Wildlife) employed stewardship officers who visited the properties and provided outreach and management advice. Participants were recruited through newsletters, lists, and Facebook groups of organisations working in conservation or agriculture between January 15 and June 01 of 2017.

‘Commercial properties’ were defined as the properties in which the primary source of income came from the land (primarily through farming or tourism), whereas ‘non-commercial’ properties were primarily used for residential, recreational, retirement, vacation, or ‘lifestyle’ purposes (Polyakov et al. 2013; McNicol and Glorioso 2014) with no or minor economic uses.

The 193 landowners who responded to the survey had a mean age of $58 \pm$ standard error (SE) 0.8 (range 30–85), 53% were women, 45% indicated they were retired or semi-retired. The properties that they owned were an average of 202 ha (± 98 , range 0.06–17,600 ha) and 80% were non-commercial properties, a majority of which were residential and/or for the explicit purpose of conservation or recreation. Of the survey respondents only 8% indicated they had inherited the property, and of this group, 47% indicated that they engaged in commercial activity on their property. Of the properties purchased by respondents, only 20% supported commercial activities. A majority (61%) of respondents participated in one PLC programme, with 20% in two programmes and 19% in three or more programmes. Respondents indicated that they were commenting specifically on their engagement in a covenant programme ($n = 63$), a strictly educational programme on a small (< 2 ha, $n = 53$) or large (> 2 ha, $n = 66$) property, or a stewardship programme ($n = 6$).

Of the 60 landowners interviewed, 28% were women, 51% appeared to be above the age of 60 (based on one or more of appearance, interview comments about life stage or survey responses if they participated in the survey, $n = 51$) and 68% were non-commercial property owners. A majority of commercial properties were multi-generational properties (69%) whereas a majority of non-commercial properties were purchased by the participant (98%). Participants were engaged in covenanting programme ($n = 27$), strictly educational programmes (< 2 ha properties, $n = 10$ and > 2 ha properties, $n = 13$), stewardship programmes ($n = 11$), with 2 people not engaged in any official programme and undertaking PLC on their own initiative.

Survey

Landowners selected one of the programmes they were involved in for the purpose of the study. To identify the relative importance of motivations to engage in PLC, we used the stem phrase ‘I participate in the Program...’ and provided 20 possible reasons to engage in PLC programmes (Supplementary Materials I). Six of these items were taken from the Motivation Toward the Environment Scale (MTES) (Pelletier et al. 1998) to differentiate between more autonomous

and less autonomous forms of motivation. We developed 14 other items based upon the results of previous qualitative and quantitative research on motivation (Putten et al. 2011; Blackmore and Doole 2013; Selinske et al. 2017), and from an iterative process of gaining feedback from experienced PLC practitioners in Tasmania. These items included more autonomously endorsed motivations such as pleasure, personal growth, and development e.g., ‘For the joy of learning more about the nature on my land’ or universalism (Schwartz et al. 2012) (e.g., ‘Because it is important to me to protect habitat for wildlife’), as well as less autonomous motivations that relate to pressures or extrinsic motivators such as financial gain or guilt (e.g., ‘Because it enhances the economic value of my property’). Respondents indicated the extent to which each item corresponded to their reasons for engaging in the programme on a seven-point Likert scale (1 = ‘Does not correspond at all’ to 7 = ‘Corresponds exactly’). In addition, we asked respondents how they felt when engaging in the PLC programme (i.e., ‘When I engage in this program: I feel energized’ or ‘...I feel alive and vital’). These two items were adapted from the State Subjective Vitality Scale (which asks for general feelings of vitality (Frederick and Ryan, 1997)). For brevity, we only included 2 of the 7 items from this scale. These two items were strongly correlated (Pearson’s $r = 0.94$). In the questionnaire, we also asked for demographic and property characteristics.

