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The LOHAS Scale: Development and Validation of a Tool for Health and Sustainability Measurement

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Abstract

LOHAS (Lifestyle of Health and Sustainability) describes an emerging lifestyle that is defined by attention to health, well-being, and environmental sustainability. Discussions of the LOHAS lifestyle have moved faster than any of the research to support it. Originally developed in South Korea, it has been picked up in the U.S. and other cultures worldwide. However, researchers have proceeded as if one scale fits all. The implications of LOHAS can only proceed if there is a reliable and valid measure for LOHAS and empirical evidence that the scale is effective for diverse groups. The current research focuses on the development of a psychometrically reliable and valid scale to measure the multi-dimensional nature of LOHAS. By following generally accepted scale development procedures, a LOHAS scale is created and tested for its reliability, dimensionality, construct, and nomological validity. Finally, theoretical and managerial implications are outlined.

Keywords: lifestyle of health and sustainability; scale development; sustainable consumer behavior

1. Introduction

LOHAS (Lifestyle of Health and Sustainability) is presented as a perceptual, attitu- dinal, and behavioural lifestyle that emphasizes personal health and well-being as well as environmental and social sustainability in the pursuit of balanced prosperity between the individual, the environment, and society [1]. It is assumed that LOHAS consumers make behavioural decisions based on the measure of their LOHAS-ness (high versus low) [2]. LOHAS constructs and terminology were created by the Natural Marketing Institute (NMI) that purported to identify the rapid growth of a global trend. Unfortunately, this proposed lifestyle was not accompanied by any empirical evidence. Although the NMI created twelve questions that they said measured the LOHAS lifestyle, these questions did not undergo any rigorous scientific scale development procedures nor extensive validation. NMI just proclaimed that LOHAS exists and has sold various non-scientific reports about what they found or think about LOHAS. Arguing that LOHAS exists does not make it "real" to research areas or useful to marketing. Although instantly understandable and appealing when reading the background literature of the NMI, very little research has been conducted on the nature and scope of this lifestyle [3].

While LOHAS took off almost as a fact in Asia, it has begun to attract discussions in the U.S. literature because it was proposed to underpin a global lifestyle trend defined simply by its name LOHAS (Lifestyle of health and sustainability). Previous literature has found some of the attitudes, interests, activities, and lifestyles of LOHAS individuals in the business context, but research findings have been inconsistent. For example, U.S. LOHAS consumers were found to purchase green products more often than the average consumer, but there was no significant difference in energy consumption between LOHAS and non-LOHAS groups in Germany [4]. The demographic boundaries of the LOHAS segment have not been clearly established as well. While a typical LOHAS consumer is seen as a married and middle-aged woman without children in the U.S. [5], a senior market segment was found to translate healthy and sustainable values into their food consumption more compared to the non-senior market segment in South Korea [6]. In regard to price sensitiveness for green products, European LOHAS consumers tended to pay much more premium for sustainably made furniture in comparison to those in China and the U.S. [7]. The mixed results in the literature may indicate that LOHAS phenomena are not universal. Another problem with the LOHAS research is that researchers have not used the same measuring tools. Previous measures devised in various disciplines have been idiosyncratic to the beliefs and needs of the researcher, and they are unidimensional, without reflecting the scope and complex nature of LOHAS. The scales seem to be developed in ways that do not adhere to the factors that defined LOHAS by the NMI. The NMI's segmentation model is the most widely used approach in international practice [8]. They estimate and delineate the feature of the LOHAS segment based on the consumer's belief and attitude toward personal health and wellness (e.g., physical and mental health), environmental sustainability (e.g., conservation, recycling, and use of green products), and social justice (e.g., children, women, workers' rights). They view LOHAS consumers as a multi-dimensional and holistic consumer segment that is regarded a prime target for marketing firms [9]. As proved in the previous literature, the partial factors of LOHAS are of a different importance, especially in the consumer decision-making process [5].

Standardization and replication of research findings is important for LOHAS theory and research to advance [5]. The absence of an accurate and valid measurement scale makes it difficult to draw a valid conclusion and interpret and compare the findings on LOHAS across studies [9,10]. The reason why a doctor uses a blood test to measure the health of a person is that there are benchmark standards in each of the measures in a blood test. If each physician were able to make up their measures, the chaos in medicine would be quite clear. Widespread production of research that might lead to substantive findings on LOHAS may be useless without a valid instrument [7]. One standard, reliable, and valid scale that accurately measures the LOHAS lifestyle will allow for validated findings and theoretical progress. Thus, this research aims to develop a psychometrically reliable and valid scale by applying a more structured and sound scientific approach to asking basic questions about the existence of LOHAS. Against this background, this study extends the existing literature and makes significant contributions in addition to theoretical perspective, including adding value to the practical application of LOHAS. It offers a clear definition for LOHAS and conceptualizes and operationalizes its dimension for the first time. The underlying dimensions identified from this study correspond to the dimensions that the NMI defined as a part of LOHAS. Given that LOHAS is an intervening lifestyle that is not only influenced by personal traits but also predicts behaviour [8], this research empirically examines a system of scientific law of LOHAS that intervenes between future time orientation and status consumption. Given that LOHAS involves a trade-off between sacrifice of current needs and future benefits, the more one is future oriented, the more s/he is likely to follow a LOHAS lifestyle [10]. At the same time, the symbolic meaning of well-being, altruism, and affordability that are reflected in healthy and green practices in LOHAS is associated with status consumption [11]. Evidence-based and empirically validated findings extend the extant empirical studies by supporting the relationship between future time orientation and LOHAS and highlighting the importance of investigating the influence of different components of LOHAS on status consumption. This research provides researchers with opportunities to undertake research using a refined concept to further validate the proposed theory and explore the importance of LOHAS as a marketing concept.

