Love the Earth? Engage in Secondhand Consumption:

The Role of Values, Socioeconomic Position, and their Interaction in Secondhand Consumption

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Abstract

Current linear human consumption patterns are not sustainable and a shift to more circular consumption is needed. This shift also entails increasing secondhand consumption. This current study investigates the values underlying secondhand consumption. Earlier studies have shown contrasting effects. On the one hand, Value-Belief-Norm theory has shown that altruistic and biospheric values lead to more pro-environmental behavior whereas egoistic and hedonistic values lead to less pro-environmental behavior. On the other hand, literature on secondhand consumption has demonstrated that financial, hedonism, and ethical motivations lead to more engagement. In this study, it will be tested whether, besides altruistic and egoistic values, especially biospheric and hedonistic values lead to more SHC since they most closely match the motivations for SHC. Moreover, as lower socioeconomic positions have long been associated with secondhand consumption, the role of an individual's socioeconomic position will also be studied, hypothesizing that the relationships between values and SHC are likely stronger for individuals with a high socioeconomic position since low SEP individuals want to distance themselves from the stigma around SHC which likely leads to less SHC. A quantitative study was done with the use of data from the LISS Panel in the Netherlands. While not all hypotheses were fully supported by the data, the results did show that the relationship between altruistic values and secondhand consumption is stronger for high socioeconomic position individuals. This study contributes to the field of pro-environmental behavior studies by showing that, in line with Value-Belief-Norm Theory, self-transcending values lead to more secondhand consumption and self-enhancing values lead to less secondhand consumption. However, the strength of these relationships is not exactly the same for those in low socioeconomic positions and those in high socioeconomic positions.

Keywords: Secondhand consumption, socioeconomic position, motivations, values

Introduction

In our current linear economy, products are created for immediate consumption and are thrown out after, increasing the need to consume more (Gullstrand Edbring et al., 2016). These human consumption patterns are unsustainable (Buerke et al., 2016) and call for the need to shift to a circular economy, wherein the production and consumption of products are iterative (Kim et al., 2014; Gullstrand Edbring et al., 2016). The focus is on reusing resources and products instead of using new resources (Hansen & Le Zotte, 2019).

An important part of this shift toward circular economies entails the adoption of secondhand consumption (SHC) (Arman & Mark-Herbert, 2022). SHC is sustainable since products already have been used and it reduces waste production (Borusiak et al., 2020; Machado et al., 2019). According to the literature, SHC is becoming more popular and the supply of secondhand products (SHP) is growing (Borusiak et al., 2020; Silva et al., 2021). In the Netherlands, 1.175 thrift stores were counted in 2019 (AlleKringloopwinkels, n.d.) and this number keeps growing (van Aart, 2022). The number of secondhand clothing stores increased by 7% in 2020 (KVK Regiodata, 2020) and 37.4% of people occasionally buy secondhand clothes (Dijksterhuis & van Baaren, 2020). However, the force of the linear economy is still strong and people continue to buy many new products (Dijksterhuis & van Baaren, 2020). Therefore, we need to know more about individual secondhand consumer behavior and the underlying mechanisms of consumer choice for SHC.

The literature distinguishes three different motivations for SHC, namely financial, hedonistic, and ethical motivations (Gullstrand Edbring et al., 2016; Lo et al., 2019). First, SHP have been purchased for a long time for financial reasons by people who cannot afford entirely new products (Williams & Paddock, 2003; Williams & Windebank, 2000). Secondly, individuals are driven by the hedonistic benefits of SHC, individuals buy SHP to be unique and present themselves according to their vision of their identity (Laitala & Klepp, 2018).

Lastly, driven by concerns regarding mainstream consumption channels and climate change, ethical benefits also play a role in SHC for individuals (Lo et al., 2019; Borusiak, 2020).

People with different backgrounds likely endorse different motivations to engage in SHC. Research has shown that individuals with a low socioeconomic position (SEP) are more likely to engage in SHC for financial reasons, and high SEP individuals are likely motivated by the hedonistic and ethical benefits (Laitala & Klepp, 2018; Guiot & Roux, 2010). However, not much research is done on the impact of an individual's SEP on their endorsement of environmental values (Bal & Stok, 2022). Nonetheless, some studies have shown that individuals with a lower SEP and individuals with a higher SEP are equally motivated to engage in sustainable behaviors which suggests that they have the same environmental values (Bal & Stok, 2022). This likely impacts their willingness to engage in SHC. However, the literature suggests that individuals might experience stigma related to buying SHP which comes with feelings of embarrassment and fear of being perceived as having a low SEP since SHC is often associated with poverty (Laitala & Klepp, 2018; Silva et al., 2021; Paço et al., 2021). Therefore, low SEP individuals may be less inclined to buy SHP.

This current study aims to explain differences and commonalities between low and high SEP individuals in their willingness and motivations to engage in SHC. By doing this, more insight will be given into the crucial factor (SEP) that affects the motivations for buying SHP. This is an important contribution to the field of study since a focus on SEP is often missing in the literature on pro-environmental behavior (Bal & Stok, 2022). Moreover, a focus on SEP is important to be able to create targeted policies that focus on enhancing SHC and changing the consumption patterns of individuals in general. To develop these policies, we need to know how individuals value SHC and what motivates their engagement. To target all SEP groups in society, we must understand the differences between them (Silva et al., 2021).

Motivations for Secondhand Consumption

Financial benefits appear to play an important role, especially, for people with a lower SEP (Laitala & Klepp, 2018). Laitala and Klepp (2018) show that people with experience in SHC often have a lower SEP and buy SHP because of the economic benefits. However, being perceived as somebody that buys SHP comes with embarrassment since SHP are often associated with poverty (Silva et al., 2021; Paço et al., 2021). Therefore, buying SHP can lead to the stigma of being perceived as having a lower SEP which likely leads to less engagement in SHC (Laitala & Klepp, 2018). According to Hamilton and Catteral (2006), individuals can act in disconfirmation with negative stereotypes and stigma. Therefore, low SEP individuals likely want to distance themselves from the stigma and consume in ways that do not confirm the stereotypes and the stigma of poverty that is associated with SHC.

Involvement in secondhand buying can also be motivated by hedonistic benefits, which occurs in particular when buying secondhand is instigated by the need to have style, be unique, and experience pleasure (Lo et al., 2019). Cervellon et al., (2012) show a contrast between buying secondhand clothes and vintage fashion. Whereas secondhand clothing shopping is often motivated by saving money, vintage clothing is about purchasing unique and rare products. Buyers of these vintage products often have a high SEP. Therefore, naming SHP or stores as vintage is also sometimes used as a marketing strategy (Cervellon et al., 2012).