Interviews

We recruited participants for semi-structured interviews about motivations for, and experiences in, PLC through a question at the end of the above survey, or via local experts and practitioners working with landowners (Yasué et al. 2019). We purposively selected participants from different age groups, programme types, property sizes, and attitudes towards environmental organisations. We stopped adding interviewees to specific groups of landowners when we felt that we were no longer getting new insights or themes (Bowen 2008; Francis et al. 2010). To determine whether we had missed a specific group of landowner or a type of perspective, we relied on the literature and ongoing conversations with experienced PLC experts in Tasmania.

Interviews lasted 25–120 minutes (an average of 57 minutes with ± 4.2 minutes) and were conducted in person (63%) or on the phone, then recorded, fully transcribed, and analysed using NVivo 11.0. Responses to the subset of questions analysed in this study pertained to motivations to engage in PLC and experiences of engaging in PLC. The full interview schedule is available in Yasué et al. (2019). Interviews were semi-structured and used open-ended questions along with probes. We would initially ask, ‘can you tell me how you became involved in conservation on your property?’ If necessary we would follow with probes such as, ‘what, in particular, appealed to you about engaging in PLC, as opposed to other approaches to engage in conservation?’ To understand the experience of engaging in the programme we asked, ‘What

is it like to be a participant of [Programme name]?', along with probes, such as, 'How does it feel to be engaging in this programme?' and 'Has engaging in the programme influenced your life in any other way?' If landowners did not understand a specific phrasing, the question would be rephrased and there was some flexibility in the order of the questions to maintain the flow of conversation.

Following the methods of Ezzy (2002), transcripts were first coded deductively based upon explicit content in pre-defined questioning (i.e., motivations to participate and experiences in the programmes) with codes based on BPN in SDT (Karaarslan et al. 2013; Raabe and Readdy 2016; Triste et al. 2018, Supplementary Materials II). We then iteratively coded transcripts through multiple readings looking inductively for emergent or integrative themes expressed across multiple interviews. We also compared these themes and the prevalence of specific codes across groups of landowners based on age and property type. In addition to one author re-reading all the transcripts, another researcher with extensive experience in PLC also read a sub-set of the transcripts ($n = 8$) in order to refine the coding approach. These codes provided a finer-scaled perspective on different links between BPN and personal and social well-being. Throughout the interview results we used pseudonyms as well as the age category (i.e., 'younger' <60 or 'older' 60+) and occupation, whenever this information was known.

RESULTS

Our findings are divided into three sections. The first two sections are on the motivations for and experiences of engaging in PLC. The final section synthesises responses from different sections of the interview to identify emergent themes related to collaborative learning and specific benefits to retirees, as well as offering a summary of findings in terms of BPN and well-being.

Motivations to engage in PLC

Autonomous motivations

Survey results

Preliminary analyses of the survey data suggested no or small differences in motivation across different types of landowners (gender, age, retirement status, property-size, and property-type) and thus we present the aggregated means (Supplementary Materials II). The six items from the MTES suggested that landowners were motivated to engage in PLC for autonomous (Pelletier et al. 1998) rather than non-autonomous reasons. The most important motivations to engage were learning as well as a desire to help others (future generations, their community, and other species (Supplementary Materials I). Purely intrinsic motivations that related to the pleasure of engagement were only moderately important, and non-autonomous motivations such as fitting in socially and economic incentives were the least important. Two motivations that related to government inaction and demonstrating the value of bottom-up conservation to government—which could

be interpreted as more non-autonomous motivations—were moderately important.

Interview results

Landowners identified numerous different types of autonomous motivations for engaging in conservation including connection to their personal goals and identities, supporting their feelings of connection to nature and conserving properties into the future as a legacy for other people and species. Very few landowners spoke about non-autonomous motivations, such as pressures from neighbours or receiving payments (Yasué and Kirkpatrick 2018; Yasué et al. 2019).

