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Body Image Benefits of Allotment Gardening

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**Abstract**

Allotment gardening – where individuals rent a small plot of land in a public space separated from the home – has been shown to improve psychological well-being and physical health. However, the impact of allotment gardening on body image has not been previously assessed, despite evidence that exposure to natural environments elevates positive body image. Here, a sample of 84 allotment gardeners from London, United Kingdom, were asked to complete a measure of state body image before and after spending time on their allotments. They were also asked to complete several measures of trait positive body image – namely, body appreciation, functionality appreciation, and body pride – selected to provide broad coverage of the positive body image construct. These data were compared to scores from a matched, non-gardener control group (*n* = 81). Results indicated that allotment gardening resulted in significantly improved state body image and that longer time spent on the allotment was associated with larger improvements. In addition, between-group analyses indicated that allotment gardeners had significantly higher positive body image than non-gardeners across all included indices. These results corroborate previous work suggesting that exposure to natural environments brings real benefits in terms of positive body image. Ensuring that these benefits are experienced by all requires policies that provide for dedicated and sustained community allotment plots.

**Keywords:** Allotment gardening; Positive body image; Nature exposure; Body appreciation; Functionality appreciation; Body pride

**1. Introduction**

 The construct of *positive body image* refers to an “overarching love and respect for the body” and includes an appreciation of the body and its functions, acceptance of the body despite its imperfections, and body-protective behaviours (Tylka, 2018, p. 9). In this perspective, positive body image is not merely the absence, or the polar opposite, of negative body image (e.g., body dissatisfaction) (Webb, Wood-Barcalow, & Tylka, 2015). Instead, the construct of positive body image represents an independent and multi-faceted construct that is uniquely associated with indices of psychological and physical well-being, including self-esteem, life satisfaction, positive self-care health behaviours, and adaptive eating behaviours (for reviews, see Tylka, 2018, 2019; Tylka & Wood-Barcalow, 2015a). This, in turn, means that the promotion of more positive body image offers a useful means of fostering psychological and physical resilience, contributing to well-being, and allowing individuals to thrive (Tylka, 2019). In order to achieve these outcomes, it is vital to develop interventions that promote positive body image rather than simply reduce negative body image (Guest et al., 2019; Webb et al., 2015).

 One method that could potentially be effective at promoting positive body image is exposure to natural environments. Within the broader literature, the salutogenic effects of natural environments on human health and well-being are well documented (e.g., Collado, Staats, Corraliza, & Hartig, 2017; Frumkin et al., 2017), but recent work has noted that such effects also extend to positive body image. For example, cross-sectional studies have reported that greater exposure to natural environments is significantly associated with facets of positive body image, such as body appreciation and functionality appreciation (Mitten & D’Amore, 2018; Swami et al., 2019; Swami, Barron, Weis, & Furnham, 2016). Experimental research has likewise shown that exposure to isomorphic nature – presented in the form of photographs of natural environments (Swami, Barron, & Furnham, 2018) and a film of a first-person walk in nature (Swami, Pickering, Barron, & Patel, 2018) – produces elevations in state positive body image. Finally, exposure to real natural environments – operationalised as walks in nature or time spent in a designed green space (Swami, Barron et al., 2018) – has also been shown to improve state positive body image.

 Capitalising on these effects requires that citizens have easy access to natural environments, but increasing urbanisation has meant that many people are exposed to reduced levels of nature (Turner, Nakamura, & Dinetti, 2004). Gardening provides an opportunity for urban dwellers to have regular contact with nature and has been found to improve physiological health, elevate positive mood, encourage physical activity, and promote better psychological well-being (for reviews, see Ohly et al., 2016; Soga, Gaston, & Yamaura, 2017). However, many homes in the United Kingdom do not have access to domestic gardens (Davies, Fuller, Loram, Irvine, Sims, & Gaston, 2009) and garden coverage is diminishing due to backland development and urban sprawl (Goode, 2006). In this context, urban allotment gardening – where individuals rent a small plot of land in a public space separated from the home to grow fruit and vegetables for personal consumption (Bell et al., 2016) – takes on renewed importance and, perhaps unsurprisingly, has witnessed a resurgence in popularity in the United Kingdom (Campbell & Campbell, 2013).