Climate concerns also led to an increase in SHC meaning that people engage in SHC because of its ethical benefits (Lo et al., 2019). However, it is not clear whether there are differences between low and high SEP individuals in the endorsement of these ethical motivations. Research has shown that high SEP individuals are more likely to engage in pro-environmental behavior in general (Eom et al., 2018; Schwartz et al., 2020). They also identify themselves more often as being pro-environmental (Moser & Kleinhückelkotten,

2018). Nonetheless, it is not clear from the literature whether people engage in SHC because they identify as pro-environmental. For that reason, it is important to look at which values can explain pro-environmental behavior in general, and how the motivations for SHC can be translated into these values.

Values and Pro-Environmental Behavior

Value-Belief-Norm (VBN) theory is commonly used to explain why individuals do or do not engage in sustainable behaviors (Stern et al., 1999; Jansson et al., 2011). Especially values play an essential role in explaining pro-environmental behavior because the values an individual deems important affects their behavioral decisions (Buerke et al., 2016; Dietz, 2016).

VBN literature often distinguishes between self-transcending and self-enhancing values (Steg et al., 2014; De Groot & Steg, 2008). Self-transcending values, such as altruism and biospheric values, motivate people to behave sustainably. Altruism means that people value the welfare of others even when it is not benefiting themselves, and biospheric values are about appreciating the ecosystem and the environment. In contrast, self-enhancing values often prevent people from acting sustainably, including egoistic and hedonistic values. Egoistic values are about appreciating power, wealth, and personal achievements, and hedonism is about valuing one's comfort and pleasure (Steg et al., 2014; Dietz, 2016; De Groot & Steg, 2008; Bal & Stok, 2022).

These values can be compared with the motivations for SHC. In VBN theory altruistic and biospheric values are perceived as self-transcending, which could also be argued for the ethical motivation for SHC when people engage in SHC because it is sustainable (Lo et al., 2019). In contrast, like the egoistic and hedonistic values, the hedonistic and financial motivations for SHC can also be self-enhancing because they are driven by self-interest.

According to the study by Yadav (2016), individuals who attach importance to altruism want to do what is good for others and the earth and therefore want to consume more sustainably. Moreover, it can be expected that biospheric values lead to SHC because people who value the earth want to consume in a way that preserves this (De Groot & Steg, 2008). It is likely that for low SEP individuals the relationship between self-transcending values and SHC is suppressed by feelings of stigma, therefore, it can be expected that they engage less in SHC. However, high SEP individuals did not experience stigma related to SHC, therefore, self-transcending values play a bigger role for them which leads to more pro-environmental behavior, including SHC.

Opposed to what is proposed by VBN theory, it can be expected that at times self-enhancing values can also lead to SHC since literature on pro-environmental behavior and SHC indicates that engagement can also be driven by self-interest.

First, egoistic values can lead to SHC because engagement can be driven by a need for status. Uren et al., (2021) show that a green status can drive people to engage in pro-environmental behavior, especially when this behavior is visible to others (Brick et al., 2017). Therefore, SHP can function as a symbol of a green status (Fredriksson, 2013). Since high SEP individuals perceive themselves more often as having a pro-environmental identity, which leads to more pro-environmental behavior (Whitmarsh & O'Neill, 2010), it is likely that for them egoistic values more often lead to SHC because it would enhance their green status (Moser & Kleinhückelkotten, 2018).

Secondly, people also engage in SHC because they find pleasure in searching for unique pieces and finding low-priced items (Lo et al., 2019). Thus, they engage in SHC because they value hedonism. However, this relationship is likely to be stronger for high SEP individuals because they are engaging in SHC to purchase vintage products (Cervellon et al., 2012; Kessous & Valette-Florence, 2019).

Additionally, because a study in Germany has shown that people are becoming less motivated to engage in SHC because of financial motivations (Steffen, 2017), it is especially interesting to translate the hedonistic and ethical motivation of SHC into the values of VBN theory. Since biospheric and hedonistic values match those motivations most closely, they are likely stronger predictors of SHC than altruistic and egoistic values.

Thus, when comparing the motivations for SHC with the values from VBN theory it becomes clear that the distinction between self-transcending and self-enhancing values is not straightforward. It is, therefore, useful to look at the values in relation to SHC to show that self-enhancing values could also motivate pro-environmental behavior. Moreover, since the role of SEP remained relatively unstudied in VBN literature (Bal & Stok, 2022) and VBN studies have focused on many different sustainable behaviors but not often on circular consumption (Gomes et al., 2022), including SHC, it is important to focus on SEP in relation to values and SHC.

Current Research

The purpose of this current study is to shed light on differences between low and high SEP individuals in their engagement in SHC, the role of values in this sustainable behavior, and how these relate to the financial, hedonistic, and ethical motivations for SHC. By bringing values and SHC together more insight will be given into the workings of SHC and by focusing on SEP and the role of values in SHC a nuance will be provided to VBN theory.

An interdisciplinary approach is needed since involvement in sustainable behaviors proved to be complex. Moreover, in SHC interdisciplinarity plays a large role. It is not merely about economics, it also involves social and cultural meanings and sustainability (Hansen & Le Zotte, 2019). This current study interweaves the different disciplines by outlining the complex picture of the culture and workings of SHC as a whole. The values based on VBN theory come from a combination of social and environmental psychology, SEP is based on

research from sociology, and lastly, the variables on SHC are based on environmental research.

Overview and Hypotheses

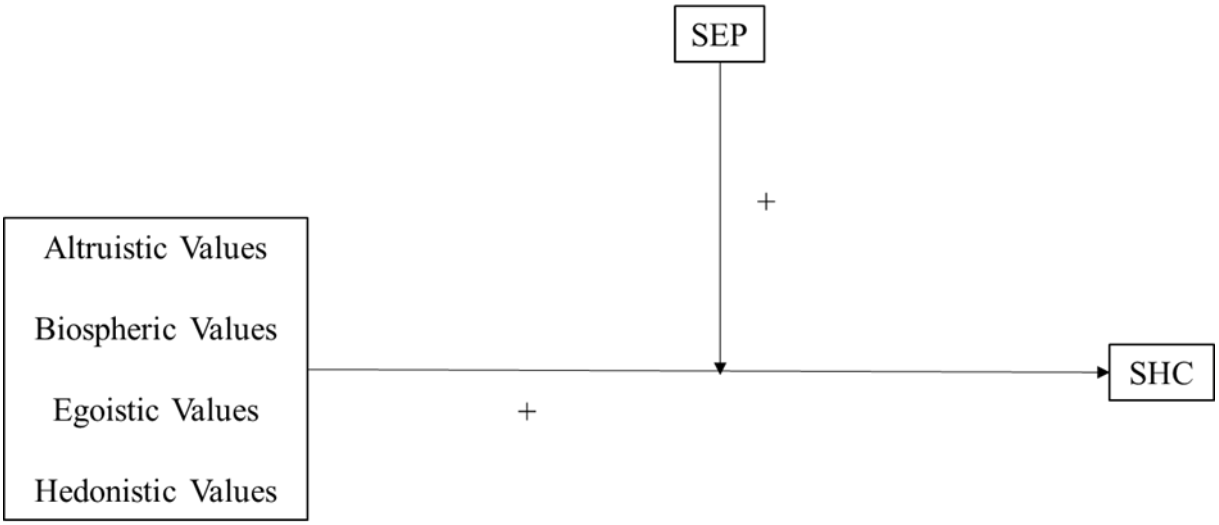
The following research question is proposed ‘To what extent can altruistic, biospheric, egoistic, and hedonistic values explain the willingness to engage in SHC, and is this different between SEP groups?’.