Personal goals, values and identities

Landowners connected their participation in PLC with deeply held values originating from childhood experiences, parents, formal education, respected peers, current or past occupations, ongoing engagement with conservation or stewardship initiatives, and past community stewardship outreach programmes (Curtis and Lockwood 2000). Engaging in conservation was part of a personal life goal or property management goal. For example, an older medical professional said, "I actively think about conservation issues, and therefore, when you see something like Gardens for Wildlife, you think, 'you know that fits in with what we wanna do.'" (Edward)

Personal goals and PLC programme goals were aligned either because landowners had explicitly purchased the property for conservation, or because PLC activities supported other goals. For example, the presence of native vegetation was personally important for aesthetic reasons and for enhancing the resilience (e.g., drought-protection) of a farm to environmental change. Multi-generational farmers described participating in PLC as part of a diversification strategy to help achieve their primary property goal of passing on an aesthetic and economically and ecologically resilient farm to the next generation. For these reasons many farmers viewed their engagement in PLC stewardship as part of a 'good farmer' identity (Burton 2004) that was fully compatible with an economically sustainable business:

I think all farmers are conservationists deep in their hearts somewhere, it just takes a long time to get there. None of us want to watch our soils wash away or blow away or have an infestation of weeds or whatever... I look at my frogs and look for wombat shit, the orchids... It's probably at a point that it feels like a normal thing to do, it shouldn't be out of the ordinary... I see it as best farming practice. (Ken, younger multi-generational farmer)

In addition to farmer identities, landowners also connected involvement in PLC with their identities as environmentalist or conservationists. Given a polarised divide between economic production and nature conservation in Tasmania (Winter 2005), it was notable that *both* self-identified farmers and self-identified environmentalists related conservation action to their identities. There were also landowners who self-identified as both a farmer and an

environmentalist and these landowners related their actions to both these identities.

Landowners concerned about the environment also spoke of an emotional need to personally make a difference. After speaking extensively about the ecological values on his property, Jeff spoke about his motivations to get a conservation covenant.

There is a combination of reasons: location... corruption with the government, pissed off with Gunns [a forestry company], but I'd say that the main reason we bought it was emotional well-being, so I can at least say I had done something...I got the covenant, to demonstrate to government that people gave a shit and that people were prepared to lock up their own land (Jeff, younger union official)

This need to win back a sense of autonomy and competence was evident when people related their motivations to environmental problems over which they felt they had little influence. For Jeff, getting a covenant created hope in an otherwise 'depressing time' when there was extensive logging of native forests. The external pressure to do something because of perceived government inaction was evident in several of the interview responses of landowners and the survey results.

A sense of powerlessness was evident in Andy's (younger multi-generational farmer) comments, who, like many multi-generational farmers, described his feelings about the die-back of native trees due to drought: "...that disappoints me. You know it's upsetting, you can't do anything about it, it's out of our control. It's how the market and the economy and world has created for us."

Given these seemingly intractable environmental challenges, landowners expressed a need to gain a greater sense of control, *at least* over their own land. This similar sentiment of regaining a sense of autonomy and control through engaging in PLC was evident in Olivia, a retiree:

This world can be a pretty crazy place in times when you just feel so insignificant and that what you think or do doesn't count but if you've got something like this, makes you feel a little bit more in control or at least be in control with your little piece of land if nothing else.

Connectedness to nature

Consistent with the survey results and past research (Farmer et al. 2011; Selinske et al. 2015), landowners were motivated to engage in PLC because of a sense of connection, belonging, and care to their local place, their land, or to other species. For example, Liam, a multi-generational farmer says: "I love the country. I love my land. I am so damn lucky to have this patch—I mean you've got waterfalls, you've got rocky mountainscapes, you've got flatlands, you've got hills, you've got everything all on one farm."

Although connection to the nature on their property was particularly prevalent for multi-generational farmers such as Liam, people who had recently moved to Tasmania for

retirement also indicated this sentiment (c.f. Kirkpatrick et al. 2018). These landowners connected PLC to their love for the 'bush' more generally rather than to a specific place and identified particularly valued types of nature (e.g., old growth forest, rare species, birds) on their properties. For these landowners, engaging in PLC provided an opportunity to create habitats for wildlife on their properties and protect different types of rare plant species. Landowners frequently spoke of caring for other species in a way similar to how they spoke about relationships with people. Motivated by altruistic values such as universalism and benevolence (Schwartz et al. 2012), these landowners blurred any distinction between nature and society. Some landowners, such as Olivia, a retiree, indicated that the obligations they felt to care for non-humans on their property was no different than their sense of moral responsibility to care for other humans:

It's almost like you've done something worthwhile for somebody other than yourself... I think everything has the right to a fair go, whether it's pademelon or a wedge-tailed eagle or a person, or a child or a dog or whatever: it really doesn't matter. I guess it is a sense of fairness for everybody.

