The Effect of Naturism on Body Image and Interoceptive Awareness

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Research considering the benefits of Naturism on body image recently re-emerged after decades of neglect. The present study continued prior work assessing positive body image and went further adding an instrument used to assess Eating Disorder treatment efficacy expecting to benchmark naturists with very low symptomatology scores. Self-report Interoceptive testing was also employed to consider neurological underpinnings and benefits of their exceptional resilience. 43 naturists (37 male), average age 57, and 36 controls (21 male), average age 38, British origin, participated online. Utilizing the Body Appreciation Scale 2 and The Eating Disorder Examination Questionnaire, naturists consistently, significantly achieved higher positive, and lower negative body image scores across all measures. Naturist results on the Multidimensional Assessment of Interoceptive Awareness 2 across all dimensions were also persistently higher than controls. Naturist results confirm their position as a unique population demonstrating exceptionally high negative body image resilience, this coupled with potential advantageous neurological benefits that with further investigation could lead to naturism becoming a proactive mind-body therapy to help prevent eating disorders. Comprehensive future philosophical, phenomenological and longitudinal research options were also put forward.

Introduction

A Body Image Dissatisfaction Epidemic

Body and appearance dissatisfaction in the Western world have reached epidemic proportions with general population estimates of between 23-56% for women, and 15-43% for men, leading to the term 'normative discontent,' meaning it has become normal for the general population to feel dissatisfied with their body (Fallon, Harris & Johnson, 2014). Eating disorders (ED) are psychiatric conditions with a combination of biological, psychological and sociocultural influences (Culbert, Racine & Klump, 2015). Genetic predisposition of ED based on monozygotic twin heritability studies estimates anorexia nervosa at between 28% and 58% leaving a sizeable contribution attributable to environmental influences (Thornton, Mazzeo & Bulik, 2010). Meta-analysis of ED found lifetime prevalence rising but averaging at 8.4% for women, and 2.2% for men (Galmiche, Déchelotte, Lambert & Tavalacci, 2019). Body dissatisfaction is pathognomonic of ED with overlapping symptoms, because of this and the high level of associated environmental causality it is important to find ways to address negative social and cultural influences to enable the strive for proactive solutions (Smolak & Cash, 2011; Tylka & Wood-Barcalow, 2015).

The Victorians popularised corsets and tiny waistlines, but previously few examples exist of slender body ideals, thinness was considered ugly and unfortunate (p.4-5, Seid, 1994). During the 20th century overweight bodies became associated with low morality and personal inadequacy, symbolically vigilant management of body image became equated to level of personal order (p.190-193, Bordo, 1993). Thin female and muscular male archetypes have become engrained in modern western society, linking to success, happiness, and social acceptability. Contrastingly being

overweight is viewed as unattractive and non-conformance can lead to negative social outcomes (Klaczynski, Goold & Mudry, 2004). Modern society has many negative body image influences, some with good intention that can create negative side-effects such as government obesity campaigns (Puhl, Peterson & Luedicke, 2013), and the connected diet industry (Furnham & Greaves, 1994). Developmental studies found television (Clark & Tiggemann, 2007), internet, and social media use (Tiggemann & Slater, 2014) led to internalisation of thin ideals and dieting behaviour, meta-reviews detail the same for adults (Groesz, Levine & Murnen, 2002; Barlett, Vowels, & Saucier, 2008). In less developed countries thin bodies can represent poverty, malnutrition and disease (McLaren, 2007), but anthropologic studies have found after only one-month introduction of television can lead to attempted emulation of bodies viewed (Becker, 2012; Boothroyd et al., 2016). Cultural transmission can also occur following emigration with cross cultural research finding that Asian women moving to Kenya rated larger bodies most desirable but others moving to England preferred slender figures (Furnham & Alibhai, 1983).

Social psychological theories explain social transmission of behaviour, attitudes and ideals covering parental, peer and media exposure. Social comparison theory suggests individuals seek accurate, objective evaluations of their attitudes and abilities. Self-evaluations are either, upward when viewing others as scoring higher on an attribute, or downward comparisons when they score lower (p.162, Suls & Wheeler, 2013). Self-discrepancy theory proposes motivations and emotional vulnerabilities are a product of discrepancies in self-focussed belief patterns. To improve well-being and reduce distress individuals are driven to reduce the gap between the perceived self, the ideal self, and the ought self; the latter whereby the person feels obliged to align to fit in (Higgins, 1987). Group socialisation theory

(Levine, Resnick & Higgins, 1993) covers peer transmission in direct contact and can cover many areas of life from games in children and language (Harris, 1995), through to development of normative beliefs about bullying (Almeida, Correia & Marinho, 2009). Social learning theory is broader and combines behaviourist thinking from the conditioning domain with mediation processes and adaptation of behaviour through observational learning (Bandura, 1962). The bobo doll experiment (Bandura, 1961) demonstrated children observing before mimicking aggressive behaviour. Children's developing body concepts integrate parental body attitudes, with negativity having the strongest effect (Levy, 1932). Mediation processes influence the likelihood of replication including salience and memory of observations, the ability to re-enact, and perceived rewards and punishment (Bandura, 1962). These theories can explain socially learned behaviour and form part of the hypothesis of this study.

Body image can be measured as positive or negative, but is not a single continuum, negativity and shame were historically the focus of research, but positive instruments have been developed to help understand resilience and highlight populations with potentially transferable benefits (Striegel-Moore & Cachelin, 1999). Psychometric questionnaires chosen for this study were the Body Appreciation Scale (BAS-2) to assess body acceptance, respect and rejection of media prescribed ideals (Tylka & Wood-Baraclow, 2015), alongside the clinical Eating Disorder Examination Questionnaire (EDE-Q), covering shape and weight concern (Fairburn & Beglin, 1994; Fairburn, 2008).

What is Naturism?

Certain populations have proven to be more resilient to negative body image.

Naturism can be defined in simple terms as the practice of social non-sexual nudity.

It can be practiced anywhere but most common are homes, clubs, beaches, or dedicated holiday resorts (British Naturism, 2019). According to the International Naturist Federation (INF; International Naturist Federation, n.d.) organised naturism began in 1893 in Essen, Germany with the objective of disseminating principles of natural health care, at the time this meant exposing the complete body to sun and air. Ungewitter (1913) in his nudity and culture book reported women were happier not feeling embarrassed about their bodies within naturist communities. The popularity of naturism is growing with up to a quarter of British people trying social nudity activities (West, 2018). Naturism has support from many governments in Europe and Scandinavia, most notably France where they promote benefits of respect for individual differences and body acceptance alongside collectivist benefits of spending time with family and friends in the most naturalistic environment possible (France, 2018a).