 Recent studies (e.g., Clatworthy, Hinds, Camic, 2017; van den Berg, van Winsum-Westra, de Vried, & van Dillen, 2010; Wood, Pretty, & Griffin, 2016) and a systematic review (Genter, Roberts, Richardson, & Sheaff, 2015) have indicated that allotment gardening has the potential to improve health and psychological well-being. To date, however, most studies have utilised specific subsets of the population (e.g., individuals experiencing mental health conditions rather than allotment holders in general; Genter et al., 2015), have not utilised comparison groups (e.g., non-gardeners; Wood et al., 2016), and – importantly – have not examined the impact of allotment gardening on body image. To rectify these oversights, the present study examined the effect of allotment gardening on state body image in a sample of allotment gardeners. It was hypothesised that allotment gardening would result in significantly improved state body image in this sample. In addition, trait positive body image in this group was compared with a matched, non-gardener control group, with the expectation that scores would be significantly higher in the former.

**2. Method**

**2.1. Participants**

One-hundred and sixty-five participants, of whom 84 were allotment gardeners and 81 were non-gardeners, volunteered to take part in the study. Participants ranged in age from 20 to 82 years (*M* = 44.70, *SD* = 18.16) and in self-reported body mass index (BMI) from 16.32 to 48.05 kg/m2 (*M* = 25.53, *SD* = 5.38). Of the total sample, 60% were women and the majority were married (73.9%), in full-time employment (55.2%), and of British White descent (86.7%).

**2.2. Measures**

 **2.2.1. State body image**. The allotment gardeners were asked to complete a measure of state body image pre- and post-session. To operationalise state body image, a visual analogue scale was used, with participants rating their satisfaction with their overall appearance on a 100-milimeter line anchored by two extremes (*extreme dissatisfaction* to *extreme satisfaction*) (Heinberg & Thompson, 1995). Responses were measured to the nearest millimetre, with higher scores reflecting greater satisfaction with overall appearance at that moment in time. Visual analogue scales have been shown to have good construct validity and are sensitive to short-term changes (Heinberg & Thompson, 1995).

 **2.2.2. Trait body image**. To measure trait body image, gardeners and non-gardeners were asked to complete three measures of positive body image. The first was the Body Appreciation Scale-2 (Tylka & Wood-Barcalow, 2015b), a 10-item measure of acceptance of one’s body, respect and care for one’s body, and protection of one’s body image from unrealistic beauty standards. Items were rated on a 5-point scale (1 = *never*, 5 = *always*), with higher mean scores reflecting higher body appreciation. The second measure was the Functionality Appreciation Scale (Alleva, Tylka, & Kroon van Diest, 2017), a 7-item measure of one’s appreciation for what the body does and can do. All items were rated on a 5-point scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*), and higher mean scores reflect greater functionality appreciation. The final measure was the 6-item Authentic Pride subscale of the Body and Appearance Self-Conscious Emotions Scale (Castonguay, Sabiston, Crocker, & Mack, 2014), which measures body pride as a sense of personal appearance-related achievement. Items on this subscale were rated on a 5-point scale (1 = *Never*, to 5 = *Always*) and scores were averaged so that higher scores reflect greater authentic body pride. All three instruments have been shown to have adequate psychometric properties (Alleva et al., 2017; Castonguay et al., 2014; Tylka & Wood-Barcalow, 2015b). In the present study, all internal consistencies were adequate across measures and across groups (all ω ≥ .89).

 **2.2.3. Additional measures**. Both groups were asked to provide their demographic details consisting of sex, age, relationship status, employment status, ethnicity, height, and weight. Height and weight were used to compute self-reported BMI as kg/m2. The gardener group were also asked to report the time spent on the allotment during the testing session in minutes and to report the tenure of their allotment in months.