Conservation into the future

Similar to past research (Gooden and Grenyer 2019), one of the experiential benefits that landowners sought from covenanting programmes was a sense of comfort and security that the biodiversity values retained and restored during their tenure would be retained after they sold or bequeathed their properties. This sentiment was prevalent amongst non-commercial landowners, because they were more likely to sell, rather than bequeath, their properties compared to commercial landowners, of whom 60% in our sample were multi-generational farmers. Jonathan (older retired researcher), a non-commercial landowner, spoke about his motivation for covenanting:

We would hope that somebody might come forward who'd have an interest in that or maybe values similar to our own. But you can't guarantee those things. So the covenant, I suppose, provided some layer of certainty for the future, regardless of who has some custodial guardian role with this property or the title over it in the future.

Even amongst a few non-commercial landowners who planned to bequeath their land to their children, there were still some who covenanted to protect habitat against future land encroachment despite this potentially reducing the autonomy of their heirs. Here Jack, an older retired medical professional, spoke about the additional benefit of covenanting given at least some doubt that his daughters would fully maintain the biodiversity values: "If push comes to shove, well if I die... So I'll leave the property to my girls, but... once I've croaked, I don't know what they're going to do with it. I would hope they'll *sort of* look after it in *some way*."

Experiences of PLC

Survey results

Participants in this study experienced high vitality (5.7 ± 0.09) when engaging in PLC, consistent with the suggestion that reflects the fulfilling of BPN (Kasser and Ryan 1999; Nix et al. 1999). A concurrent study also suggested that Tasmanian PLC landowners felt a sense of autonomy and competence when engaging in these programmes (Yasué and Kirkpatrick 2018).

Interview results

We identified three positive experiential themes—purpose, satisfaction and joy—that integrated BPN in PLC activity. Although the experiential themes were overwhelmingly positive, a small number of landowners indicated some negative experiences in engaging with PLC programmes (particularly paid covenant programmes). These negative experiences are discussed in detail in Yasué et al. (2019).

Purpose

Our results confirm past PLC research (Selinske et al. 2015; Gooden and Grenyer 2019) in demonstrating that engaging in PLC can provide a sense of purpose. We considered purpose to be a stable intention that leads to productive engagement with a personally important self-transcendent goal (García-Alandete 2015). Several non-commercial landowners spoke about how engaging in PLC provided greater purpose in their lives: “[PLC] gives immense intellectual, spiritual, and emotional satisfaction, I mean you are working for life with life, you are working for something that is ultimately positive.” (William, older semi-retired environmental professional)

The effect of PLC on a greater sense of purpose was best illustrated by two landowners who had invested substantial time and money on conservation projects. Both landowners were professionals who had lucrative jobs and no children: “I’ve got to have something that gives me a reason to go to work... (laughs). So earning the money to be able to do this, and to come home and enjoy it, and watch it all grow and stuff is kind of what it’s all about.” (Noah, younger medical professional)

For Noah, PLC was important because his job did not give him enough purpose or meaning in itself, but became bearable as a means to finance PLC. Noah said that though he had spent most of his life moving from place to place for work, engaging in PLC gave him ‘roots’ to his property and may stop him from moving elsewhere. He said, “I feel a lot more grounded than I’ve ever had before because of all the stuff that’s happening, so that’s kinda nice.”