Quantitative and longitudinal research considering social nudity finds it can contribute to improved body self-concept in children and adults with no negative effects, family sexual liberalism was mirrored in the adolescent but not simple nudity (Okami, Olmstead, Abramson & Pendleton, 1998; Story, 1979, 1984). Recently West (2018) found a significant association between time spent practicing naturism and body appreciation. West draws on research that exposure to non-idealised bodies leads to positive feedback about the self (Green, 2001; Re et al., 2011; Herbozo and Thompson, 2006). Given the challenging treatment resistance of ED (Halmi, 2013),

alongside the aforementioned directive from world leading specialists to focus on prevention it is imperative to further West's work.

The Interoceptive Link

Interoception refers to the processing of signals originating in the body and their transmission to the brain, afferent feedback incorporates conscious and unconscious physiological state information that is used to maintain bodily functioning and homeostasis (Khalsa et al., 2018). Interoceptive sensations available to the preconscious emanate from unmyelinated free nerve endings and also play a role in affective and emotional perception (Berlucchi & Aglioti, 2010; Garfinkel et al., 2016). Thirst and hunger sensations motivate acts of sustenance, distension of the bladder triggers conscious efferent muscle control to manage excretion, heartbeat can also be voluntarily brought into conscious awareness with varying individual levels of accuracy (Herbert, Muth, Pollatos & Herbert, 2012).

Neuroanatomically the anterior cingulate cortex and somatotopically organised insula (Craig, 2004; Haggard, Iannetti & Longo, 2013), collectively known as the insular cortex, contain functional areas for sensorimotor, social-emotional and olfacto-gustatory processing (Kurth, Zilles, Fox, Laird & Eickhoff, 2010). The insula is central to vicarious observational learning, prediction of feeling states employed in anticipating emotional events relating to the body, and interpreting emotion in others (Singer, Critchley & Prueschoff, 2009).

Interoceptive performance is associated with alexithymia (Brewer, Cook & Bird, 2016), anxiety, depression (Paulus & Stein, 2010), and autism (Garfinkel et al., 2016). Extant literature recognises interoceptive deficits alongside body image

distortion as central to ED (Skårderud, 2009), supported by both self-report testing, and in person assessment of sensitivity to visceral activity (Herbert & Pallatos, 2014), also meta-reviews of associated neurocircuit abnormalities (Khalsa & Lapidus, 2016). ED psychopathological symptoms, including impairments in emotional processing, both in the self and recognition in others, and body distortion can be linked to the insular cortex (p.137-138, Tsakiris & De Preester, 2018). Perception of the bodily self is constructed from a multi-modal combination of visual exteroceptive, proprioceptive, and interoceptive sensory information (Tsakiris, 2017). Neuroimaging studies find viewing self-images of the body leads to significantly reduced insular cortex activation in anorexia nervosa patients compared to healthy controls (Gaudio & Quattrocchi, 2008; Sachdev, Mondraty, Wen & Gulliford, 2008). Non-clinical groups also demonstrated lower interoceptive performance correlated with self-objectification (Ainley & Tsakiris, 2013). Tsakiris & De Preester (2018) surmise that interoceptive processes may be downregulating as part of a coping strategy (p.175), this also aligns with Gaete & Fuchs (2016) embodied defence hypothesis whereby subjective embodied emotion is suppressed leading individuals to experience their body as object. Collectively this suggests negative body attitudes may lead to exteroceptive modality dominance whilst combining inputs that integrate to create conscious attentional representations of the self.

Mind-body pursuits, including yoga (Daubenmier, 2005) meditation, ballet (Sze, Gyurak Yuan & Levenson, 2010) and mindfulness (Hanley, Mehling & Garland, 2017) lead to interoceptive ability improvement. Longitudinal studies demonstrate significant interoceptive neuroplasticity potential, following contemplative training (Bornemann, Herbert, Mehling & Singer, 2015), yoga and meditation over 2-years (Mehling et al, 2014). Neuroimaging has also demonstrated right anterior insula

thickening alongside reduced recruitment of visual pathways following meditational practice over time (Farb, Segal & Anderson, 2013), highlighting the potential for activities that lead to interoceptive ability improvement to counter the aforementioned downregulation.

Although interoceptive ability can be measured clinically by comparing perceived versus actual bodily signal detection this study employed an entirely self-reported psychometric questionnaire, the Multidimensional Assessment of Interoceptive Awareness (MAIA-2; Mehling, Acree, Stewart, Silas & Jones, 2018).

Recently Todd, Aspell, Barron & Swami (2019) continued interoceptive ability investigation work on healthy British adults linking greater awareness to positive body image finding interoceptive ability significantly predicted body appreciation.

The Present Study

The present study aimed to build on and part replicate prior research establishing a significant relationship between naturism and positive body image (West, 2018), by adding a psychometric instrument commonly used to assess emerging ED treatments (Fairburn, 2008), thus for the first time to benchmark the naturist population along a negative body image spectrum for comparison with other groups, internal and external to the study.

Alongside confirming that naturist activity leads to body satisfaction, the study also assessed interoceptive awareness, assuming that a practice, in this case naturism, that results in positive body image outcomes will also lead to improved interoceptive ability (Todd et al., 2019). This additional line of enquiry if correct allows for inferences to be made about how positive effects of naturism manifest

neurologically, and the potential for it to be considered as a therapeutic approach to mind-body integration (Mehling et al., 2012).

Hypotheses

The first hypothesis (H1) predicted higher levels of body appreciation (BAS-2) and lower levels of shape and weight concern on the EDE-Q in naturists compared to controls.

The second hypothesis (H2) predicted interoceptive awareness for naturists would be significantly higher than controls on the MAIA-2 Noticing subscale that represents ability to sense signals from the body. H2 is formulated based on Tsakiris & De Preester's (2018) interoceptive downregulation theory (p.175) and the embodied defence hypothesis (Gaete & Fuchs, 2016), they posit that cross-modal balance between interoception and exteroception is mediated by denial and coping when making social body comparisons. In practice, naturists spend time in groups where downward comparison between bodies can be made according to social comparison theory (p.162, Suls & Wheeler, 2013), they are in the presence of realistic body role models leading to visual, non-verbal, social transmission of body ideals, aligning with group socialization theory (Levine, Resnick & Higgins, 1993), clothing may also distort interpretation of the bodily self during immediate self-other conscious comparison via any medium (Kim & Damhorst, 2010) in line with self-discrepancy theory (Higgins, 1987).