2. Literature Review

2.1. Conceptualizing LOHAS

LOHAS builds on the domains of health and sustainability. However, work in these areas has proceeded without any consideration of what LOHAS might add. A descriptive review of the available (limited) literature allows us to infer the attributes that are reflected in LOHAS. First, most discussions on LOHAS address physical health issues. LOHASians have interests in enhancing personal and their family's health and well-being [12]. They often

purchase a wide variety of natural and organic products that enhance physical fitness, ranging from foods to personal care products [6]. When buying healthy foods, they tend to trust the information provided by friends or the media, and they exchange information with their circle [13]. Regular exercise and the intake of functional foods or dietary supplements are commonly observed among LOHAS followers. For health management, LOHAS individuals are open towards integrative healthcare approaches that treat a human being as a balanced entity of mind, body, and spirit [14]. They are interested in seeking out information and services relevant to alternative and complementary medical care such as Ayurveda and acupuncture [15]. This does not have to do with a denial of conventional medicine, but involves their different values and beliefs concerning health.

The second theme in the discussion of LOHAS pertains to personal development. One's full potential can be achieved by understanding oneself at a deeper level and recovering one's true nature [4]. Spiritual activities lead to a more profound, self-actualized, and sophisticated individual [16]. LOHASians adopt spiritual practices/products including yoga, meditation, Qigong, aromatherapy, or macrobiotics as a means of personal development [15]. It is estimated that the spiritual market accounts for eighteen percent of the LOHAS market in the U.S. [17].

The third theme in the literature includes the philosophical and psychological values inherent in LOHAS. It embraces an optimistic future view, the experience of new challenges, desire for peace, and the relationship orientation [18]. Yeh and Chen (2011) found that LOHAS followers are open-minded (i.e., willing to accept different ideas and opinions) and tend to view positive aspects of things, allowing them to deal with problems in a positive way [13]. Liu and Wu (2014) also argued that they are against pessimism and cynicism and are inclined to be more optimistic about their future [19].

The fourth constant factor in the literature is ecological orientation, which is the manifest characteristic that defines LOHAS consumers. LOHASians are concerned about the environmental impact of a product throughout the entire period of its lifecycle—how the product is made, sold, consumed, and discarded, and if the process is done without harm or depletion to the environment [13]. According to Korhonen (2012), LOHAS consumers appreciate environmental value more than the functional, emotional, or instrumental value in product packaging [20]. They paid much attention to the source of the packaging materials or its recyclability and biodegradability. Zentner (2016) argued that the people committed to a LOHAS tend to live as vegetarians or vegans because these food products need less energy and produce less harmful by-products than meat or fish during the production process [21]. LOHAS consumers prefer local food products or organic foods because of its farming techniques cause less harm to the environment in addition to its health benefit [22]. In addition, LOHASians focus carefully on information such as license marks or eco-labels to buy a product that meets the environmental standards [23]. Yeh and Chen (2011) revealed that careful reading of labels of contents on packages increased when an individual is dedicated to a LOHAS. They are also likely to be asked for advice about sustainable products due to the accumulated knowledge about eco-friendly products. They are willing to spread and share information [5]. Furthermore, LOHAS consumers are not discouraged by higher prices for sustainable products [5]. For a high involvement product such as furniture, Asian and North American LOHAS consumers were found to be willing to pay a 10% price premium, whereas European consumers were willing to pay a 30% or more premium [24]. Typically, LOHAS consumers are willing to pay up to 20% more for products made in a sustainable way [9].

Lastly, most discussions of LOHAS market behaviour deal with a social responsibility aspect. LOHAS consumers are socially attuned with a world view that considers com- munity outcomes [25]. They are interested in social issues connected with what they eat and wear [26]. They critically evaluate the production process of the products and make purchase decisions that meet their standards for social responsibility [26]. They have a strong preference for buying products from companies with social values similar to those that they uphold [25]. Workplace equality, human rights, and care for minorities including children and women are issues that they consider [27]. To some degree, they think that a company's employee care is more important than being conscious about their environmental impact [9]. Reflecting these values in their consumption choices, LOHAS consumers buy Fair Trade products where farmers receive higher than the average price for their products, manufacturers in developing countries realize the financial benefit, no child labour is exploited in the production process, or no discrimination is made in wages between gender [28]. Another distinctive characteristic is that they not only reward ethical performance (purchasing ethical products over alternatives) but also punish unethical actions

(refusing to choose unethical products) of the businesses which they perceive to be socially irresponsible [9]. Advertisements that cause suspicion of green/social washing are penalized by ignorance, negatively influencing future buying behaviour [29]. It is note- worthy that the two types of social actions are theoretically distinct. Many who reject the products/services do not necessarily choose ethical products over alternatives [30].

The problem with all this is that most of the summary of LOHAS lacks empirical support. Many of the studies mentioned above conceptually infer the components of LOHAS rather than empirically testing its reliability and validity. The definitions of LOHAS are diverse in the literature, and each definition reflects only a fraction of the features of LOHAS [6]. To substantiate LOHAS, the LOHAS concept should be measurable, and to this end, a clear and precise definition of LOHAS needs to be preceded. One overarching framework that helps to embrace diverse definitions and accurately define what is included in the definition of LOHAS and what is not is imperative for the development of a reliable and valid measure [31].