Similarly, Isaac spoke about PLC providing a sense of purpose by creating an opportunity to work towards a goal that is larger than himself:

...doing a nine to five job, got no kids, fairly financially okay... Kind of wondering, okay. Why are we going to work?...you scratch your head you wonder why... Why are we bothering? And so, I’m engaged in something that’s giving me something to do that will have hopefully some long-term benefit. (Isaac, younger environmental professional)

The sentiment that PLC may help to provide a sense of purpose was particularly evident in the interviews with recently retired people. For example, one recent retiree who previously had a challenging and meaningful job spoke of the need to “take on a substantial project” for retirement and to contribute to a broader purpose. He wanted to do something different than his colleagues who had retired and “got tired of playing golf and going to the beach after about a year.” This retiree compared PLC to golf in terms of physical activity and sunshine, but found in PLC a much greater sense of purpose. For non-commercial landowners, part of this enhanced purpose focused on providing a gift for future owners or more broadly for future generations:

Knowing that there is a sense of permanence to what you are doing...and when you go, there is some chance of legacy... It is like some of those great gardens that have been built by people over the centuries, they did it not for themselves, but the satisfaction that they got was knowing, you know, that it would be there in the future for other people to enjoy. (William, older semi-retired environmental professional)

In contrast, older multi-generational farmers did not indicate that their engagement provided a greater sense of purpose. Instead, PLC was presented as being just part of their goal of passing on an economically and ecologically viable property to their heirs.

Satisfaction

Landowners spoke about the sense of personal fulfillment, satisfaction, pride, and achievement they derived from providing benefits for other species on their properties, as found by Michel-Guillou and Moser (2006) and Gooden and Grenyer (2019). They spoke about the ability to make a ‘tangible’ difference, especially when asked about how engaging in PLC differs from other types of environmental conservation. Several landowners emphasised that part of their satisfaction in engaging in PLC was related to the fact that they had full creative control and autonomy to make a “long-term difference” (Ethan, older semi-retired multi-generational farmer). As Charlotte, an older retired marketer, explained: “It is your own piece of land and it is your home and you’re able to do what you’d like to do with it and not be influenced by others, or have other people dictate what should happen on it.”

Landowners spoke about the sense of satisfaction they got out of seeing the trees that they planted “come to fruition” (Oscar, retiree). Many participants pointed to ‘their’ trees during interviews or talked about the joy of looking at the trees outside their window.

It makes me feel happy, it is nice to drive around when there are trees around, especially when it is drought, it is good to have something to soak up the water and the dust from flying around, something green, rather than just arid, if you look out along here, it isn’t as nice as having some trees along the fences. (Charlie, younger multi-generational farmer)

These trees not only create habitat for other animals but also support the farmer's goals of having a more ecologically and economically "resilient" property. Some landowners described the response of nature to their work as a reciprocal interaction (Kimmerer 2013) in which they help the land and the land helps them. For example, Julie, a younger multi-generational farmer says: "It's nice to know you've made homes for things and there's something sort of, some strength in the landscape, because there's diversity, and those things can live there and maybe help manage the landscape."

Several landowners spoke about the satisfaction of seeing nature respond to their work. For example, Ava, an older farmer says, "We enjoy seeing it go well. We like the fact that the riverbanks are repairing themselves quite energetically just by our putting up that little fence up." While Isaac, a younger environmental manager says, "...you look back on it and you really feel good about, wow, look how beautiful this is. You know I helped it come back... It's just something you do for yourself, your well-being."

For some farmers, such feelings of satisfaction extended to positive recognition from others for undertaking PLC:

We've always managed our farms as if it's a showpiece. It is an example of hard work, and so for it to look good and people appreciate it, it's rewarding for us. I think it's similar to being proud of your family or something, isn't it?... Because, in agriculture, there's not a lot of recognition. There's not a lot of rewards for what you're doing. You just do it. So to have any recognition or gratitude from the community doing things like that, is a good feeling. (Max, younger multi-generational farmer)

Joy

Independent of any conservation outcome or social recognition, some landowners suggested that engaging in PLC activities was *intrinsically* pleasurable. Exercising outdoors, creating projects, learning skills, connecting to others, participating in studies, and becoming more intimate with the land were all mentioned as potential sources of enjoyment. As Jacob (younger architect) explained:

Conservation is, it's stuff that I thoroughly enjoy. I love going for a wander and spraying weeds, I love going for a wander and planting things, and I love just kind of going for a wander and seeing what bugs, animals, anything else, have started to engage in the property and those areas. It's a constant learning experience and observation, I think that's just really exciting in itself.