The third hypothesis (H3) predicted that associations between BAS-2 and MAIA-2 would all be positive, and they would be higher degree for naturists. Negative relationships were predicted for both shape and weight concern. The high-level

nature of H3 allowed for post-hoc exploration of relationships between all body image instruments and MAIA dimensions.

Methods

Design

The experiment employed a between-group design; naturist vs control population independent variables and within-subject dependent variables (MAIA-2; BAS-2 & EDE-Q). Between group comparison of means were conducted for H1 and H2. For H3 bivariate correlation was used to understand relationships between body image instruments and MAIA dimensions. Psychometric questionnaires were delivered standardised, and non-randomised to increase reliability (Boynton & Greenhaigh, 2004).

Participants

The study comprised of 51 naturist participants whom were largely male (47 male and 5 female), their ages were between 21 and 74 years ($M = 54.21$ years, $SD = 11.96$). There were 40 control participants (21 male and 19 female), age between 23 and 59 years ($M = 34.89$ years, $SD = 12.79$). Body Mass Index (BMI) based on self-report height and weight ranged between 19.15 and 38.19 for naturists ($M = 27.68$, $SD = 4.35$), between 16.47 and 51.85 for controls ($M = 25.46$, $SD = 6.61$), this was on average as expected in the United Kingdom (NHS, 2019). Exclusion criteria of minimum age 18-years applied for all participants. Controls were screened for experience of prior naturist activity, none were found. Ethical approval was granted by Psychological Sciences Department, Birkbeck College, University of London. Naturists were volunteer sampled, recruited through online forum advertisement in

conjunction with British Naturism, controls were opportunity sampled from friends and associates of the author. No motivations or interests were identified, no payments, benefits or incentives were made. The experiment was conducted online as part of a BSc Psychology with Neuroscience dissertation. Participants had no prior knowledge or training and were invited to take part in a mind-body experiment.

Materials

General Data Protection Regulations (European Parliament, 2018) guidelines were utilised to ensure compliance of data, and anonymity. Gorilla experimental testing platform was used throughout (Figure 1) and provided tabulated raw data for analysis.

The Mind-Body Experiment

When responding to these statements please reflect on how they apply to you generally in daily life.

I push feelings of discomfort away by focusing on something.

Never 0 1 2 3 4 5 Always

When I feel unpleasant body sensations, I occupy myself with something else so I don't have to feel them.

Never 0 1 2 3 4 5 Always

When I feel physical pain, I become upset.

Never 0 1 2 3 4 5 Always

I start to worry that something is wrong if I feel any discomfort.

Never 0 1 2 3 4 5 Always

Figure 1. The Mind-Body Experiment, Gorilla Online Data Collection Platform

Microsoft Excel manipulated raw data. SPSS v.26, statistical analysis software application ran statistical tests. Three psychometric instruments relating to interoception, body image and ED were used. The Multidimensional Assessment of Interoceptive Awareness, version 2 (Appendix A), a revision of the MAIA adjusted to achieve higher convergent construct validity (Mehling et al., 2018). MAIA-2 breaks

down into 8 subscales. The Noticing subscale reports awareness of bodily sensations; Not Distracting reports ability to not be distracted or to ignore sensations of discomfort or pain; Not Worrying reports tendency not to feel emotional distress or worry with sensations of discomfort or pain; Attention Regulation reports ability to control and sustain attention to sensations; Emotional Awareness reports awareness of links between bodily sensations and emotional affect; Self-Regulation reports how well an individual can self-regulate psychological distress by attending to body sensations; Body Listening reports ability to active listen for insights from the body; Trusting reports whether the body is experienced as a trustworthy and safe place. Thirty-seven Likert questions (0,1,2,3,4,5) with 0 = Never to left, 5 = Always at the opposite. Temporal context was presented with the statement “Please reflect on how they apply to you generally in daily life.” Cronbach’s alpha testing covering all subscales found $\alpha = 0.63$, Not Distracting and Not Worrying when removed increased alpha to $\alpha = 0.79$, based on the standard collective minimum of $\alpha = 0.70$ they were removed from the analysis (Tavakol & Dennick, 2011).

The Body Appreciation Scale-2 (BAS-2; Appendix B), a revision, was adjusted to reduce sex specificity, and to remove dissatisfaction-based language (Tylka & Wood-Barcalow, 2015). BAS-2 is unidimensional and contains 10 Likert questions (1,2,3,4,5) with 1 = Never, 5 = Always at the opposite. Temporal context was presented with the statement “Indicate whether the question is true about you never, seldom, sometimes, often, or always.”

The Eating Disorder Examination Questionnaire, version 6.0 (EDE-Q; Appendix C), a revision adapted to align with DSM-V (Fairburn, 2008). Four subscales measure: eating restraint and concern, and body shape and weight concern. Shape dimension

covered degree of concern relating to preoccupation, dissatisfaction and importance of shape, flatness of stomach, fear of weight gain, discomfort seeing body, avoidance of exposure, and feelings of fatness. Weight covered degree of concern relating to importance of weight, reaction to prescribed weight, preoccupation with weight, dissatisfaction with weight and desire to lose weight. Thirteen Likert questions (No Days, 1-5 days, 6-12 days, 13-15 days, 16-22 days, 23-27 days, Every Day) for questions 6, 8, 10, 11 & 12. And Likert (0,1,2,3,4,5,6) with 01 = Not at all at the left end of the spectrum and 6 = Markedly, slightly and moderately equally spaced between the two. Temporal context was presented with the statement "Answer the questions considering the past four weeks (28 days)." Cronbach's alpha testing covering shape weight dimensions found $\alpha = 0.97$, demonstrating an excellent level of consistency (Tavakol & Dennick, 2011).

Procedure

Participants used a weblink to access the experiment. A simple, introduction outlined the experiment without reference to hypothesis or theory. Completion time given estimate 10 minutes. Ethical approval, consent, opt-out, data protection safeguards information was issued and acknowledged. Age, height, weight, gender (male, female, prefer not to say and prefer to self-describe) was collected. One sample question explained Likert scales. Participants were shown a brief explanation of the study. Each psychometric questionnaire was presented in MAIA-2, BAS-2 & EDE-Q order. Upon completion to safeguard against distress contact details were given for BEAT, the UK's eating disorder charity, BDDF, the Body Dysmorphic Foundation, Samaritans and Mind for mental health support. A unique code was issued giving access to data should they request.