The hypotheses for this study are twofold. First, since the literature on SHC has shown that, besides financial benefits, people are motivated to engage in SHC because of the hedonistic and ethical benefits, expected that, besides altruistic and egoistic values, especially biospheric and hedonistic values lead to more SHC since they most closely match with the hedonistic and ethical motivations for SHC.

Second, it can be expected that these relationships are moderated by SEP since it is likely that low SEP individuals want to distance themselves from the stigma around SHC and therefore, high SEP individuals are more likely to act in accordance with their values and their green identity in comparison to low SEP individuals (see Figure 1).

Figure 1

Graphical Representation of Hypotheses



Methods

Sample

Three datasets were used from the LISS (Longitudinal Internet studies for the Social Sciences) panel administered by CentERdata (Tilburg University, The Netherlands) through which access was requested. The dataset State of the Environment and Environmental Policy was used from a single-wave study conducted in April 2020. Based on this collection date, the waves of the datasets Personality and Background Variables were selected, see Table 1 for information about the datasets. The LISS panel consists of 5,000 households in the Netherlands, including about 7,500 individuals (LISS Panel – Centerdata(a), n.d.).

Table 1

Description of Used Datasets

Dataset	Sent Out	Frequency	Response	Participants	Main Variables Based on Dataset	Reference
State of the Environment and Environmental Policy	April 2020	Single Wave	2.778, of which 2.092 completed	18 years or older	SHC & Biospheric Values	Elshout, 2021
Personality Wave 12 (part of the LISS Core Study)	May and June 2020	Yearly	5.923, of which 5.859 completed	All panel members aged 16 years or older	Altruistic Values, Egoistic Values, & Hedonistic Values	Marchand, 2020; LISS Panel – Centerdata(c), n.d.
Background Variables	April 2020	Monthly, since 2007	10.875	All panel members	SEP, Education, & Control Variables (Gender & Age)	Elshout, 2022

Relevant items of each dataset were selected (see Appendix A) and combined into a new dataset based on respondent's ID (total N = 10.876). The Background Variables and the Personality questionnaires were filled in by many more participants than the questionnaire State of the Environment and Environmental Policy. To make the most statistically valid claims only the participants that filled in all questionnaires were included, leading to a dataset for analysis of 1859 participants (see Table 2).

Table 2

Frequencies of Categorical Variables

	Frequency	%	Valid %	Cumulative %
Sex				
Male	924	49.7	49.7	49.7
Female	935	50.3	50.3	100.0
Total	1859	100.0	100.0	
SEP				
Low SEP	1082	58.2	58.2	58.2
High SEP	677	36.4	36.4	94.6
Missing	100	5.4	5.4	100.0
Total	1859	100.0	100.0	
Education				
Low Education	1138	61.2	61.2	61.2
High Education	721	38.8	38.8	100.0
Total	1859	100.0	100.0	

Procedure

After registering and finishing the first questionnaire, participants were asked to give consent, and then became officially part of the panel (LISS Panel – Centerdata(b), n.d.). Panel members are asked monthly to fill in questionnaires on various topics. All questionnaires had to be filled in online; participants without internet and a computer were provided with this (LISS Panel – Centerdata(a), n.d.). The monthly duration of completing questionnaires is on average 15 to 30 minutes. Panel members are paid an unknown amount for each completed questionnaire (LISS Panel – Centerdata(a), n.d.).

Ethical Conduct

The ethical committee of the Faculty of Social and Behavioral Sciences of Utrecht University gave its approval (number 22-1053). The datasets did not include potentially identifying information about the participants. Data was only used for this study. Following

faculty protocol, data was stored in the researcher's u-disk to which only the researcher has access. Thereafter, it is stored on a secured drive for seven years. Centerdata protects the data following the European "General Data Protection Regulation" (LISS Panel – Centerdata(b). n.d.).

Dependent Variable

Secondhand Consumption

Three items were selected for the SHC scale (a = .57)[1], for example, "I regularly buy second-hand products" (see Appendix B). The items were asked on a scale ranging from 1 (completely disagree) to 5 (completely agree), also including option 6 (don't know) (Elshout, 2021), which was defined as missing in the dataset.

Independent Variables

Values

Participants were asked, "Which values act as guiding principle in your life and which values are less important to you?" Following, a list of values was shown. Answer options ranged from 1 (extremely unimportant) to 7 (extremely important) (Marchand, 2020). Seventeen items were selected that matched altruistic, hedonistic, and egoistic values (see Appendix C) on which a principal component analysis was conducted (see Appendix D). The Kaiser-Meyer-Olkin measure showed the sample adequacy of the analysis, KMO = .90. Three components were extracted based on the Kaiser's criterion (component 1 = 6.37, component 2 = 2.15, and component 3 = 1.40). These components did not fit neatly with the expected component structure. The first component included altruistic and hedonistic values, the second, egoistic and hedonistic values, and the last, altruistic and egoistic values. Since this

[1] Scale scores were calculated by averaging the items, for the SHC scale only including participants with valid scores on all three items, for the altruistic, egoistic, and hedonistic values scale including all participants, and the biospheric scale includes participants with valid scores on four of the five items (to deal with missing data on this scale, participants that missed more than one item were not included in the analyses which was necessary to create equally sized samples for all data analyses using variables from different datasets).

overlap between the values scales did not match with the literature, it was decided to create, partly based on the principal component analysis, three value scales that do match with the literature.

Three items were selected for the altruistic values scale (for example "equality") (a = .67), two items for the egoistic values scale (for example "social recognition") (a = .75), and three items for the hedonistic values scale (for example "freedom") (a = .68). The biospheric values were measured using five items[2] (a = .81), such as "Our health and quality of life depend on healthy nature" (see Appendix B).

Moderator Variable

Socioeconomic Position

SEP was measured by income using the item "Personal net monthly income in Euros", measured on a scale ranging from 0 (no income) to 12 (more than EUR 7500), also including option 13 (I don't know) and 14 (I prefer not to say) which were defined as missing values (Elshout, 2022). To create the most equally sized groups, participants were categorized as low SEP (N = 1082) when net income was up to 2000 euros monthly, or as high SEP (N = 677) when net income was 2001 euros per month or higher.