2.2. Measuring LOHAS

The previous literature addresses the distinctive nature and features of LOHAS and investigates how the attributes that define LOHAS lead to specific consumer behaviours. Unfortunately, the previous studies provide only limited insights into LOHAS in the sense that the currently available scales fail to capture the constituents of LOHAS comprehensively. In the majority of the research, LOHAS has been understood as an environmental consciousness, which is only part of its total meaning. For example, Cowan and Kinley (2014) measured the LOHAS lifestyle using questions concerning environmental conscious- ness, environmental knowledge, and pro-environmental attitudes [32]. Häyrinen, Mattila, Berghäll, and Toppinen (2016) included a set of items measuring awareness of environ- mental problems, preference for pro-environmental products, and perceived self-efficacy toward environmental behaviour [33]. Kim, Lee, Kim, and Kim (2013) focused on green purchases, natural resource conservation, and environmentalism [6]. Park (2015) utilized several questions about the preference for green products and the degree of activeness toward environmental protection behaviour [12].

Despite attempts made in several studies to measure LOHAS in a broader sense, the scales still tend to be limited to one particular aspect of LOHAS. For instance, in the study on the development of a LOHAS index for the elderly, Fu, Lee, Pai, and Kuo (2012) measured LOHAS from a health perspective [34]. They defined LOHAS as an optimal mental state where satisfaction is achieved in a wide range of life domains. However, they did not include sustainability issues. Koszewska (2011) included questions measuring social responsibility, but the questions limited the ethics in LOHAS to the choice of products from socially responsible companies, with little measure of other domains [35]. Although Szakály et al. (2017) tapped broader aspects of LOHAS including authenticity, health, environmental, and ethical consciousness, personal development and psychological and philosophical dimensions were not considered importantly in their scale. The measure by Pícha and Navrátil (2019) is limited to the environmental and physical factor, ignoring the ethical, mental, and emotional facet of LOHAS [25].

A well-defined conceptualization of lifestyle should be based on the variety of elements that other researchers have claimed to be part of LOHAS. It should tap into hidden aspects of one's life such as values, personality traits, and attitudes as well as observable factors including activities or collection of products and services consumed [36]. However, current scales describe the LOHAS lifestyle, relying on only one component [33], or rarely more [6]. Although some researchers measured LOHAS using scales that include questions assessing cognitive, emotional, and behavioural dimensions as tapping into the various do- mains in LOHAS, the scales did not undergo a rigorous scale development procedure. The majority of the existing scales were not subjected to a thorough and extensive validation since scale development for the hypothetical construct was considered secondary to the substantive scientific issues. Some scales tested their reliability but did not assess their validity [32,33]. Without a valid instrument, widespread production of research that will lead to substantive findings on LOHAS may be useless.

To summarize, the existing scales suffer from several limitations. First, they are unidimensional and unable to capture other potentially important aspects of LOHAS. They do not adequately reflect the nature and scope of LOHAS. Second, the existing scales cannot claim to measure the features of LOHAS thoroughly since they did not go through with a thorough scale development procedure. The lack of reliability and validity of the scales further undermines the claims of LOHAS research. Despite the clear theoretical and managerial significance of LOHAS, current research on measuring LOHAS provides limited guidance. Thus, this study is designed to develop standard questions for measuring the components of LOHAS in the hopes that a standard measuring tool

can and will be used in future research so that the field will make some sense and be imbued with more rigor and create more research and development opportunities. Table 1 summarizes the review of the extant LOHAS scales.

Table 1. Lifestyle of Health and Sustainability (LOHAS) scales review.

Research. Conceptual Framework for Lifestyle	Operational Definition of LOHAS	Source of Items	Reliability/Validity
Cowan and Kinley (2014) [32]			
Häyrinen, Mattila,			
Concerns and knowledge about the environment	Attitude		
Adopted from past research related to environmentalism	Adopted from past		
Reliability (α > 0.70)	Berghäll, and Toppinen (2016) [33]		
Wan, Chen and Toppinen			
Pro-environmental engagement			
Buying			
Attitude,			
perception, awareness	research related to sustainability and LOHAS	Adopted from past	Reliability
(α > 0.75)/validity	(2015) [22]		
Fu, Lee, Pai, and Kuo	eco-friendly products	Perception	
Optimal	research and the LOHAS		
website (www.lohas.com)	N/A	(2012) [34]	psychological state
Attitude, perception			
Unspecified	Reliability cial, and	Yeh and Chen (2011) [13]	
mental health and eco-friendly activities			
Behavior,			
cognition, emotion	www.isurvey.com/tw	N/A	Koszewska (2011) [35]
Prosumer ethics	Behavior	Unspecified	Reliability 0.50)
Szakály, Popp, Kontor, Kovács, Peto″, and Jasák (2017) [12]			
Lehota, Horváth, and Rácz			
Health/environmental consciousness and ethical/authentic value-oriented			
Health and environmental			
Attitude, perception, behavior			
Behavior, attitude, value,			
Adopted from past research related to LOHAS			
Reliability (α > 0.70)	(2012) [37]		
Kim, Lee, Kim, and Kim	consciousness, ethical behavior, authentic value		
Environmentalism,	consciousness	Qualitative research	N/A
Reliability	(2013) [6]	green consumerism, conserving resources	

Opinion, behavior	Qualitative research		
Adopted from past($\alpha > 0.75$)/validity	Park (2015) [12]	Environmental protection	Consumption, behavior, perception, preference
research related to health and well-being	Reliability ($\alpha > 0.85$)/validity		

3. Materials and Methods

3.1. Item Generation and Scale Instrumentation

As discussed in the aforementioned section, LOHAS was identified as a multidimensional construct consisting of six beliefs and attitudinal components: physical fitness, personal development, philosophical values, psychological values, ecological orientation, and social responsibility. Each of the six components can be measured with a multi-item scale. To create the initial pool of items, an extensive review of the literature was performed. To start the process, twelve LOHAS questions were adopted from the NMI. Twenty-eight LOHAS questions from South Korean LOHAS studies that seemed to adequately reflect a definition and traits of the LOHAS lifestyle pertinent to the U.S. were selected through a three-round Delphi technique with eleven professionals in the health and sustainability area. In addition, thirty questions from U.S. scales that have been created to measure aspects of the five attributes discussed earlier were selected. A total of seventy items were generated.