Results

Data Screening

Analysis of questionnaire data revealed ordered response patterns assumed to be 'clicking through' (Stieger & Reips, 2010), 8 naturist and 4 control participants were excluded.

Descriptive Statistics

Table 1 details mean and standard deviations for all experimental variables.

Bonferroni correction (BC; Bland & Altman, 1995) was applied to the t-test results comparing means between groups with 12 variables ($p = .05/12 = .004$). Naturists mean age was significantly higher than controls, $t(73) = -7.31$, $p < .001$ and their mean BMI was not significantly different, although higher, $t(59) = -1.72$, $p = 0.09$.

Naturists without exception significantly achieved higher positive, and lower negative body image scores comparative to both internal and external results, this indicates lower symptomatology for ED.

BAS-2 means were higher than controls, $t(77) = -4.07$, $p < .001$, indicating greater body image positivity. Clinical ED data for BAS-2 was not available for comparison but external study results (Table 2), show naturists scored significantly higher than British healthy male $t(463) = 5.74$, $p < .001$, and female groups $t(487) = 8.18$, $p < .001$. Control population means were not significantly different from the British healthy male group $t(456) = 1.07$, $p = 0.29$.

EDE-Q shape concern means were lower than controls, $t(77) = 5.63$, $p < .001$, indicating naturists were more comfortable with body shape. Clinical and healthy adult results (Table 3), were available for comparison, naturists scored significantly lower than Australian healthy females $t(5296) = 3.49$, $p < .001$, US clinical ED male patients $t(79) = 7.19$, $p < .001$, and Swedish clinical female patients $t(2366) = 16.66$, $p < .001$. Control means were significantly higher than Australian healthy females $t(5289) = 2.07$, $p = 0.04$, but significantly lower than both US clinical ED male patients $t(72) = 2.40$, $p = 0.02$, and Swedish clinical female patients $t(2359) = 8.66$, $p < .001$.

EDE-Q weight concern means were also lower than controls, $t(77) = 5.11$, $p < .001$, indicating naturists were more comfortable with their weight. Clinical and healthy adult scores (Table 4), were available for comparison, naturist scores were lower than Australian healthy females but the difference was not significant $t(5296) = 1.86$, $p = 0.06$, and they were significantly lower than both US clinical ED male patients $t(79) = 6.42$, $p < .001$, and Swedish clinical female patients $t(2366) = 12.72$, $p < .001$. Control means were significantly higher than Australian healthy females $t(5289) = 4.24$, $p < .001$, although lower than US clinical ED male patients $t(72) = 1.61$, $p = 0.11$ but the difference was not significant, and lower significantly than Swedish clinical female patients $t(2359) = 5.17$, $p < .001$.

MAIA-2 means for Trusting were significantly higher for naturists meaning they experienced their bodies as more safe and trustworthy, $t(62) = -4.96$, $p < .001$, their mean Noticing scores were also significantly higher, they were more aware of comfortable, uncomfortable and neutral body sensations, $t(62) = -3.29$, $p = 0.002$. Other MAIA-2 means were not significant after BC, but across all dimensions

naturists demonstrated greater interoceptive ability than controls, only Attention Regulation was $p > .05$. Body Listening means were higher, meaning they listened for insights more from the body, $t(71) = -2.05$, $p = 0.04$. Emotional Awareness means were higher, indicating greater awareness of the connection between emotional states and emerging body sensations, $t(65) = -2.02$, $p = 0.05$. Self-Regulation means were higher meaning their ability to regulate psychological distress through placing attention on sensations was greater, $t(74) = -2.38$, $p = 0.02$. Attention Regulation means were higher meaning they were more able to control and sustain attention to bodily sensations, $t(70) = -1.83$, $p = 0.07$.

Correlation

Table 1 details bivariate correlations for all experimental variables and both populations. BC (Bland & Altman, 1995) was applied to the correlation results within groups covering 66 variables ($p = .05/66 = .0008$). Descriptions of correlation coefficients conform with guidance by Cohen (1992) as 0.5 high, 0.3 medium, and 0.1 low degree. Appendix D, Table D1 contains Fisher's Z transformation scores (Fisher, 1921) conducted to test the significance of the difference between correlation coefficients.

Controls BMI had a significant high degree of negative association with Trusting $r(34) = -.589$, $p = 0.0002$, indicating that increasing weight reduced their experience of the body as a trustworthy and safe place, although not significant after BC, BMI also had a high degree of negative association with BAS-2, $r(34) = -.514$, $p = 0.001$, meaning weight gain also negatively affected their relationship with the body.

Naturists BMI had a low degree of association and no significant correlations were

found. Differences were significant between-group BMI and trusting correlations, $Z = 3.06$, $p < .01$, and BMI and BAS-2, $Z = 2.26$, $p < .05$, meaning putting weight on did not lead to the same problems.

Both populations share the expected relationship direction between BAS-2 and shape and weight concern, being more body positive led to lower concern with shape and weight scores, associations were not significant for naturist shape $r(41) = -.21$, $p = 0.18$, and weight $r(41) = -.21$, $p = .18$, or control shape $r(34) = -.27$, $p = .11$ and weight $r(34) = -.15$, $p = .38$.

Naturist associations between BAS-2 and Trusting were significant after BC, positive and high degree, $r(41) = .60$, $p = 0.00002$. Self-Regulation was significant to the default p value threshold ($< .05$), $r(41) = .48$, $p = .001$, indicating increases in body appreciation led to experiencing the body as more trustworthy, and their ability to self-regulate psychological distress by attending to body sensations also improved. All other associations were low degree across Body Listening, Noticing, Attention Regulation and Emotional Awareness. Correlational differences were significant between group BAS-2 and Body Listening correlations, $Z = -3.00$, $p < .01$, meaning improvements in body image led to a high degree of active listening for insights from the body from controls but not from naturists. Significant high degree positive associations between BAS-2 and MAIA-2 subscales existed for controls including Trusting $r(34) = .63$, $p = 0.00004$; Body listening $r(34) = .58$, $p = 0.0002$, and Attention Regulation $r(34) = .61$, $p = 0.00008$. These relationships demonstrate that increasing body image positivity led to the body being experienced with greater trust, it improved their ability to both actively listen for insights and to control and sustain attention to sensations from the body. Self-Regulation, $r(34) = .39$, $p = 0.02$, and

Noticing, $r(34) = .37$, $p = 0.02$, had positive medium degree associations significant to the default p value threshold ($< .05$), indicating controls also become more aware of bodily sensations and improved their ability to self-regulate psychological distress by attending to body sensations.