In line with past research (Ulrich 1984; Wells and Evans 2003), Olivia (a retiree) spoke about the mental health benefits of spending time in nature and engaging in PLC:

I like being in nature. If I am ever feeling stressed or unhappy, I go for a walk in the bush and I feel fine, and so there is obviously a connection there, that is good for your ability to cope with the world. So I guess to me that's a really big thing as well, because I have cancer, so

being down there is just an amazing...you just forget about everything and you just feel really good about the world and about yourself and, any little thing you manage to do, regardless of how small it is. It makes you feel good...

Olivia's reference here to the positive feelings of succeeding in even small tasks that provide a sense of self-efficacy and competence confirms research indicating that significant well-being benefits can be derived from seemingly small or banal achievements (Bandura and Schunk 1981; Reis et al. 2000).

Finally, landowners frequently spoke about experiencing a sense of timelessness, a positive flow state (Nakamura and Csikszentmihalyi 2014), when immersed and engrossed in conservation activity on their property (Caulkins et al. 2006). "I love it," enthused Joseph (government biologist), adding, "I can work ten hours a day outside in the garden and not notice; and it's fun."

Synthesis

Learning through collaborating

One of the most important qualitative benefits of engaging in PLC appeared to be opportunities for collaborative learning. As noted in past research (Morrow-Howell et al. 2003; Charatsari et al. 2018), learning opportunities helped participants feel more competent in their ability to be effective stewards of their land. Because landowners participated in PLC programmes on their own properties, PLC is potentially a more solitary experience than other types of volunteer or environmental action (Broad 2003; O'Brien et al. 2011). However, opportunities for learning were often facilitated by stewardship officers or other PLC practitioners. Landowners engaged with others in workshops, collaborative research projects, and educational tours of their properties. These were all experienced as opportunities to learn and be inspired.

Engaging with educational material and trusted stewardship officers (Yasué et al. 2019) facilitated a deeper sense of connection to land and other species. For example, when stewardship officers pointed out rare species, landowners became more aware and excited and this helped to generate greater connection to and interest in their land. In contrast to other contexts where landowners felt burdened by the discovery of an endangered species on their properties (Liberg et al. 2012; Langpap 2006) and resented any additional cost and responsibility, participants shared their excitement at having a new responsibility to become stewards. Landowners felt supported by a wider community and thus autonomously embraced new opportunities to make a difference to their world through PLC. Patrick, an older multi-generational farmer who worked closely with conservationists over decades said:

That is so special you know, what a responsibility. Do you feel like losing that plant? No, no way.....Oh look there's orchids and skinks and so there are ranunculi, daisies, all sorts of little things that I'm no expert on, it's just you become aware of them and then just enjoy that that's there and that's how special nature is.

Several multi-generational farmers described the importance of meeting people and learning in order to maintain a nimble and dynamic sustainable business for future generations. Here a young multi-generational farmer, Harry, reflects on the value of educational farm tours in which farmers visit each other's properties.

It can become very insular and a little bit isolated from what's going on. And so it sort of spurs you to get on and see what's going on in different places. Everyone's really passionate about what they do, so it's really good to go out and hear that. I'm always happy to have people here and do things cause I like what I'm doing, and want to share that a little bit.

Multi-generational farmers often spoke about engaging in a 'learning journey' with a community of farmers and conservationists. These interactions create community with a focus on shared concerns and problems (Sobels et al. 2001). It was notable that even farmers with extensive land management experience and extensive and established social connections with other farmers, researchers or other conservation organisations, still valued these collaborative learning programmes.