3.2. Samples and Data Collection

Data collection involved three rounds. For initial item reduction, 320 samples were collected using Amazon Mechanical Turk (Mturk). Following approval of the study protocol by the institutional review board (IRB), respondents who agreed with the online informed consent voluntarily participated in the survey with monetary compensation. After removing invalid responses, 300 responses were used for the analysis: 45% were male and 55% were female; 16% were aged 18–25, 31% were 26–35, 27% were 36–45, 12% were 46–55, and 11% were 56–65. In the second round, additional samples were recruited to identify the underlying factor structure and confirm the scale's dimensionality. Purdue's office of registrar randomly distributed 7346 questionnaires to the students registered in Spring 2018 via email. A Qualtrics web-based survey was employed for data collection. Following approval of the study protocol by the institutional review board (IRB), respondents who agreed with the online informed consent voluntarily participated in the survey. The sample was composed of 613 Purdue undergraduate and graduate students aged between 18 and 25 (64%), 26 and 35 (28%), 36 and 45 (6%), 46 and 55 (1%), and 56 and 65 (1%); 38% were male and 62% were female; 51% were White/European, 44% were Asian, 2% were Hispanic/Latin, and 2% were African American. Out of 613 answered questionnaires, 52 unopened and 22 incompletes were excluded, obtaining 539 completed surveys. The sample was split to develop a model based on one half and to validate the solution using the other half [38]. For sample characteristics, the first half consisted of 40% male and 60% female; 54% were aged 18–25, 35% were 26–35, 8.4% were 36–45, 1.5% were 46–55, and 1.1% were 56–65. For the other half, 36% were male and 64% were female; 73% were aged 18–25, 21% were 26–35, 3.2% were 36–45, 1.4% were 46–55, and 1.1% were 56–65. In testing the nomological validity of the LOHAS scale, an additional sample of 210 respondents aged between 18 and 65 were collected through Mechanical Turk (MTurk). The sample had 25% aged between 18 and 25, 38% between 26 and 35, 31% between 36 and 45, and 6% between 56 and 65; 36% were male and 64% were female.

3.3. Measures

3.3.1. LOHAS

LOHAS is operationally defined in this research as a lifestyle that not only emphasizes personal health and well-being in various life domains but the collective well-being of nature and society as a whole. LOHAS was measured using a five-point Likert-type scale ranging from "strongly agree" (5) to "strongly disagree" (1). The questions asked: "to what extent do you agree with the following statements?' please select the number that most closely matches your lifestyle".

3.3.2. Future Time Orientation

Future time orientation is considered as a significant individual difference variable in the context of consumer behaviour. It leads individuals to build a certain relationship with their environment. Prospective temporal focus

is concerned with particular motivations and plans [39]. It precedes a psychological process and behaviour, which influence a style of life [40]. For the operationalization of future time orientation, the well-established four-item Likert-type scale by Shipp, Edwards, and Lambert (2009) was used [41].

3.3.3. Status Consumption

Status consumption refers to obtaining social prestige or status from the consumption of goods perceived high in status by significant others [42]. It is often associated with lifestyle in the sense that lifestyle is a way in which an individual elicits and expresses prestige [43]. Appropriate attitude/behaviour and acquisitions of consumption goods create status distinctions within the social order [44]. Eastman, Goldsmith, and Flynn's (1999) five- item Likert-type scale was adopted for the operationalization of status consumption [42].

3.4. Hypothesis Development for Nomological Validity

The validity of the LOHAS scale was tested in a nomological network of theoretically related antecedent and consequence.

3.4.1. Antecedent

1. Future time orientation and environmentalism

Future time orientation is considered as a significant individual difference variable in the context of sustainable behaviour. One distinctive aspect of sustainable behaviour is that the consequences of environmentally friendly behaviour are perceived to be vague and distant since changes occur slowly and uncertainty exists in the issues and its solutions [45]. Sustainable action entails a trade-off between present and future needs [10]. While the sacrifice in pro-environmental/ethical behaviour occurs in the present, its benefit is rewarded in the future [46]. Most sustainable behaviours include putting aside immediate personal benefits to prioritize behaviours that focus on others and future generations [47]. Milfont and Gouveia (2006) found that future time orientation and selfless orientation are the significant predictors of pro-environmental behaviour [48]. Erffmeyer, Keillor, and LeClair (1999) found that Japanese consumers doing long-term planning tend to take into account social values in evaluating a corporation's brand image [49].

2. Future time orientation and physical health

Future time orientation is related to personal health and well-being in the sense that a future focus leads individuals to invest in the activities that help achieve positive future outcomes and avoid undesired future consequences [50]. Sensitivity to the impact of present actions and decisions on future consequences enables individuals to plan for the future and prepare for the proactive responses. Women with future time orientation are more prone to have regular breast examinations. Individuals high in future time perspective eat healthy foods more often and are less inclined to use alcohol and substances [51]. Therefore, hypothesis 2 is formulated as follows: future time orientation will positively influence physical fitness.

3. Future time orientation and social consciousness

Long-term orientation influences ethical value formation [52]. Japanese consumers who practice long-term planning placed a high value on social-focused and conservative values in their evaluation of a company's brand [49]. Chinese business managers who value long-term perspectives were prone to having high standards of business ethics [53]. Cross-cultural research showed that the business managers in America with long-term orientation have a higher awareness about the role of business ethics than those in Korea and India with short-term perspectives [54]. Therefore, hypothesis 3 is formulated as follows: future time orientation will positively influence social consciousness.