**2.3. Procedures**

Ethics approval was obtained from the relevant departmental ethics committee. Between April and September 2018, allotment gardeners were recruited from twelve allotment sites in north London, United Kingdom. Inclusion criteria included having a tenured allotment, being a United Kingdom resident, being of adult age, and self-reported fluency in English. In addition, only one participant was permitted per allotment. These participants were recruited via direct approach and were provided with brief information about the study. Individuals who agreed to take part in the study provided written informed consent and completed a pre-session questionnaire consisting of the VAS. Upon exit of the allotment, they were asked to complete a second questionnaire consisting of the post-session VAS, the measures of trait body image, and demographic items.

 To recruit a matched control group of non-gardeners, the procedure established by Wood and colleagues (2016) was followed, which involved recruiting participants from eight supermarkets located closest to the allotment sites. Non-gardeners were identified by verbally asking individuals if they gardened and indicating that eligibility required that they “do not do anything in the garden” (Wood et al., 2016). Individuals who were eligible and met additional inclusion criteria (being a United Kingdom resident, being of adult age, and self-reported fluency in English) were provided with brief information about the study. Those who agreed to participate provided written informed consent and completed a single questionnaire containing the measures of trait body image and demographic items. All participants across both groups took part on a voluntary basis, were not remunerated, and were provided with written debrief information.

**3. Results**

**3.1. Impact of Allotment Gardening on State Body Image**

 To examine the impact of allotment gardening on state body image, a paired-samples *t*-test was computed with VAS scores. Results indicated a significant increase in VAS scores from pre-session (*M* = 52.95, *SD* = 18.84) to post-session (*M* = 62.64, *SD* = 16.81), *t*(83) = 4.86, *p* < .001, dependence-corrected *d* = 0.53. The mean length of tenure on the allotments was 58.12 months (*SD* = 21.00) and the mean session length was 153.30 minutes (*SD* = 120.82). To examine whether these variables had an impact on state body image change, the difference between pre- and post-session VAS scores was first computed. Next, a linear multiple regression was computed with the VAS difference score as the criterion variable and tenure and session length, respectively as predictor variables. The regression was significant, *F*(2, 83) = 27.07, *p* < .001, Adj. *R*2 = .39. Longer session duration was associated with greater state body image change (*r* = .62, B = .09, *SE* = .01, β = .61, *t* = 7.04, *p* < .001), but not tenure (*r* = .18, B = .10, *SE* = .08, β = .12, *t* = 1.38, *p* = .175).

**3.2. Comparison of Allotment Gardeners and Non-Gardeners**

Independent-samples *t*-tests indicated no significant differences between allotment gardeners and non-gardeners in terms of age, *t*(163) = 1.07, *p* = .287, *d* = 0.17, and self-reported BMI, *t*(163) = 0.48, *p* = .633, *d* = 0.08. There were also no significant differences across groups in the distribution of sex, χ2(1) = 0.02, *p* = .899, relationship status, χ2(4) = 3.38, *p* = .496, occupational status, χ2(4) = 7.48, *p* = .113, and ethnicity, χ2(3) = 0.49, *p* = .922. These results suggest that the two groups were adequately matched in terms of these demographic criteria. Next, to test whether there were between-group differences in trait positive body image, a series of Bonferroni-corrected (*p* = .05/3 = .016) independent-samples *t*-tests were computed. Results indicated that, compared to the non-gardeners, the gardener group had significantly higher body appreciation (gardener *M* = 3.47, *SD* = 0.75; non-gardener *M* = 3.08, *SD* = 0.81), *t*(163) = 3.25, *p* = .001, *d* = 0.51, functionality appreciation (gardener *M* = 3.54, *SD* = 0.68; non-gardener *M* = 3.16, *SD* = 0.82), *t*(163) = 3.32, *p* = .001, *d* = 0.52, and body pride (gardener *M* = 3.11, *SD* = 0.89; non-gardener *M* = 2.62, *SD* = 0.93), t(163) = 3.46, *p* = .001, *d* = 0.54.