The collaborative learning component of these programmes seemed to be even more important for retiree landowners and other new residents who did not have these same social connections. For example, a retired landowner living in a remote part of Tasmania said:

It has brought us into contact to other people who are doing wonderful things and are very inspiring, so there are other people, you know, sometimes you feel quite alone, and it is quite inspirational to get in contact with other individuals and little organisations especially, mainly small organisations or couples or families or so on that are doing great work and that has been fantastic and inspirational. (Oscar, Older retiree)

Similarly, Sophie, a mother of young children and a new resident said, "I really enjoy knowing that we're part of something that is potentially bigger. And that we are doing what we can within our own little world, our little space."

Even some non-commercial landowners who did not seek out support from other landowners indicated that just the knowledge that there are others working in these PLC programmes who share pro-environmental practices, fostered feelings of solidarity, shared identity, and greater collective efficacy. Jack, an older retired medical professional, said, "Yeah. It makes you realise that you're not just a lone voice in the wilderness. And that's important. It's nice to know that there are other people around doing the same sort of thing."

Well-being benefits to older adults

Although both, our surveys and interviews, documented motivations and psychological benefits to people of different ages and life stages, retired interviewees identified specific types of impacts that they felt were particularly important

because of their life stage. Specifically, they spoke about impacts on personal growth, purpose, autonomy (through covenants), exercise, stress relief (in the context of an illness), time spent outdoors, self-efficacy, enhancing a sense of control over one's life, and social interactions. In older life, when some people may experience reduced opportunities for social interaction, autonomy, personal growth, or life purpose (Ryff and Keyes 1995; Kasser and Ryan 1999), PLC programmes provided important opportunities to enhance personal well-being through contributing to the public good outcomes of conservation. Volunteering and engaging in the outdoors (Morrow-Howell et al. 2003; Ferrand et al. 2012; Milligan et al. 2015), engaging in personally meaningful projects (McGregor and Little 1998) and enhanced physical movement can be particularly important for, and reduce the chance of depression among older adults (Marshall et al. 2014). These results may explain our findings as well as past research that demonstrated that participants in PLC tend to be older than non-participants (Selinske et al. 2019). Further research on PLC for older adults may help design programmes that meet their specific needs and life circumstances (Yasué et al. 2019).

Benefits for autonomy, competence and relatedness

Spending time engaged in activities that support autonomously-endorsed, self-transcendent, creative and altruistic aspirations supports autonomy, competence, relatedness, and enhances well-being (Kasser and Ryan 1996; Brown and Kasser 2005). As elsewhere (Selinske et al. 2017; Gooden 2019), our participants were autonomously motivated to engage in conservation. Whether it was multi-generational farmers engaging in these programmes to help them achieve their primary goal of passing on an economically and ecologically resilient farm to the next generation (Mooney and Defenderfer 2010; Inwood et al. 2013) or non-commercial landowners gaining a greater sense of life purpose after retirement, engaging in the 'moral economy' (Germann 2013), engaging in the joy of responsible action (Chernela and Zanotti 2014) or simply the joy and excitement of learning new skills and ideas, people had their own autonomous aspirations for engaging in conservation.

PLC programmes supported feelings of competence and self-efficacy (Bandura and Schunk 1981) by furthering the skills and resources available to landowners in managing their properties, providing opportunities to develop and apply practical skills, and by connecting the actions of landowners to the conservation work of other organisations and individuals, engendering a greater sense of collective efficacy (Yasué et al. 2019). Such feelings of competence are important predictors of pro-environmental farming practices (Michel-Guillou and Moser 2006). Furthermore, engaging in PLC boosted feelings of both autonomy and competence, while the broader state of the environment brought feelings of sadness, frustration, despair, or anger (Kidner 2007; Fritze et al. 2008). This engagement provided a sense of local environmental influence and hope in the context of a wider sense of environmental disempowerment. Progress in small

but tangible ways can help to enhance feelings of well-being (McGregor and Little 1998) by promoting self-congruence or integrity (Deci and Ryan 2000) and a sense of personal accomplishment (Bandura and Schunk 1981; McGregor and Little 1998). The daily contextual factors that influence psychological well-being are important given high rates of depression in wealthy societies (Blazer 2003; Cole and Dendukuri 2003), and links between environmental change and mental health (Fritze et al. 2008). Furthermore, it has been found that daily positive and personally meaningful activities are more important than personal circumstances (e.g., income and education) for happiness (Sheldon and Lyubomirsky 2007; Lyubomirsky et al. 2011).