4. Future time orientation and mental health

Future time orientation has been revealed to have a positive relationship with mental health. Although individuals with pronounced future orientation have a high level of stress and pressured lifestyle, they were more involved in active coping activities to deal with stress [55]. Therefore, hypothesis 4 is formulated as follows: future time orientation will positively influence mental health.

5. Future time orientation and emotional state

Future time orientation has been positively associated with emotional state. In a study of childhood cancer survivors, Mann, Kato, Figdor, and Zimbardo (1999) assigned subjects to write about selected events in the past, present, or future. Writing about the future lead to a significant increase in optimism for the patients. Pessimistic subjects benefited more from future writing than the optimistic [56]. Moreover, when individuals assessed their future thoughts as proximal and pleasant, they were more likely to have a positive affective state and experience daily well-being [57]. Therefore, hypothesis 5 is formulated as follows: future time orientation will positively

influence emotional health.

6. Future time orientation and spirituality

The limited literature revealed that future time orientation is relevant to spiritual well- being. In the research on the relation of religiousness and spirituality with externalizing psychopathology (EP) in adolescence, Holmes and Kim-Spoon (2016) found that future time orientation is a mediator between spirituality and EP. Highly religious or spiritual adolescents were more prone to think about their future (e.g., afterlife beliefs) and this prevented a decline in the value of future reward, which may ultimately lead to self-control and discourage unhealthy behaviours [43]. Therefore, hypothesis 6 is formulated as follows: future time orientation will positively influence spirituality.

3.4.2. Consequence

1. Emotional health and status consumption

Negative emotions of self-doubt and self-threat are related to a desire to acquire material objects [58]. When self-integrity is threatened, an individual attempts to protect the self through an alternate source to recover their self-worth [59]. Given that a possession is one self-defining factor or a symbol of identity, consuming high-status goods may serve as indirect psychological resources needed to affirm self [60]. On the contrary, individuals with positive emotions or beliefs can appraise the strength and adequacy of one's inner resources to endure negative events, resulting in an inverse relationship with status goods consumption [61]. Therefore, hypothesis 7 is formulated as follows: emotional health will negatively influence status consumption.

2. Social consciousness and status consumption

Socially conscious behaviour for solving long-term social problems such as human rights and intrageneration equity is motivated by post materialistic values such as benevolence, universalism, and self-transcendence [62]. The collective orientation inherent in post materialistic values is conversely associated with individualistic values such as materialism [63]. Materialism underlying status consumption focuses on narrow and short-term interests and the attainment of personal goals, which is conversely associated with collective well-being [63]. Socially conscious behaviour is expected to have a negative relationship with status consumption in the sense that public and community-oriented values underlying social consciousness are contradictory to the values in status orientation [62,63]. Therefore, hypothesis 8 is formulated as follows: social consciousness will negatively influence status consumption.

3. Spirituality and status consumption

Following a spiritual life is incompatible with materialistic pursuits. Stillman, Fincham, Vohs, Lambert, and Phillips (2012) observed that people with a higher level of spirituality reported a lower desire to consume money in a lavish and flashy way [64]. This relationship was mediated by materialism such that a higher level of spirituality reduced the value that individuals placed on material objects, and it, in turn, decreased one's desire to spend a considerable amount of money on material goods. In line with this, in the research on spirituality as a motivational aspect of human behaviour, Piedmont, Wilkins, and Hollowitz (2013) revealed that one's spiritual and religious traits contrast with materialism and consumerism (i.e., possession, acquisition of wealth) but align with non-material values including relationship with others, compassion, and altruism [65]. Therefore, hypothesis 9 is formulated as follows: spirituality will negatively influence status consumption.

4. Mental health and status consumption

When experiencing stressful events, people take consumption as a means of coping with stress [66]. Stress develops a desire for material possessions such that possession of them provides instant hedonic feelings which direct one's mind away from the stressful situation [67]. For example, youths who experienced acute life course stress were more likely to have increased vulnerability and this made them rely more on the positive aspect of material possessions [68]. Those who have adequate stress control approaches are assumed to be less likely to place a weigh on ostentatious consumption. Therefore, hypothesis 10 is formulated as follows: mental health will negatively influence status consumption.

5. Physical fitness and status consumption

Evidence has suggested that physical well-being is negatively associated with materialistic values. A materialistic individual prioritizes satisfaction with possessions for personal success and often looks down on their physical and psychological well-being [69]. They are more likely to engage in risky health behaviours such as smoking or drinking alcohol [70]. In a study on the relationship between materialistic life goals and health- compromising

behaviours by Williams, Hedberg, Cox, and Deci (2000), adolescents who reported high aspirations for extrinsic life goals (e.g., wealth, fame, and image) were more likely to engage in substance use and smoking compared to the people who had intrinsic life goals (e.g., relationship, growth, and community feeling) [71]. Therefore, hypothesis 11 is formulated as follows: physical fitness will negatively influence status consumption.

6. Environmentalism and status consumption

Pro-environmentalism and the pursuit of materialistic goals are fundamentally oppo- site [72]. Citizens who place high values on wealth and social standing are more likely to have high levels of CO2 emissions [73]. In the value circumplex model, the universalism underlying environmental protection is located on the opposite side of materialism, indicating that the two values are incompatible [63]. Maio, Pakizeh, Cheung, and Rees (2009) provided more in-depth insight into the negative impact of materialism on environmental concerns. The prime of materialistic value influences both the increase in the importance of materialism and the decrease in the importance of its opposite value of universalism [74]. Andersson and Nässén (2016) found that individuals with high materialism care less about the environment and cause more greenhouse gas (GHG) emissions [75]. Therefore, hypothesis 12 is formulated as follows: environmentalism will negatively influence status consumption.