EDE-Q shape concern after BC highlighted no significant associations for naturists, at the default p value threshold ($< .05$), a medium degree association between shape concern and Emotional Awareness was found, $r(41) = .38$, $p = .01$, indicating that increasing shape concern led to greater awareness of the link between bodily sensations and emotional affect. For controls no significant associations were found after BC, but at the default p value threshold ($< .05$), a medium degree relationship with Trusting was found $r(34) = -.39$, $p = .02$, meaning when they became more concerned about body shape they experienced their bodies as less safe and trustworthy. The differences between group shape concern and Trusting correlations was significant, $Z = 2.193$, $p = < .05$, meaning naturists were not negatively affected in the same way.

EDE-Q weight concern was not significantly associated with any interoceptive subscales for the naturist or control population after BC, but at the default p value threshold ($< .05$), there was a medium degree association with Emotional Awareness for naturists, $r(41) = .46$, $p = .002$, meaning when they were concerned about weight they listened more to bodily sensations and were able to link them to emotional affect.

Table 1*Bivariate Correlations, Means and Standard Deviations for Naturists (lower diagonal) and Controls (upper).*

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. Age		-0.53**	0.16	-0.04	-0.39*	-0.35*	-0.23	-0.08	0.09	-0.19	0.001	0.23
2. Gender	-0.31*		0.10	-0.02	0.33*	0.29	-0.08	-0.04	-0.23	-0.05	-0.35*	-0.34*
3. BMI	0.24	-0.03		-0.51**	0.19	0.11	-0.19	-0.12	-0.19	0.03	-0.12	-0.59
4. BAS-2 Body Appreciation	0.09	0.007	-0.04		-0.27	-0.15	0.58	0.37*	0.61	0.19	0.39*	0.63
5. EDE-Q Shape Concern	-0.07	-0.18	0.12	-0.21		0.94	0.11	-0.08	-0.13	0.13	0.03	-0.40*
6. EDE-Q Weight Concern	-0.002	-0.17	0.11	-0.21	0.91		0.28	0.07	0.01	0.15	0.11	-0.32
7. MAIA-2 Body Listening	-0.31*	0.13	-0.14	-0.04	0.12	0.22		0.37*	0.63	0.37*	0.49**	0.24
8. MAIA-2 Noticing	-0.04	0.06	-0.003	0.06	0.16	0.17	0.20		0.36*	0.44**	0.23	0.08
9. MAIA-2 Attention Regulation	-0.09	0.18	0.22	0.26	0.18	0.21	0.32*	0.32*		0.24	0.56	0.49**
10. MAIA-2 Emotional Awareness	0.13	-0.29	0.23	0.08	0.38*	0.46**	0.21	0.34*	0.42**		0.40*	-0.03
11. MAIA-2 Self-Regulation	0.09	0.23	0.09	0.48**	0.10	0.12	0.24	0.31*	0.60	0.29		0.46**
12. MAIA-2 Trusting	0.21	0.13	0.04	0.60	0.09	0.10	0.02	0.23	0.53	0.32*	0.51**	
M (Naturist)	57.47	1.07	27.68	4.15	1.35	1.36	3.16	3.72	3.29	3.66	3.56	4.29
SD (Naturist)	11.58	0.26	4.35	0.49	0.92	1.01	0.86	0.55	0.72	0.69	0.74	0.60
M (Control)	37.58	1.44	25.46	3.61	2.80	2.86	2.73	3.22	2.96	3.29	3.16	3.48
SD (Control)	12.40	0.50	6.61	0.70	1.35	1.57	0.98	0.76	0.83	0.89	0.74	0.84
t	-7.31	4.26	-1.72	-4.07	5.63	5.11	-2.05	-3.29	-1.83	-2.02	-2.38	-4.96
p	< .001†	< .001†	0.09	< .001†	< .001†	< .001†	0.04	0.002†	0.07	0.05	0.02	< .001†
d	1.66	0.93	0.40	0.92	-1.27	-1.16	0.47	0.75	0.42	0.46	0.54	1.12

Note:

a. Naturists N=43, Controls N=36.

b. * p = < .05; ** p = < .01; † = sig. after BC (p = .05/12 = .004); grey cells = sig. after BC (p = .05/66 = .0008).

Table 2*BAS-2 Body Appreciation Score Comparisons, Internal to Study and External Healthy Adults*

Population	Sex	Age range	Age M (SD)	N	Score (SD)	Source
Naturist	Mixed	26-74	57.47 (11.58)	43	4.15 (0.49)	Present Study
Control	Mixed	23-59	37.58 (12.40)	36	3.61 (0.70)	Present Study
British healthy	Male	18-85	39.13 (13.76)	422	3.47 (0.76)	Alleva, Paraskeva, Craddock & Diedrichs, 2018
British healthy	Female	18-76	39.46 (11.57)	446	3.06 (0.86)	Todd et al., 2019

Table 3*EDE-Q Shape Concern Mean Score Comparisons, Internal to Study, Clinical ED Patients, and External Healthy Adults*

Population	Sex	Age range	Age M (SD)	N	Score (SD)	Source
Naturist	Mixed	26-74	57.47 (11.58)	43	1.35 (0.92)	Present Study
Australian healthy	Female	18-42	30.26 (7.22)	5255	2.23 (1.65)	Mond, Hay, Rodgers & Owen, 2006
Control	Mixed	23-59	37.58 (12.40)	36	2.80 (1.35)	Present Study
US clinical	Male	12-65	24.4 (12.6)	38	3.74 (1.95)	Jennings & Phillips (2017)
Swedish clinical	Female	18-66	25.28 (7.61)	2325	4.72 (1.32)	Welch, Birgegård, Parling & Ghaderi, 2011

Table 4*EDE-Q Weight Concern Mean Score Comparisons, Internal to Study, Clinical ED Patients, and External Healthy Adults*

Population	Sex	Age range	Age M (SD)	N	Score (SD)	Source
Naturist	Mixed	26-74	57.47 (11.58)	43	1.36 (1.01)	Present Study
Australian healthy	Female	18-42	30.26 (7.22)	5255	1.79 (1.51)	Mond, Hay, Rodgers & Owen, 2006
Control	Mixed	23-59	37.58 (12.40)	36	2.86 (1.57)	Present Study
US clinical	Male	12-65	24.4 (12.6)	38	3.52 (1.93)	Jennings & Phillips (2017)
Swedish clinical	Female	18-66	25.28 (7.61)	2325	4.07 (1.39)	Welch, Birgegård, Parling & Ghaderi, 2011