**4. Discussion**

 There were two important findings in the present study. First, it was found that spending time on an allotment resulted in significantly improved state body satisfaction in a sample of gardeners. This finding is consistent with previous work showing that direct exposure to real nature results in significant improvements to state body image (Swami, Barron et al., 2018), as well as studies indicating that allotment gardening has positive effects on psychological well-being (e.g., Clatworthy et al., 2017; van den Berg et al., 2010; Wood et al., 2016). The present finding is important in light of increasing urbanisation and the costs of urban living in terms of psychological well-being, as well as the decline in garden coverage in homes in the United Kingdom (Davies et al., 2009). It might be suggested allotment gardening is a useful means of promoting not just general psychological well-being, but also more positive body image, for people living in urban areas. Importantly, the present study also showed that time spent on the allotment on a single visit was significantly associated with larger increases in state positive body image. This result is consistent with other research showing that the amount of time spent on allotments is associated with higher psychological well-being (Webber, Hinds, & Camic, 2015) and points to possible dose-response effects (see Pasanen, Ojala, Tyrväinen, & Korpela, 2018).

 This suggestion is consistent with the second important finding of the present study, namely that allotment gardeners had significantly higher trait positive body image – as assessed through multiple instruments – compared to a matched, non-gardener control group. This fits with previous research indicating that allotment gardeners had significantly higher life satisfaction and self-esteem, better overall health, and fewer symptoms of depression and reduced loneliness compared to non-gardeners (van den Berg et al., 2010; Wood et al., 2016). Understanding mechanistic pathways that lead to these differences is difficult to ascertain through cross-sectional data alone, but taken together the present data suggest that time spent on allotments may contribute to short-term elevations in state body image, which in turn contribute to improved trait positive body image in the longer-term. Of course, there may be additional pathways through which these benefits are realised, such as the provision of meaningful activity that influence feelings of connectedness to nature and to others, greater self-compassion, and improved physical activity and health (Swami, Barron et al., 2018, 2019; Webber et al., 2015). Understanding how allotment gardening contributes to more positive body image may be facilitated in the future through qualitative research.

 A number of limitations of the present study limits the conclusions that can be drawn at present. First, although attempts were made to recruit matched samples of gardeners and non-gardeners, it is possible that between-group differences were an artefact of questionnaire completion (i.e., completing the questionnaire on an allotment versus at a supermarket or because of mood differences during testing). Second, the lack of a control makes it difficult to know whether improvements in state body image were a function of allotment gardening or other factors, though it should be noted that an active control group may be difficult to conceptualise in the absence of further research. Third, because no additional measures were included in the survey package, it is possible that the gardeners in particular were able to guess the study hypothesis and thus responded in a socially desirable manner. Fourth, although the two groups were well matched in terms of key demographic criteria, it may be important in future research to consider additional covarying variables, such as social class, income, and engagement in physical activities. Finally, the present results are limited to allotment gardeners in a single locale in the United Kingdom and it is unclear to what extent the same findings would be replicable in other locations and national groups.

 Future studies could build on the present work in a number of other ways, primarily through seeking to better understand mechanistic pathways that lead to improvements in body image as a function of allotment gardening. One way to achieve this would be to include possible mediating variables, such as connectedness to nature, self-esteem, self-compassion, and trait mindfulness. In a similar vein, it would be useful to examine to what extent allotment gardening results in reduced negative body image, as opposed to improvements in positive body image (see Swami et al., 2016). Despite these omissions and the preliminary nature of the present work, accumulating evidence suggests that allotment gardening – and nature exposure more generally – has a host of benefits for psychological well-being (Genter et al., 2015), including in terms of body image. Ensuring that opportunities for gardening are available to all people is, therefore, vital and may help to reduce the long-term cost burden on health services in the United Kingdom. One way to achieve this, beyond policies that ensure access to green spaces for all citizens, would be through the provision of dedicated and sustained community allotment plots.

**Author Disclosure Statement**

There are no conflicts of interest to declare.

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