Finally, engaging in PLC enhances trust and reciprocity, and evinces care for future generations (Sobels et al. 2001; Mathijs 2003). Although relatedness in BPN refers to relationships with other people, our results suggested that people may also feel a sense of relatedness with nature and that these connections can be enhanced by PLC programmes. Such 'environmental relatedness' (Ezzine-de-Blas et al. 2018) was deepened by opportunities for people to care for, observe and learn about other species and natural processes, and also to build deeper roots and connection to place (Gosling and Williams 2010). Some of the methods developed by SDT researchers to understand manifestations of relatedness (e.g., trust, belonging and reciprocity) could be adapted to explore whether 'environmental relatedness' shared similar characteristics and influence on well-being. Research in rural studies, urban planning and traditional ecological knowledge has suggested that environmental relatedness could have important psychological benefits (Beery 2013; Kimmerer 2013; Kirkpatrick et al. 2018).

CONCLUSION

Limitations

Although our study demonstrates that engaging in PLC programmes can support BPN as a precursor to well-being, to avoid priming participants we did not explicitly measure or quantify well-being or explicitly probe experiences of mental or emotional ill-health. A quantitative socio-psychological study of a much larger population may help to demonstrate the extent of the effect as compared to other types of programmes or activities. Although attempts were made to diversify the interview sample, the survey sample may not fully reflect the population of conservation landowners. Few farmers filled out the survey and it is possible that enthusiastic participants in PLC were more likely to respond to the survey. However, given that even our least enthusiastic respondents in interviews (Yasué et al. 2019) gained some psychological benefit from PLC, this bias is unlikely to significantly affect our conclusions.

In Tasmania, with moderate weather, an abundance of wild nature and good social security systems, PLC has been able to benefit a group of retirees who are relatively financially secure, well-educated, skilled, healthy people who own land and who

are motivated and eager to learn. However, the financial wealth required to own land, as well as the types of social services available for retirees means that PLC could only be considered an effective approach to enhance well-being in a small subset of the elderly. On the other hand, even in different socio-political contexts, our methods and results and the BPN framework may be applied to explore the well-being benefits in a range of other activities such as volunteering for soup kitchens or tending community gardens (Burls 2007; Lovell et al. 2015).

Our survey and interviews suggest that engaging in PLC supported autonomy by enabling landowners to align the management of their properties with their social identities, personal values and psychological needs (Kasser and Ryan 1999; Reis et al. 2000). Landowners had feelings of vitality when engaged in PLC and participated in conservation due to autonomous and self-transcendent motivations (Sheldon et al. 1996; Reis et al. 2000; Schwartz et al. 2012). These motivations imbued life with greater meaning and purpose through a sense of benefiting not only themselves, but future generations and other species. These results suggest that engaging in PLC can promote personal and collective well-being.

The primary goal of nature conservation is to influence human activity to achieve environmental outcomes, often by aligning them with economic objectives. However, the socio-psychological benefits of PLC highlighted in this study have important implications. Conservation projects with demonstrated benefits to both the environment and to human well-being may be more likely to succeed in the long-term (Saunders et al. 2006; Brooks et al. 2012; Cetas and Yasué 2016). Our results suggest that PLC fostered many of the qualitative factors that promote well-being, including feelings of autonomy, connectedness, purpose, learning, and belonging to people and nature (Ryff and Keyes 1995). Framing and designing PLC in terms of these types of benefits rather than solely environmental or economic benefits may enhance the diversity of those participating in PLC, beyond people who are solely interested in economic benefits or who have existing commitments to the environment (Shaw and Miller 2016). This seems likely to lead to broader, longer-term and more socially and environmentally effective engagement in PLC (Cooke et al. 2016).

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