Analyses

IBM SPSS Statistics 28 was used to analyze the data. First, descriptive statistics were calculated, including correlations between variables (described only correlations including the SHC variable and when the correlation size was at least small (>.10)). Secondly, assumptions for linear regression and moderation analyses were checked. No assumptions were violated; based on Cook's distance, no outliers were found in the sample, the models were linear and normally distributed, and homoscedasticity of variance was shown. To be able to conduct the

[2] Since this variable stems from the same dataset as the SHC variable, see the SHC variable for the range of the scale.

moderation analyses, the independent variables were centered. Thereafter, the hypotheses were tested in three steps. First, linear regression analyses were conducted between the control variables and SHC. Second, linear regression analyses were performed between the value scales and SEP on SHC. Third, linear regression analyses were performed including an interaction term between the value scales and SEP on SHC.

Results

Descriptive Statistics

Participants on average are slightly supportive of SHC (see Table 3). Additionally, the participants attach importance to all values on average. Participants attach high importance to altruistic and biospheric values and are also in favor of hedonistic and egoistic values.

Table 3

Descriptive Statistics of Measures

	Min.	Max.	M (*SD*)	Median
Altruistic Values	1	7	6.02 (.86)	6.00
Biospheric Values	1	5	3.89 (.61)	4.00
Egoistic Values	1	7	4.65 (1.21)	5.00
Hedonistic Values	1	7	5.26 (.92)	5.33
SHC	1	5	3.32 (.69)	3.33
Age	18	102	54.78 (17.60)	58.00

Several socio-demographic and value-based variables are positively correlated with SHC (see Table 4). High-educated and female participants tend to be slightly more supportive of SHC. Moreover, participants that valued biospheric items tend to be more supportive of SHC. In comparison, participants that attach importance to egoistic values are less supportive of SHC.

Table 4

Bivariate Correlations Between Variables

		1.	2.	3.	4.	5.	6.	7.	8.	9.
1.	SHC	-								
2.	Altruistic Values	.088**	-							
3.	Biospheric Values	.345**	.225**	-						
4.	Egoistic Values	-.176**	.198**	-.119**	-					
5.	Hedonistic Values	-.093**	.325**	-.047*	.595**	-				
6.	High SEP (ref. low SEP)	-.057*	-.026	-.008	.005	.040	-			
7.	High Education (ref. low education)	.134**	-.068**	.165**	-.093**	-.079**	-.001	-		
8.	Female (ref. male)	.135**	.205**	.107**	-.096**	.005	-.032	-.041	-	
9.	Age	-.057*	.242**	.003	.095**	-.098**	-.046*	-.088**	-.030	-

Note. Two-sided test * $p < 0.05$, ** $p < 0.01$.

Moreover, four linear regression analyses were conducted between SEP and the four value scales to test whether low and high SEP individuals score differently on these scales. However, in all analyses, SEP did not function as a significant predictor of the value scales.

The Effect of Values and SEP on SHC

To test which of the independent variables is best in predicting SHC (H1), a linear regression analysis was conducted including all value scales and SEP ($R^2 = .14$, $F(5) = 61.59$, $p = <.001$) (see Model 1, Table 5). The significant positive relationship between biospheric values and SHC indicates that participants who attach importance to biospheric values are more likely to engage in SHC. In contrast, SEP and egoistic values are negative predictors of SHC, meaning that high SEP participants and participants who attach importance to egoistic values are less likely to engage in SHC. When comparing the standardized betas of these

predictors it becomes clear that the biospheric values variable is the strongest predictor of SHC, followed by egoistic values and SEP.

After adding the control variables (see Model 2, Table 5) (R^2 = .16, $F(8)$ = 43.12, p = <.001), the altruistic values variable also became a significant positive predictor of secondhand consumption. In this model altruistic values, biospheric values, egoistic values, SEP, education, gender, and age are all significant predictors of SHC of which biospheric values still is the strongest.

Table 5

Linear Regression Analysis of all Predictors and Controls on SHC

	Model 1				Model 2			
	b (*CI 95%*)	*SE B*	*β*	*p*	*b* (*CI 95%*)	*SE B*	*β*	*p*
Constant	3.327 (3.297, 3.357)	0.015		0.000**	3.348 (3.235, 3.461)	0.058		0.000**
Altruistic Values	0.037 (0.000, 0.074)	0.019	0.046	.052	0.043 (0.003, 0.083)	0.020	0.053	.034*
Biospheric Values	0.358 (0.308, 0.407)	0.025	0.317	<.001**	0.335 (0.285, 0.385)	0.026	0.297	<.001**
Egoistic Values	-0.082 (-0.112, -0.052)	0.015	-0.144	<.001**	-0.066 (-0.097, -0.036)	0.016	-0.116	<.001**
Hedonistic Values	-0.004 (-0.045, 0.037)	0.021	-0.005	.853	-0.019 (-0.068, 0.021)	0.022	-0.025	.381
High SEP (ref. Low SEP)	-0.002 (-0.003, 0.000)	0.001	-0.052	.016*	-0.002 (-0.003, 0.000)	0.001	-0.051	.017*
High Education (ref. Low Education)					0.106 (0.045, 0.167)	0.031	0.074	<.001**
Female (ref. Male)					0.112 (0.052, 0.172)	0.031	0.081	<.001**
Age					-0.002 (-0.004, 0.000)	.001	-0.055	.017*
N	1859				1859			
R^2	.143				.157			
ΔR^2	.143				.015			

Note. Two-sided test * $p < 0.05$, ** $p < 0.01$, unstandardized coefficients are reported.

SEP as Moderator in the Relationship Between Values and SHC

It was calculated in three steps whether SEP functions as a moderator in the relationship between values and SHC. First, a linear regression analysis was conducted between the control variables and SHC which remained constant in all following moderation analyses ($R^2 = .021$, $F(2) = 19.886$, $p = <.001$) (see Model 1, Table 6a/b). The small R^2 of this model indicates that the control variables by themselves do not explain much of the variance

in the model. A small positive relationship between females and SHC indicates that women are more likely to engage in SHC. Moreover, older participants are slightly less likely to engage in SHC. However, this effect is even smaller.

Thereafter, linear regression analyses were conducted between the predictor variables and SHC (see Models a in Table 6a/b). Subsequently, linear regression analyses were conducted including interaction terms between the value scales and SEP to test whether SEP functions as a moderator in the relationship between the value scales and SHC (see Models b in Table 6a/b). However, the results demonstrate that in none of the models SEP functions as a moderator in the relationship between values and SHC (βs < 0.009, ps > .706).