Discussion

H1 was predicted correctly, naturists scored higher than controls and external reference studies that included large healthy adult samples on BAS-2, they also scored lower on EDE-Q shape and weight concern, again compared to both controls, healthy normative and clinical ED populations. Higher BAS-2 scores not only demonstrate greater body appreciation but also resilience against negative media influence, for EDE-Q lower scores indicate lower symptomatology for ED. Weight can be added to the generalizability of naturist results based on West (2018) prior findings. West's explanation for how naturist body appreciation might benefit from exposure to non-idealised bodies may be expanded upon based on Longo's (2017) residual deviation from the average body hypothesis whereby an individual's body image is based on a relative vector deviation from the average body. All theories align with the view that visibility of actual average rather than media representation average would lead to what may be explained as recalibration.

H2 was also predicted correctly, naturists scored significantly higher on the MAIA-2 Noticing subscale indicating they have greater ability to sense interoceptive signals. Theoretically this points to confirming that naturists neurologically do the opposite of ED patients, rather than downregulating interoceptive processing in favour of exteroceptive visual input as a defence they can rely on internal signals. The social psychological theories presented collectively offer an explanation as to why naturists would not feel the need to put up a defence, they would feel more comfortable having calibrated their body image. High degree MAIA-2 correlatory associations between BAS-2, Trusting and Self-Regulation subscales add weight to these assumptions based on their interpretation as experiencing the body as more

trustworthy and possessing an improved ability to self-regulate psychological distress by attending to body sensations.

H3 prediction that relationships between BAS-2 and MAIA-2 subscales for both naturists and controls would be positive was correct, other than naturists Body Listening coefficient that was unexpectedly negative to a very low degree.

Interestingly for naturists, although all means for MAIA-2 measures were higher at the univariate level, the strength of relationships here were lower than controls across all subscales other than Self-Regulation. After BC, only Trusting was significant for naturists, indicating they experienced their bodies as more trustworthy as BAS-2 increased. At the default p value ($p = < .05$), Self-Regulation was also significant and had a high positive degree association meaning they were better able to control and sustain attention to sensations.

For controls, after BC, relationships between BAS-2 and MAIA-2 were much stronger with Body Listening, Attention Regulation and Trusting achieving significance.

Noticing and Self-Regulation were also significant to $p = < .05$, these relationships indicate that with increased body satisfaction controls were more aware of, and able to control sustained attention to sensations, they were able to self-regulate stress by listening to their bodies and it led to it feeling like a safer place. The unexpected difference between groups can potentially be explained because of the magnitude of the difference of effect for controls, potentially they had more headroom to improve.

H3 predicted MAIA-2 measures would negatively correlate with EDE-Q shape and weight for both naturists and controls but across both measures and groups only Trusting had a high degree negative association. There were no significant relationships after BC on any of the sub-scales but at the default p value threshold (p

= < .05), Trusting became significant for controls indicating that as shape and weight concern became a problem their body didn't feel like a safe place. Although Trusting also had a high degree association for Naturists it was entirely insignificant, this may be partly explained by the higher resilience demonstrated at the univariate level through significantly higher Self-Regulation means. It was unexpected not to find more negative relationships, but the results are important because although not significant after BC, high degree positive associations with emotional awareness for both shape and weight indicate that when negative body image becomes a problem naturists are more resilient by listening to and linking bodily sensations with emotional affect rather than switching them off. This may be a transfer effect within the insular cortex as it is also a centre for emotional processing (Garfinkel et al., 2016), and it also aligns with the theory that positive and negative body image is not on a single continuum (Striegel-Moore & Cachelin, 1999).

Limitations

H2 predicted naturists would be better at sensing signals from the body based on Tsakiris (2017) downregulation hypothesis, MAIA-2 has good convergent reliability (Bornemann, Herbert, Mehling & Singer, 2015) but the self-reported Noticing subscale could be further validated using clinical interoceptive accuracy testing (Ainley & Tsakiris, 2013). Neuroimaging could also be used to monitor insular cortex activity and exteroceptive occipital correlates (Sachdev et al., 2008).

Naturists were mainly male, and sex has been found to significantly influence body appreciation in some studies (Table 2; Tylka, 2013), although not all (Swami, Hadji-Michael & Furnham, 2008), their age was also significantly higher which can also vary body image results in men and women (Griffiths et al., 2016). West (2018) also

found a large discrepancy in gender, reporting 12% and 19% female in two studies but in another purposely selecting 12 male and 12 females. Future studies should consider recruitment abroad where both sex and age are much more balanced (France, 2018a).

Correlatory analysis results provide an in-depth preliminary overview of the relationships between measures but it was not possible to infer causation as there was no measurement of effect over time, temporality implications are discussed further below.

Body parts carry negative affect for men and women leading to worsened health outcomes. Labiaplasty demand increased 45% in 2014/15 (ISAPS, 2017), psychological motives were embarrassment, anxiety and loss of self-esteem (Miklos & Moore, 2008), age of enquiry is decreasing (Strickland, 2016). One-in-three British women avoid cervical screening because of embarrassment, body image and vulva dissatisfaction (NHS, 2018a). Penis ideals evolve historically, in Greco-Roman culture large male genitalia was considered ugly (Hardy, 2004). Today size is a problem for up to 45% of men, UK clinicians highlight 'small penis syndrome' concerning ability to satisfy along with abnormal privacy concerns (Wylie & Eardley, 2007). The British NHS published a webpage to help (NHS, 2018b). Penis size averages are very similar (Jamison & Gebhard, 1988) but paradoxically censorship introduces difficulty in communication of norms that could reduce dysmorphia. Breast augmentation is the top cosmetic surgery procedure (BAAPS, 2019). Psychological drivers were self-esteem, achieving ideal, appearance dissatisfaction and sexuality (Solvi et al., 2010), desire from adolescents has increased (Strickland, 2016). The UK has poor breast-feeding rates with 34% at six-months compared to 63% in

Sweden (World Health Organisation, 2019). Sexualisation leads to stigma, judgement and harassment (Renfrew et al., 2016). Feeding can improve the immune system, intelligence, and digestive functions (Victora et al., 2016). Social nudity has been used as a way to promote better understanding of healthy norms such as genitalia focussed photography books that have been used in schools (Dodsworth, 2019). Given the high prevalence of body part shame and aversity to exposure future studies should consider the contribution relinquishment of shame and realisation of one's body parts as normal may have on body satisfaction scores. It may be possible to evolve or add to a clinical psychometric tool such as the Body Cathexis Scale (Secord & Jourard, 1953).