4. Results

4.1. Scale Purification, Stability, and Dimensionality

Item Purification and Reliability Assessment

The main purpose of purifying a multi-item scale is to reduce the number of items, to obtain an internally consistent scale [76]. The initial 70 items were subjected to item reduction on a sample of 300 using Cronbach's alpha [77]. An internal consistency assessment was carried out for the set of items of each sub-dimension. The items with a corrected item-to-total correlation less than 0.50, high cross-loading, and high variance/low mean were eliminated [78]. Overall, 20 items were eliminated. The items with coefficient alpha above 0.60 were retained for all the six subscales [77], indicating acceptable reliability.

4.2. Reliability Assessment and Dimensionality

An exploratory factor analysis was undertaken on 270 samples to identify the under- lying factor structure of the LOHAS scale. The Kaiser–Meyer–Olkin measure was 0.84 and Bartlett's test of sphericity was significant at the 0.001 level. Factors were extracted by Unweighted Least Square (ULS) with varimax rotation. Items were deleted with (a) factor loading below 0.60, (b) cross-loadings above 0.40, or (c) communality below 0.30 [79]. The factor analysis resulted in 32 items loading on six factors, which were revealed as physical fitness (5 items), mental health (6 items), spirituality (3 items), emotional health (4 items), environmentalism (11 items), and social consciousness (3 items). The six factors were retained based on Horn's parallel analysis, explaining 60% of the total variance.

A confirmatory factor analysis was followed to verify the factorial validity and dimensionality of the hypothesized LOHAS model [79]. The four items with factor loading below 0.04 were eliminated. The resultant LOHAS model now consisted of a total of 28-items loading on the six factors. Composite reliability (CR) and average variance extracted (AVE) were calculated for rigorous testing of internal consistency of the set of items within each domain [80]. Most of the estimates for each dimension were within recommended ranges (Environmentalism: composite reliability (CR) = 0.90, average variance extracted (AVE) = 0.50; Physical fitness: CR = 0.80, AVE = 0.45; Emotional: CR = 0.83, AVE = 0.56; Mental: CR = 0.79, AVE = 0.56, spirituality: CR = 0.87, AVE = 0.69; social consciousness: CR = 0.80, AVE = 0.57) [80]. Although the AVE of "physical fitness" was below 0.5, the items in these factors were decided to be kept because (1) this is the "first-time" exploratory study of theoretical model-testing [81]; (2) convergent validity is still adequate if CR is higher than 0.60 [82]; (3) it does not produce serious discriminant validity problems [81]; and (4) the traits of the factors are more adequately reflected by the included items, enhancing the content and face validity [83]. Table 2 provides a complete list of final items as well as their means, standard deviations, and factor loadings.

Table 2. Scale items, descriptive statistics, and factor loadings.

Physical fitnessFactor Item	Mean	SD	Factor Loading1. I purchase and eat foods considering my health.			3.8	1.1	0.77
2. I limit foods like sugar, coffee, fats, etc.				3.7	1.1	0.73		
3. I choose diet low in fat, saturated fat, or cholesterol.				3.7	1.1	0.59		
4. I avoid foods with high additives.				3.9	1.0	0.69		
5. I usually read the ingredients on food labels.				3.2	1.3	0.56		
Mental health								
1. I try to control stress.						3.7	1.2	0.72
2. I reduce stress and anxiety.						3.8	1.1	0.83
3. I use specific methods to control my stress.				3.6	1.1	0.69		
Emotional health								
1. I try to take positive outlook on things.				3.9	1.1	0.77		
2. I think positively of life.						4.1	1.0	0.80
3. I try to cope with positively on failure and frustration.				4.0	1.0	0.69		
4. I am able to speak openly about my feelings when angry or worried.				3.3	1.1	0.73		
Spiritual health								
1. I feel connected with some force greater than myself.				3.6	1.2	0.82		
2. I nurture the spiritual aspects of myself				3.8	1.2	0.90		
3. I spend a portion of the everyday in prayer, meditation, or personal reflection.				3.7	1.2	0.77		
Environmentalism								
1. I protect the environment.						3.7	1.2	0.9
2. I choose environmentally friendly products.				3.9	1.1	0.76		
3. I choose sustainable source products over conventional ones.				3.8	1.0	0.75		
4. I am interested in renewable energy sources.				3.9	1.1	0.66		
5. I prefer sustainable agriculture practices.				3.6	1.1	0.68		
6. I prefer products manufactured in sustainable ways.				3.9	1.0	0.85		
7. I prefer products made of recycled materials.				3.8	1.1	0.72		

8. My purchase decisions are based on its effect on the world.	3.7	1.1	0.66
9. I teach the benefits of environmentally friendly products to family or friends.	3.7	1.1	0.64
10. I would be willing to reduce my consumption to help protect the environment.			4.0
1.0	0.61		
Social consciousness			
1. I am socially conscious.			3.7
1.1	0.73		
2. I consider the local society and its members in daily life.	3.9	1.1	0.82
3. I consider the entire world and population in daily life.	3.8	1.1	0.7

4.3. Validity

4.3.1. Convergent Validity

Convergent validity refers to the degree to which a trait is well measured by its indicators [84]. This is determined by whether observed variable loadings on a particular factor are high or not [79]. Evidence of convergent validity was examined by a confirmatory factor analysis where all items of the scale loaded on their respective dimensions. The measurement model provided a good fit to the data ($\chi2$ (335) = 5385.369, RMR= 0.64 CFI = 0.94, TLI = 0.93, RMSEA = 0.05). All indicators were above the accepted reliability threshold of 0.60 and significantly loaded on their respective latent constructs [84].