Table 6a

Linear Regression Analyses of Control Variables, Altruistic Values, Biospheric Values, Egoistic Values, Hedonistic Values, and SEP on SHC

	Model 1				Model 2a				Model 2b				Model 3a				Model 3b			
	b (CI 95%)	*SE B*	*β*	*p*	*b (CI 95%)*	*SE B*	*β*	*p*	*b (CI 95%)*	*SE B*	*β*	*p*	*b (CI 95%)*	*SE B*	*β*	*p*	*b (CI 95%)*	*SE B*	*β*	*p*
Constant	3.338 (3.230, 3.445)	0.055		.000**	3.410 (3.298, 3.523)	0.057		.000**	3.410 (3.298, 3.523)	0.057		.000**	3.383 (3.281, 3.485)	0.052		.000**	3.384 (3.281, 3.486)	0.052		.000**
Female (ref. Male)	0.184 (0.112, 0.247)	0.032	0.133	<.001**	0.158 (0.094, 0.222)	0.032	0.114	<.001**	0.158 (0.094, 0.221)	0.032	0.114	<.001**	0.132 (0.073, 0.191)	0.030	0.096	<.001**	0.132 (0.073, 0.191)	0.030	0.096	<.001**
Age	-0.002 (-0.004, 0.000)	0.001	-0.053	.022*	-0.003 (-0.005, -0.001)	0.001	-0.076	.001**	-0.003 (-0.005, -0.001)	0.001	-0.075	.001**	-0.002 (-0.004, -0.001)	0.001	-0.057	.008	-0.002 (-0.004, -.001)	0.001	-0.057	.008**
High SEP (ref. Low SEP)					-0.002 (-0.003, 0.000)	0.001	-0.054	.018*	-0.002 (-0.003, 0.000)	0.001	-0.054	.020*	-0.002 (-0.003, 0.000)	0.001	-0.053	.014*	-0.002 (-0.003, 0.000)	0.001	-0.054	.014*
Altruistic Values					0.066 (0.028, 0.105)	0.020	0.082	<.001**	0.064 (0.024, 0.104)	0.020	0.079	.002 **								
Altruistic X SEP									0.000 (-0.001, 0.002)	0.001	0.009	.706								
Biospheric Values													0.378 (0.329, 0.426)	0.024	0.335	<.001**	0.378 (0.328, 0.428)	0.025	0.335	<.001**
Biospheric X SEP																	-0.000 (-0.002, 0.002)	0.001	-0.002	.946
Egoistic Values																				
Egoistic X SEP																				
Hedonistic Values																				
Hedonistic X SEP																				
N	1859				1859				1859				1859				1859			
R^2	.021				.030				.030				.135				.135			
ΔR^2	.021				.009				.000				.114				.000			

Note. Two-sided test * $p < 0.05$, ** $p < 0.01$, including models 1 – 3b, unstandardized coefficients are reported.

Table 6b

Linear Regression Analyses of Control Variables, Altruistic Values, Biospheric Values, Egoistic Values, Hedonistic Values, and SEP on SHC

	Model 1				Model 4a				Model 4b				Model 5a				Model 5b			
	b (CI 95%)	*SE B*	*β*	*p*	*b (CI 95%)*	*SE B*	*β*	*p*	*b (CI 95%)*	*SE B*	*β*	*p*	*b (CI 95%)*	*SE B*	*β*	*p*	*b (CI 95%)*	*SE B*	*β*	*p*
Constant	3.338 (3.230, 3.445)	0.055		.000**	3.333 (3.226, 3.440)	0.055		.000**	3.333 (3.226, 3.440)	0.055		.000**	3.374 (3.266, 3.482)	0.055		.000**	3.374 (3.266, 3.482)	0.055		.000**
Female (ref. Male)	0.184 (0.112, 0.247)	0.032	0.133	<.001**	0.161 (0.099, 0.223)	0.031	0.117	<.001**	0.161 (0.099, 0.223)	0.032	0.117	<.001**	0.182 (0.120, 0.244)	0.032	0.132	<.001**	0.182 (0.120, 0.244)	0.032	0.132	<.001**
Age	-0.002 (-0.004, 0.000)	0.001	-0.053	.022*	-0.002 (-0.003, 0.000)	0.001	-0.040	.078	-0.002 (-0.003, 0.000)	0.001	-0.040	.078	-0.003 (-0.004, -0.001)	0.001	-0.065	.005**	-0.003 (-0.004, -.001)	0.001	-0.065	.005**
High SEP (ref. Low SEP)					-0.002 (-0.003, 0.000)	0.001	-0.054	.017*	-0.002 (-0.003, 0.000)	0.001	-0.054	.017*	-0.002 (-0.003, 0.000)	0.001	-0.052	.024*	-0.002 (-0.003, 0.000)	0.001	-0.052	.025*
Altruistic Values																				
Altruistic X SEP																				
Biospheric Values																				
Biospheric X SEP																				
Egoistic Values					-0.092 (-0.117, -0.066)	0.013	-0.161	<.001**	-0.092 (-0.118, -0.066)	0.013	-0.161	<.001**								
Egoistic X SEP									0.000 (-0.001, 0.001)	0.001	0.000	.991								
Hedonistic Values													-0.074 (-0.108, -0.040)	0.017	-0.098	<.001**	-0.075 (-0.110, -0.040)	0.018	-0.099	<.001**
Hedonistic X SEP																	0.000 (-0.001, 0.002)	0.001	0.003	.897
N	1859				1859				1859				1859				1859			
R^2	.021				.050				.050				.034				.034			
ΔR^2	.021				.029				.000				.013				.000			

Note. Two-sided test * $p < 0.05$, ** $p < 0.01$, including models 1, 4a – 5b, unstandardized coefficients are reported.