Philosophical Implications

This study gives rise to philosophical questions about naturism that are likely to affect body image. Future consideration should be given to how positive self-affirmatory suggestions following naturist activity transfer forwards. Internalisation of naturism as a construct of identity with body acceptance as a core belief over time may have a transfer effect that becomes a self-fulfilling prophecy based not only on social comparison, but also belief that the self holds more power over body image. Experimental testing for this effect may be devised by exploring differences between individuals who identify as naturists and those who attended and benefited from the experience of social nudity at a single event. Ideological subscription is difficult to measure but interesting research exists considering the impact of Protestantism on body satisfaction (Quinn & Crocker (1999), higher residual beliefs negatively influenced well-being, and priming with protestant messages led to lower self-esteem compared to humanist stimulus.

Other important philosophical considerations include assessment of the impact of cultural messages affecting norms, control and shame, described in sociological philosophy as *techniques of the body* (Mauss, 1935; Fuchs, 2017), these messages are ordained, largely instilled during childhood and beyond the grasp of consciousness (Bourdieu, 1977; Fuchs, 2017). Contrasting cultural messages can shed light on origins. Swedish parents encourage naked childhood activities to enhance body knowledge and confidence (McGurk, 2017, p.145), compared to the recent British strategy that also promotes improving knowledge but introduces privacy mantras (NSPCC, 2019). This is controversial for some parents with Neuroscientist Mayim Bialik specifically commenting on potential side effects (Bialik, 2016). Habitus is also a powerful concept that may help deconstruct cultural differences relating to body shame, defined as aspects of culture rooted in the body and it's daily practice (Mauss, 1935; Fuchs, 2017), covering bodily social appearance in its entirety including manners, clothing, posture and ways of life relative to social class (Bourdieu, 1990; Fuchs, 2017).

Naturists are a unique population culturally and future investigations should try to deconstruct differences relating to these philosophical points, the practice may for example be viewed as partly transcending class because of appearance uniformity, phenomenological investigations could be employed, and this approach would align with world ED experts vision to dig deeper into positive body image (Smolak & Cash, 2011).

The Temporal Effect of Naturism on Body Image

Alongside breaking down naturism phenomenologically, greater understanding of the temporal effect of social nudity on body image is needed to move forward towards an applied psychological solution. Research is currently limited to three studies specifically considering temporality, (Table 5).

Table 5
Effects of Social Nudity Over Time on Body Satisfaction

Study	Population	Sex	Age M (SD)	N	Exposure (min)	Before Score (SD)	After Score (SD)
1	Naked charity walk	Mixed	22 (14.47)	24	90	3.00 (1.02)	3.29 (0.91)
2	Naked waterpark	Mixed	45.36 (13.92)	100	180	3.32 (0.93)	3.55 (0.85)
3	Life drawing	Female	20.19 (3.00)	37	240	4.24 (1.74)	5.32 (1.87)

Note:

- a) Authors: studies 1-2, West (2018), study 3, Swami (2016).
- b) Body image instruments: studies 1-2, Body Appreciation Scale 1 (Avalos, Tylka & Wood-Barcalow, 2005); study 3, Body Image States Scale (Cash, Fleming, Alindogan, Steadman & Whitehead, 2002).

Main factors of interest to consider include; Body image measurement time series values: As with West (2018) and Swami (2016), a minimum requirement; Prior experience of naturism: West created an index variable of naturist experience combining the product of years and frequency as part of a separate cross-sectional study, he found a significant relationship with body satisfaction; Subscription to naturist philosophy: with reference to the implications above, the level of knowledge, and internalisation of naturist values alongside experience is important and connected but separate from experience alone, development of a questionnaire is recommended; Length of activity: West's events were single and ranged between 90 and 180 minutes, Swami's events were uniform, and the total time involved two events on separate occasions. A standardised approach would be beneficial,

breaking out multiple events and considering retention; Demographic of naked community: Swami found just one naked individual influenced appreciation, more work to consider how dynamic this variable is and variance between individuals; Retention: Swami reported retention following an unspecified break within a month period, further consideration should be given to maintenance, ultimately as with fitness activities a practitioner may in future help a client calculate individual requirement to maintain body image; Influences upon retention: borrowing assumptions from the tripartite influence model of body image and eating disturbance (Thompson, Coover & Stormer, 1999), exposure to media, and communications with parents and peers can be analysed in between events; Decay: considering both retention and activities that increase or decrease body positivity, within a longer-term holiday study, to consider decay of body satisfaction within a controlled environment post measurement, for example before going to bed and the following morning halfway through a holiday; Standardisation of instruments: prior investigations did not employ the same measures, a collaborative standardised approach would benefit in future; Sustainability: Life drawing, compared to sauna for example, although dependent upon local facilities may be more popular over months or years and have more universal appeal.

Participant selection is also crucially linked to the above points covering temporality. Bray (2019) hosted a reality television show, Naked Beach, in conjunction with Dr. Keon West that helped individuals suffering from body image concerns by spending time in a similar environment to a naturist holiday. The outcomes were positive from both participant and public, but it was not reported as an experiment. This should be replicated in future at one of the European naturist centres.

Finally, a longitudinal study should be planned, ideally in conjunction with a university in West France with a local large naturist resort where 70-80% of customers are families (France, 2018a), and many people own properties and return every year, many for their entire life since birth, this can help answer the questions about whether naturist children are more resilient to ED over 15 to 20 years.

Conclusion

This study successfully part replicated work by West (2018) that first established the link between naturism and positive body image. It went further by introducing a negative body image instrument commonly used to assess eating disorder treatment efficacy. All body image instrument results for Naturists agreed with the hypothesis that as a population they are highly resilient to negative body image when compared both to controls within study and external clinical and healthy normative data. West's posits on theory were built upon, adding social psychological and cognitive theories about how naturism may help people recalibrate body image based on the residual deviation from average hypothesis (Longo, 2017). Alongside body image, the study also made a preliminary assessment of naturist interoceptive awareness, the population scored consistently higher than controls across every measure with significant results after Bonferroni correction across four of six subscales, others were significant to $p = 0.05$ and 0.07 . Inferences were made about the neurological basis and benefits Naturism may provide that appear to be the reverse of those found in patients suffering with ED as outlined in Tsakiris et al., (2018) interoceptive downregulation hypothesis.