4.3.2. Discriminant Validity

Discriminant validity is concerned with the degree to which the measures of different traits are unrelated [84]. For each dimension, AVE exceeded the generally accepted level of 0.50 [79]. In addition, the AVE for each construct was higher than the squared correlation between the construct of interest and any other construct in the LOHAS model, indicating discriminant validity [79]. Table 3 illustrates the discriminant validity test in detail.

Table 3. Discriminant validity test.

nvironmentalism	Physical	Mental	Emotional	Spirituality
Environmentalism	0.50 a			
Physical fitness	0.14 b	0.45 a		
Mental	0.07 b	0.12 b	0.56 a	
Emotional	0.05 b	0.14 b	0.36 b	0.56 a
Spirituality	0.02 b	0.10 b	0.20 b	0.24 b
0.69 a				
consciousness	0.34 b	0.15 b	0.12 b	0.28 b
0.13 b	0.57 a			

a Average variance extracted (AVE) for each factor; b Squared correlation (ı.e., shared variance) between each pair of constructs.

4.3.3. Nomological Validity

A structural model was estimated with Amos 26.0 and provided reasonable fit to the data ($\chi2$ (420) = 781, $\chi2$/df = 1.86, RMSEA = 0.06, CFI = 0.92, IFI = 0.92, TLI = 0.90). The estimated path coefficients were supported for the expected relationships between the subdimensions of the LOHAS scale and the antecedent. To elaborate on these results, it was found that future time orientation influenced all six dimensions of physical fit- ness ($\beta = 0.72$, $p < 0.01$), mental health ($\beta = 0.92$, $p < 0.001$), emotional health ($\beta = 0.86$, $p < 0.001$), spirituality ($\beta = 0.60$, $p < 0.001$), environmentalism ($\beta = 0.71$, $p < 0.05$), and social consciousness ($\beta = 0.86$, $p < 0.001$). On the other hand, with regard to consequence, it was revealed that only emotional health ($\beta = -0.72$, $p < 0.05$) had an adverse effect on status consumption, as expected. What is interesting to note is that contradictory to our expectation, environmentalism ($\beta = 0.13$, $p < 0.01$), mental health ($\beta = 0.39$, $p < 0.01$), social consciousness ($\beta =$

0.32, p < 0.05), and spirituality (β = 0.37, p < 0.001) were revealed to have a positive effect on status consumption. Physical fitness (β = 0.25, p= 0.13) had no significant effect. Figure 1 illustrates the nomological network of the LOHAS construct and Table 4 provides the statistics for its paths.

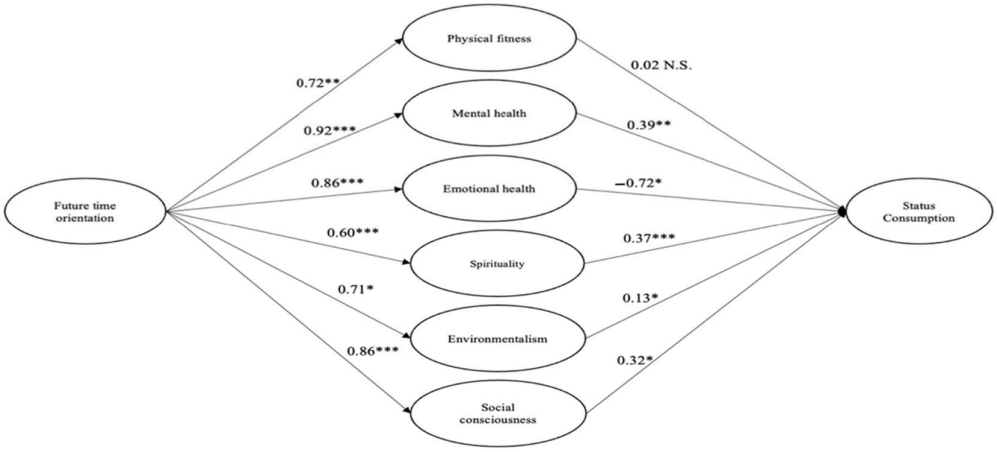

Figure 1. Nomological network of LOHAS. All path coefficients are standardized estimates. *** p < 0.001. ** p < 0.01. * p < 0.05.

consumption, as expected. What is interesting to note is that contradictory to our expectation, environmentalism (β = 0.13, p < 0.01), mental health (β = 0.39, p < 0.01), social consciousness (β = 0.32, p < 0.05), and spirituality (β = 0.37, p < 0.001) were revealed to have a positive effect on status consumption. Physical fitness (β = 0.25, p= 0.13) had no significant effect. Figure 1 illustrates the nomological network of the LOHAS construct an1d2 of 17. Table 4 provides the statistics for its paths.

Table 4. Statistics for the paths of nomological validity test.

Path	B	S.E.	t-Value	Hypothesis
Future time orientation (FTO)—Physical Fitness	0.72	0.23	5.8 **	Supported
FTO—Emotional	0.86	0.18	6.2 ***	Supported
FTO—Mental	0.92	0.23	2.3 ***	Supported
FTO—Spiritual	0.60	0.22	5.7 ***	Supported
FTO—Environmentalism	0.71	0.10	2.4 *	Supported
FTO—Social Consciousness	0.86	0.23	6.7 ***	Supported
Physical Fitness Status consumption (STC)	0.15	0.17	1.5	ns

RejectedEmotional → STC	−0.72	0.29	−4.9 *
Supported Mental → STC	0.39	0.23	2.6 **
Reversely supported Spiritual → STC	0.37	0.11	4.1 ***
Reversely supported Environmentalism → STC		0.13	0.16
1.7 * Reversely supported Social Consciousness → STC	0.32	0.21	2.2 *

Reversely supported

All path coefficients are standardized estimates. *** $p < 0.001$. ** $p < 0.01$. * $p < 0.05$., ns = non-significant.