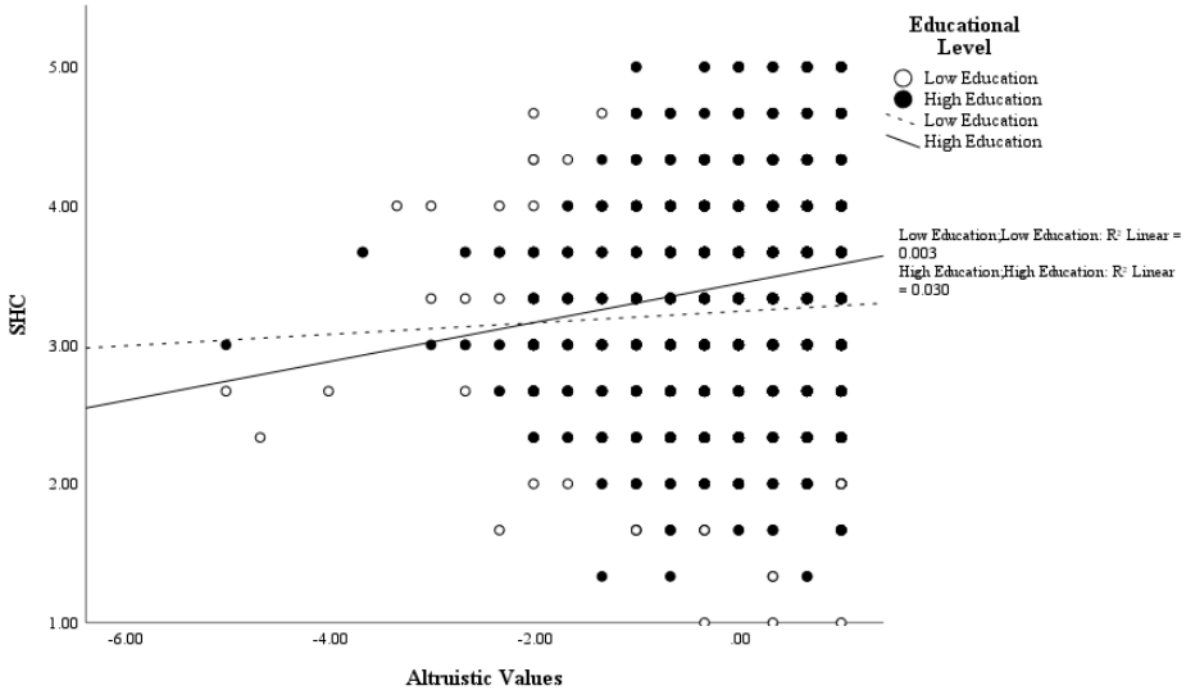
Additional Measures

To test for the robustness of findings the analyses were also conducted for a second time with education as a measure of SEP using the item "Level of education in CBS (Statistics Netherlands) categories" measured from 1 (primary education) to 6 (university) (Elshout, 2022). The participants were categorized as having a low education (N = 1138) when scoring on post-secondary vocational education (MBO) or lower, or as having a high education (N = 677) when scoring on HBO or university.

The findings are fairly similar as the results described above besides one difference; in the model with altruistic values and SHC (R^2 = .05, $F(5)$ = 19.25, p = <.001) the interaction term between altruistic values and high education (b = 0.09, β = 0.07, p = .02) was significant. Thus, the relationship between altruistic values and SHC is stronger for highly educated individuals than for low-educated individuals (see Figure 2).

Figure 2

The effect of Altruistic Values and Education on SHC



Discussion

This study aimed to link the literature on SHC motivations to the values of VBN theory to shed light on SHC as pro-environmental behavior, which is important since VBN studies rarely focused on circular consumption (Gomes et al., 2022), including SHC. This current study nuances the existing findings of VBN studies by showing that self-transcending

values are positively related to sustainable behavior and that self-enhancing values are negatively related to sustainable behavior. It was expected that the relationship between values and SHC is stronger for high SEP individuals since they more often engage in pro-environmental behavior (Eom et al., 2018) and because low SEP individuals likely want to distance themselves from the stigma around SHC (Hamilton & Catterall, 2006). While the main analyses, where income was included as a measure of SEP, did not yield significant moderation effects of SEP in the relationship between values and SHC, including education as a measure of SEP in the analyses, did show that the relationship between altruistic values and SHC is moderated by education. Thus, the relationship between altruistic values and SHC is stronger for highly educated individuals than for low-educated individuals.

The first hypothesis was not fully confirmed by the findings. It was expected that all values could lead to engagement in SHC, of which biospheric and hedonistic values were likely the strongest predictors since they most closely match the hedonistic and ethical motivation for SHC. However, in line with VBN theory, the results demonstrate that biospheric and altruistic values indeed lead to more SHC and that hedonistic and egoistic values lead to less SHC. This latter finding was surprising as earlier studies revealed hedonism as a motivation for SHC (Lo et al., 2019, Laitala & Klepp, 2018). However, according to Dietz (2016), hedonism is about pleasure and comfort. Since pro-environmental behavior often requires changes in one's lifestyle, this holds back people who value hedonism to engage in pro-environmental behavior. SHC might be perceived as costing too much effort since it requires an active search for unique pieces. Moreover, according to Brick et al., (2017), engagement in pro-environmental behavior is more likely to happen when this behavior is visible to others. It could be that engagement in SHC is not directly visible to others and not primarily seen as a green behavior which can explain why egoistic values did not lead to more SHC.

The second hypothesis was partly confirmed by the results when using education as a measure of SEP in the relationship between altruistic values and SHC. This indicates that this relationship is stronger for highly educated individuals than for low-educated individuals. According to Eom et al., (2018), education can be used to measure social status and income can be used to measure economic status, when added together they form an individual's SEP. This distinction is visible in the study on political consumption by Baumann et al., (2015). They found that education was the only significant predictor of political consumption. In contrast to having a high income, being highly educated can be linked to having more cultural capital, according to the researchers. For that reason, it is likely that highly educated individuals who attach importance to altruistic values have more cultural capital and therefore are more likely to engage in SHC as opposed to individuals with a high income.

However, SEP measured as education does not function as a moderator between the other values and SHC. Also, no differences were found in the relationship between values and SHC when SEP was based on income. It might be that whereas other pro-environmental behaviors can be expensive to engage in (e.g., buying an electric car) (Matthies & Mertens, 2022), SHC does not have additional costs, it is even something that you can save money on (Lo et al., 2019). This is in line with the study of Matthies and Merten (2022) who also found no differences between low- and high-income groups in curtailment behaviors. This indicates that it is equally possible for both groups to engage in the curtailment behavior of SHC.

Evaluation and Limitations

Several existing datasets needed to be used to answer the research question. This led to methodological limitations worth mentioning here. First and foremost, since the used datasets did not have the same sample size, a large part of the total sample needed to be excluded from the final sample. This might impact the representativity of the sample and the ability to generalize the findings to the population. However, since the sample size was still large, it did

not pose a threat to the data analysis. Second, not all values are equally comparable since the analyzed constructs were not measured on the same range. Therefore, it was decided to look at the beta values of the predictors instead of the b-coefficient values.

Studying existing data can also be useful. Since much research has been done and much data has been collected, it was not necessary to collect new data. In this current study, data from the LISS panel was used, which is a representative sample of the Dutch population. It would have been hard to collect new data that was equally representative for this current study.

Future research and Policy Recommendations

Despite the expectations, the results align better with VBN theory than with the literature on SHC motivations. In addition, no differences were found in the main analyses between SEP groups in the relationship between values and SHC. In this study, it was decided to use income as the main operationalization of SEP since people can be motivated to engage in SHC because of the financial benefits (Laitala & Klepp, 2018). However, since an interaction effect was found between high education and altruistic values in the additional analyses it would be useful to include other operationalization of SEP as well. As the study of Baumann et al., (2015) also demonstrated differences in the results when SEP was based on education in comparison to income (which was explained by the amount of cultural capital attached to educational levels), it would be valuable to include a broader operationalization of cultural capital in future research. This is important because it can explain the underlying mechanisms of differences between SEP groups in pro-environmental behavior.

Moreover, this current study showed that especially biospheric values lead to more SHC. According to Van den Broek et al., (2017), people who attach importance to certain values are more likely to engage in the aimed behavior when policy messages focus on those

values. Therefore, it would be useful to highlight the ethical benefits of SHC in policies to increase engagement in SHC.