Many relevant and connected recommendations were made including suggestions for adaptation and employment of a body cathexis scale to include genitalia. The philosophical and sociological implications that may influence naturist body image related self-fulfilling prophecies were discussed that will ideally lead to in depth phenomenological inquiry. Options for future temporal and longitudinal studies were made including clinical and neuroimaging studies.

Body image has become an epidemic in the Western world and many people feel under extreme pressure to conform to the slender ideal. Regulation of the body in advertising and media is not a viable option due to global regulatory differences and the negative effect of skinny and athlete shaming that would result from enforced choice of oversize models. Potentially naturism can be employed as a proactive mind-body therapy to help improve body image concerns and act as an antidote to low body satisfaction. Naturism is a universal and already well-established holistic solution (Visit Finland, 2020; France, 2018b). Despite historical negativity towards the practice the British public are becoming more interested as the media opens up to lower censorship helping people to easier differentiate between sexual and non-sexual nudity. Public views can change radically over time, a good example is written in the obituary of Christiane Lecocq, Founder of CHM Montalivet (Telegraph, 2015), saying “grew up at a time when women were beginning to expose their ankles and arms”.

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Appendices

Appendix A

Multidimensional Assessment of Interoceptive Awareness (MAIA-2) Questions

1. When I am tense, I notice where the tension is located in my body.
2. I notice when I am uncomfortable in my body.
3. I notice where in my body I am comfortable.
4. I notice changes in my breathing, such as whether it slows down or speeds up.
5. I ignore physical tension or discomfort until they become more severe.
6. I distract myself from sensations of discomfort.
7. When I feel pain or discomfort, I try to power through it.
8. I try to ignore pain
9. I push feelings of discomfort away by focusing on something
10. When I feel unpleasant body sensations, I occupy myself with something else so I don't have to feel them.
11. When I feel physical pain, I become upset.
12. I start to worry that something is wrong if I feel any discomfort.
13. I can notice an unpleasant body sensation without worrying about it.
14. I can stay calm and not worry when I have feelings of discomfort or pain.
15. When I am in discomfort or pain, I can't get it out of my mind
16. I can pay attention to my breath without being distracted by things happening around me.
17. I can maintain awareness of my inner bodily sensations even when there is a lot going on around me.
18. When I am in conversation with someone, I can pay attention to my posture.
19. I can return awareness to my body if I am distracted.
20. I can refocus my attention from thinking to sensing my body.
21. I can maintain awareness of my whole body even when a part of me is in pain or discomfort.

- 22. I am able to consciously focus on my body as a whole.
- 23. I notice how my body changes when I am angry.
- 24. When something is wrong in my life, I can feel it in my body.
- 25. I notice that my body feels different after a peaceful experience.
- 26. I notice that my breathing becomes free and easy when I feel comfortable.
- 27. I notice how my body changes when I feel happy / joyful.
- 28. When I feel overwhelmed, I can find a calm place inside.
- 29. When I bring awareness to my body, I feel a sense of calm.
- 30. I can use my breath to reduce tension.
- 31. When I am caught up in thoughts, I can calm my mind by focusing on my body/breathing.
- 32. I listen for information from my body about my emotional state.
- 33. When I am upset, I take time to explore how my body feels.
- 34. I listen to my body to inform me about what to do.
- 35. I am at home in my body.
- 36. I feel my body is a safe place.
- 37. I trust my body sensations.

Appendix B

Body Appreciation Scale (BAS-2) Questions

1. I respect my body.
2. I feel good about my body.
3. I feel that my body has at least some good qualities.
4. I take a positive attitude towards my body.
5. I am attentive to my body's needs.
6. I feel love for my body.
7. I appreciate the different and unique characteristics of my body.
8. My behaviour reveals my positive attitude toward my body; for example, I walk holding my head high and smiling.
9. I am comfortable in my body.
10. I feel like I am beautiful even if I am different from media images of attractive people (e.g., models, actresses/actors).

Appendix C

Eating Disorder Examination Questionnaire (EDE-Q) Questions

1. Have you had a definite desire to have a totally flat stomach?
2. Has thinking about shape or weight made it very difficult to concentrate on things you are interested in (for example, working, following a conversation, or reading)?
3. Have you had a definite fear that you might gain weight?
4. Have you felt fat?
5. Have you had a strong desire to lose weight?
6. Has your weight influenced how you think about (judge) yourself as a person?
7. Has your shape influenced how you think about (judge) yourself as a person?
8. How much would it have upset you if you had been asked to weigh yourself once a week (no more, or less, often) for the next four weeks?
9. How dissatisfied have you been with your weight?
10. How dissatisfied have you been with your shape?
11. How uncomfortable have you felt seeing your body (for example, seeing your shape in the mirror, in a shop window reflection, while undressing or taking a bath or shower)?
12. How uncomfortable have you felt about others seeing your shape or figure (for example, in communal changing rooms, when swimming, or wearing tight clothes)?

Appendix D

Table D1

Fisher's Z Transformation, Z values based on Table 1 correlation coefficients

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. Age												
2. Gender	1.177											
3. BMI	0.364	-0.580										
4. BAS-2 Body Appreciation	0.571	0.094	2.262*									
5. EDE-Q Shape Concern	1.481	-2.259*	-0.305	0.298								
6. EDE-Q Weight Concern	1.526	-2.013*	-0.022	-0.242	-0.956							
7. MAIA-2 Body Listening	-0.363	0.884	0.197	-2.997**	0.043	-0.254						
8. MAIA-2 Noticing MAIA-2 Attention	0.154	0.421	0.513	-1.412	0.832	0.458	-0.822					
9. Regulation MAIA-2 Emotional	-0.759	1.792	1.778	-1.860	1.326	0.842	-1.714	-0.207				
10. Awareness	1.352	-1.048	0.855	-0.495	1.143	1.510	-0.727	-0.554	0.842			
11. MAIA-2 Self-Regulation	0.388	2.530*	0.884	0.458	0.325	0.009	-1.218	0.373	0.264	-0.516		
12. MAIA-2 Trusting	-0.085	2.035*	3.062**	-0.239	2.193*	1.855	-0.946	0.681	0.254	1.530	0.245	

Note: Naturists N = 43, Controls N = 36.

* p = < .05; ** = p = < .01.