5. Discussion

Our research provides significant theoretical and practical implications. First, this study extends the emerging literature on LOHAS by firstly attempting to operationalize the broad meaning of LOHAS and establishing an empirically tested framework of LOHAS. While most existing research in this domain has focused on the one-dimensionality of LO- HAS, particularly on environmentalism with a lack of a well-defined theoretical foundation, the rigorous scale development offers theoretically grounded multifaced assessments of LOHAS. The current LOHAS scale is a six-dimensional concept that includes individual motivation for a healthy life in physical, mental, emotional, and spiritual areas as well as their consideration for well-being of the nature and society.

Second, the new scale has well-established psychometric qualities in terms of reliability and validity. The new standardized measuring criterion will provide valid research findings and allow the comparisons and replications of the research in this field. The new scale fills a gap in a way that allows future researchers to investigate complex relationships among variables in their studies with a variety of objectives, contributing to the further advancement of the LOHAS theory [85]. Additionally, it identifies that partial dimension of LOHAS has different importance to the consumption choice, as proved in the previous literature [5]. Third, our findings validate LOHAS as an attitudinal and behavioral style of life that mediates personal traits and specific behavior [8]. We corroborate a previous research stream by identifying that future time orientation positively influences LOHAS and the symbolic aspect of LOHAS is associated with status consumption behavior. The contradictory results to the previous literature of the positive relation of spirituality to status consumption could be explained by the non-religious nature of the spiritual dimension in LOHAS. Compared to the religious form of spirituality (e.g., religious practices—prayer, relationship with deity), the non-religious form (e.g., sense of connectedness with whole humanity, being a part of the universe) has to do with a positive association with mate- rial consumption. For example, Piedmont, Wilkins, and Hollowitz (2013) found that all religious-oriented dimensions of the assessment of spirituality and religious sentiments (ASPIRES) scale (i.e., prayer fulfillment, universality, and religious involvement) were negatively related to consumerism and materialism, whereas connectedness, which is a non-religious dimension, was positively associated with material possessions, indicating people who have a sense of involvement in a community and concern for the health of their

community showed interest in acquiring wealth [65]. Z˙ emojtePiotrowska, Piotrowski, and Klimaszewska (2010) also found that the expression of spiritual transcendence (i.e., paintings illustrating religious/spiritual content) results in spending on status goods [86]. In addition, the positive relationship between environmentalism/social consciousness and status consumption might be established because sustainable/ethical consumption often indicates a purchase going beyond basic needs [11]. For instance, organic product consumption makes people feel pride and place at a higher social status as they perceive the products in much the same way that they perceive high-end products [87]. Individuals gain prestige and esteem when their wealth or power is put in evidence through the purchase of exclusivity [88]. Furthermore, the positive association between mental health and status consumption may indicate that for mentally healthy individuals, status (conspicuous) consumption is not seen as a mode of compensatory consumption but as a more positive practice, contributing to their well-being [89].

Finally, this research not only expands the business practitioner's theoretical under- standing of LOHAS but also contributes to its practical uses. Given the importance of LOHAS as a valuable marketing concept, the investigation of its conceptual structure and antecedents and outcomes provides insights into how to incorporate LOHAS in their marketing plans and strategies. Utilization of the LOHAS concept will help create a positive corporate image, which has a significant impact on consumer purchase intention. At the same time, marketing professionals could use the new scale as a market segmentation tool given its ability to measure differences in

individual motivations and beliefs toward healthy and sustainable products.

6. Limitation and Future Research

This study has several unresolved issues. First is that the various studies conducted here used student samples. While the homogeneous nature of the student sample allows accurate theoretical prediction, it raises questions about generalizability. It would be worthwhile to extend this research to the general population to ensure the appropriateness of the usage of this scale with a broader age spectrum.

Second, from the methodological point of view, this study mostly relied on a deductive method (i.e., literature review) to operationalize and generate the initial domains and item pool. Although an extensive and integrative review of the literature was conducted to theoretically operationalize the target concept, more diverse views could have been incorporated to create additional items when sampling the domain of LOHAS [90]. For future research, adopting additional qualitative approaches (e.g., focus group or interview) will help assess and enhance the validity of the proposed dimensionality and compositions of LOHAS. Formal assessment of content validity could be undertaken to improve confidence in inferences made in the final form of the LOHAS scale [90].

A third limitation is concerned with social desirability bias. It results from a respondent's desire to project a favorable image to others [91]. It becomes a threat to the research that employs a multi-item scale [92]. Considering the socially desirable nature of the LOHAS lifestyle and the multi-faced assessment of the scale items, provision of socially admittable responses in self-report data may lead to biased validity or moderated relationships between the constructs of interest in the research.

Forth, although the scale development procedures followed in this research were extensive and the psychometric properties of the scale were established rigorously, future research may test the scale in other contextual settings to corroborate its ability to predict actual behavior. Adopting a predictive validity test, future research may investigate if the attributes that define LOHAS lead to specific consumer behavior that is reflective in the definition of LOHAS.

Fifth, more variables could be incorporated into a structural model which considers LOHAS with predictors and outcome variables. While the current study examined the behavior of the LOHAS construct within the network of one antecedent and consequence, incorporating theoretically relevant concepts such as specific values and individual difference or behavioral variables into the model will help more rigorously assess the stability of the LOHAS scale under diverse conditions [93].

Finally, the cultural generatability of the scale may be further examined. Since the NMI proposed LOHAS as a cultural shift, research has been performed globally but consensus has not existed about the nature and behavior of LOHAS consumers. A cross-cultural scale test will allow researchers to understand the importance of cultural context in unfolding the LOHAS lifestyle and identify similarities and differences in the manifestations, dimensions, and subsequent measures of the LOHAS construct.

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