Conclusion

Since VBN studies rarely focused on circular consumption (Gomes et al., 2022), this study contributes to the field of pro-environmental behavior studies by focusing on SHC. This study gives insight into the underlying mechanisms of SHC by demonstrating that self-transcending values lead to more SHC whereas self-enhancing values lead to less SHC, regardless of SEP. This insight is important since the force of the linear economy is still very strong and a shift to SHC is needed (Dijksterhuis & van Baaren, 2020). To increase engagement, policies can use the slogan ‘Love the earth? Engage in SHC’ to inspire individuals who attach importance to biospheric values to engage in SHC.

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Appendix A

Downloaded Items from the Datasets

Downloaded Items from State of the Environment and Environmental Policy

qk20a135

qk20a147

qk20a148

qk20a175

qk20a177

qk20a181

qk20a182

qk20a183

Downloaded Items from Personality Wave 12

cp20l099

cp20l100

cp20l101

cp20l102

cp20l103

cp20l104

cp20l105

cp20l106

cp20l107

cp20l108

cp20l109

cp20l110

cp20l111

cp20l112

cp20l113

cp20l114

cp20l115

cp20l116

cp20l117

cp20l118

cp20l119

cp20l120

cp20l121

cp20l122

cp20l123

cp20l124

cp20l125

cp20l126

cp20l127

cp20l128

cp20l129

cp20l130

cp20l131

cp20l132

cp20l133

cp20l134

Downloaded Items from Background Variables

Nohouse_encr

Geslacht

Gebjaar

Leeftijd

Lftdcat

Belbezig

Brutoink

Brutoink_f

Nettoink

Netinc

Nettoink_f

Brutocat

Nettocat

Brutohh_f

Nettohh_f

Oplzon

Oplmet

Oplcat

Appendix B

Selected Items for Moderation Analyses

Items of the Secondhand Consumption Scale

“I regularly buy second-hand products”

“I am open to buying products made from used parts or materials”

“I prefer new products”

Items of the Altruistic Values Scale

“A World at Peace”

“Equality”

“Loving”

Items of the Hedonistic Values Scale

“A Comfortable Life”

“Pleasure”

“An Exciting Life”

Items of the Egoistic Values Scale

“A Sense of Accomplishment”

“Social Recognition”

Items of the Biospheric Values Scale

“All that attention for nature and the environment is exaggerated”

“Our health and quality of life depend on healthy nature”

“It is a moral duty to care for nature and the environment”

“I am willing to change my lifestyle to help the environment”

“We all need to live simpler lives to protect the environment”

Appendix C

Items for the Values Scales included in the Principal Component Analysis

Items of the Altruistic Values Scale

"Sincere and Truthful"

"Responsible"

"Forgiving"

"Helpful"

"A World at Peace"

"Equality"

"Loving"

Items of the Hedonistic Values Scale

"Freedom"

"Inner Harmony"

"A Comfortable Life"

"Pleasure"

"An Exciting Life"

"Self-respect"

Items of the Egoistic Values Scale

"Hardworking"

"Self-controlled"

"A Sense of Accomplishment"

"Social Recognition"

Appendix D

Results of Principal Component Analysis

	Component		
	1	2	3
Altruistic Values			
Sincere and truthful			-.665
Responsible			-.788
Forgiving			-.574
Helpful			-.663
Loving	.377		
A world at peace	.647		
Equality	.766		
Egoistic Values			
Hardworking			-.790
Self-controlled		.323	-.691
A sense of accomplishment		.743	
Social recognition		.796	
Hedonistic Values			
Freedom	.750		
Self-respect	.697		
Inner harmony	.573		
A comfortable life		.627	
Pleasure	.468	.436	
An exciting life		.776	

Note. Principal Component Analysis with Oblimin Rotation.

Appendix E

Data Analysis Syntax

```
*save original file.
SAVE OUTFILE='U:\My Documents\Data bestand master thesis versie 3\Bronbestand master thesis data versie
3.sav'
  /COMPRESSED.
*save working file.
SAVE OUTFILE='U:\My Documents\Data bestand master thesis versie 3\Werkbestand master thesis versie
3.sav'
  /COMPRESSED.
*add variable labels to items from environmental policy questionnaire.
VARIABLE LABELS qk20a135 'I regularly buy second-hand products'.
VARIABLE LABELS qk20a147 'I am open to buying products made from used parts or materials'.
VARIABLE LABELS qk20a148 'I prefer new products'.
VARIABLE LABELS qk20a175 'I am willing to change my lifestyle to help the environment'.
VARIABLE LABELS qk20a177 'All that attention for nature and the environment is exaggerated'.
VARIABLE LABELS qk20a181 'We all need to live simpler lives to protect the environment'.
VARIABLE LABELS qk20a182 'Our health and quality of life depend on healthy nature'.
VARIABLE LABELS qk20a183 'It is a moral duty to care for nature and the environment'.
*change names items environmental policy questionnaire and divide in SHC and Bio values.
RENAME VARIABLES (qk20a135 TO qk20a148 = SHC1 TO SHC3).
RENAME VARIABLES (qk20a175 TO qk20a183 = BioValues1 TO BioValues5).
*add value labels to items SHC and Biospheric values.
VALUE LABELS *recode system missing values of environmental policy questionnaire in 99 and add value lable
of missing value.
RECODE SHC1 TO BioValues5 (SYSMIS = 99).
EXECUTE.
ADD VALUE LABELS SHC1 TO BioValues5 99 'Recoded system missing value'.
MISSING VALUES SHC1 TO BioValues5 (99).
*making a variable for missings on SHC1.
COMPUTE mis_1 = missing(SHC1).
EXECUTE.
* move flagged cases to top of file.
SORT CASES mis_1 (d).
*Delete everbody not scoring on mis_1.
SELECT IF (mis_1=0). SHC1 TO SHC3 1 'Completely disagree' 2 'Disagree' 3 'Neither disagree, nor agree' 4 'Agree'
5 'Completely agree'.
VALUE LABELS BioValues1 TO BioValues5  1 'Completely disagree' 2 'Disagree' 3 'Neither disagree, nor agree' 4
'Agree' 5 'Completely agree'.
*Frequencies of SHC1 to BioValues5.
FREQUENCIES VARIABLES=SHC1 SHC2 SHC3 BioValues1 BioValues2 BioValues3 BioValues4 BioValues5
  /ORDER=ANALYSIS.
*recode system missing values of personality wave 12 questionnaire in 99 and add value label of missing.
RECODE cp20l099 TO cp20l134 (SYSMIS = 99).
EXECUTE.
ADD VALUE LABELS cp20l099 TO cp20l134 99 'Recoded system missing value'.
MISSING VALUES cp20l099 TO cp20l134 (99).
VALUE LABELS cp20l099 TO cp20l134 1 'Extremely unimportant' 2 'Low importance' 3 'Slightly important' 4
'Neutral' 5 'Moderatly important' 6 'Very important' 7 'Extremely important'.
* Frequencies of variables from Personality wave 12.
FREQUENCIES VARIABLES=cp20l099 cp20l100 cp20l101 cp20l103 cp20l104 cp20l105 cp20l106 cp20l107
    cp20l108 cp20l109 cp20l110 cp20l111 cp20l112 cp20l113 cp20l114 cp20l115 cp20l116 cp20l117 cp20l118
    cp20l119 cp20l120 cp20l121 cp20l122 cp20l123 cp20l124 cp20l125 cp20l126 cp20l127 cp20l128 cp20l129
    cp20l130 cp20l131 cp20l132 cp20l133 cp20l134 cp20l102
  /ORDER=ANALYSIS.
```

```
*making a variable for missings on cp20l099. .
COMPUTE mis_2 = missing(cp20l099).
EXECUTE.
* move flagged cases to top of file.
SORT CASES mis_2 (d).
*verwijder iedereen die niet scoort op mis_1.
SELECT IF (mis_2=0).
*Frequencies after deleting data of personality wave 12 that was missing.
FREQUENCIES VARIABLES=cp20l099 cp20l100 cp20l101 cp20l103 cp20l104 cp20l105 cp20l106 cp20l107
    cp20l108 cp20l109 cp20l110 cp20l111 cp20l112 cp20l113 cp20l114 cp20l115 cp20l116 cp20l117 cp20l118
    cp20l119 cp20l120 cp20l121 cp20l122 cp20l123 cp20l124 cp20l125 cp20l126 cp20l127 cp20l128 cp20l129
    cp20l130 cp20l131 cp20l132 cp20l133 cp20l134 cp20l102
  /ORDER=ANALYSIS.
*adding variable labels to variables of personality wave 12 questionnaire.
VARIABLE LABELS cp20l099 'Sincere and truthful'.
VARIABLE LABELS cp20l100 'Responsible'.
VARIABLE LABELS cp20l101 'Hardworking'.
VARIABLE LABELS cp20l102 'Forgiving'.
VARIABLE LABELS cp20l103 'Open-minded'.
VARIABLE LABELS cp20l104 'Courageous'.
VARIABLE LABELS cp20l105 'Helpful'.
VARIABLE LABELS cp20l106 'Loving'.
VARIABLE LABELS cp20l107 'Capable'.
VARIABLE LABELS cp20l108 'Clean'.
VARIABLE LABELS cp20l109 'Self-controlled'.
VARIABLE LABELS cp20l110 'Independent'.
VARIABLE LABELS cp20l111 'Happy'.
VARIABLE LABELS cp20l112 'Polite'.
VARIABLE LABELS cp20l113 'Intellectual'.
VARIABLE LABELS cp20l114 'Obedient'.
VARIABLE LABELS cp20l115 'Logical'.
VARIABLE LABELS cp20l116 'Creative'.
VARIABLE LABELS cp20l117 'A world at peace'.
VARIABLE LABELS cp20l118 'Family security'.
VARIABLE LABELS cp20l119 'Freedom'.
VARIABLE LABELS cp20l120 'Equality'.
VARIABLE LABELS cp20l121 'Self-respect'.
VARIABLE LABELS cp20l122 'Happiness'.
VARIABLE LABELS cp20l123 'Wisdom'.
VARIABLE LABELS cp20l124 'National security'.
VARIABLE LABELS cp20l125 'Salvation'.
VARIABLE LABELS cp20l126 'True friendship'.
VARIABLE LABELS cp20l127 'A sense of accomplishment'.
VARIABLE LABELS cp20l128 'Inner harmony'.
VARIABLE LABELS cp20l129 'A comfortable life'.
VARIABLE LABELS cp20l130 'Mature love'.
VARIABLE LABELS cp20l131 'A world of beauty'.
VARIABLE LABELS cp20l132 'Pleasure'.
VARIABLE LABELS cp20l133 'Social recognition'.
VARIABLE LABELS cp20l134 'An exciting life'.
*Adding value and variable labels to gender variable.
VALUE LABELS geslacht 1'Male' 2'Female' 3'Other'.
VARIABLE LABELS geslacht 'Sekse'.
*Adding variable labels to gebjaar, leeftijd, lftdcat, belbezig, oplzon, oplmet and oplcat.
VARIABLE LABELS gebjaar 'Year of birth'.
VARIABLE LABELS leeftijd 'Age of the household member'.
VARIABLE LABELS lftdcat 'Age in CBS categories'.
```

```
VARIABLE LABELS belbezig 'Primary occupation'.
VARIABLE LABELS oplzon 'Highest level of education irrespective of diploma'.
VARIABLE LABELS oplmet 'Highest level of education with diploma'.
VARIABLE LABELS oplcat 'Level of education in CBS (Statistics Netherlands) categories'.
*Value labels to primary occupation.
VALUE LABELS belbezig 1 'Paid employment' 2 'Works or assists in family business' 3 'Autonomous professional, freelancer, or self-employed' 4 'Job seeker following job loss' 5 'First-time job seeker' 6 ' Exempted from job seeking following job loss'
   7 'Attends school or is studying' 8 'Takes care of the housekeeping' 9 'Is pensioner ([voluntary] early retirement, old age pension scheme)' 10 'Has (partial) work disability' 11 'Performs unpaid work while retaining unemployment benefit'
   12 'Performs voluntary work' 13 ' Does something else' 14 'Is too young to have an occupation'.
*adding variable labels to brutoink, brutoink_f, nettoink, netinc, nettoink_f, brutocat, nettocat, brutohh_f and nettohh_f.
VARIABLE LABELS brutoink 'Personal gross monthly income in Euros'.
VARIABLE LABELS brutoink_f 'Personal gross monthly income in Euros, imputed'.
VARIABLE LABELS nettoink 'Personal net monthly income in Euros'.
VARIABLE LABELS netinc 'Personal net monthly income in Euros (available as from July 2008)'.
VARIABLE LABELS nettoink_f 'Personal net monthly income in Euros, imputed (available as from July 2008)'.
VARIABLE LABELS brutocat 'Personal gross monthly income in categories'.
VARIABLE LABELS nettocat 'Personal net monthly income in categories'.
VARIABLE LABELS brutohh_f 'Gross household income in Euros'.
VARIABLE LABELS nettohh_f 'Net household income in Euros'.
*adding value labels to brutocat and nettocat.
VALUE LABELS brutocat 0 'No income' 1 'EUR 500 or less' 2 'EUR 501 to EUR 1000' 3 'EUR 1001 to EUR 1500' 4 'EUR 1501 to EUR 2000'
   5 'EUR 2001 to EUR 2500' 6 'EUR 2501 to EUR 3000' 7 'EUR 3001 to EUR 3500' 8 'EUR 3501 to EUR 4000' 9 'EUR 4001 to EUR 4500'
   10 'EUR 4501 to EUR 5000' 11 'EUR 5001 to EUR 7500' 12 'More than EUR 7500' 13 'Do not know'.
VALUE LABELS nettocat 0 'No income' 1 'EUR 500 or less' 2 'EUR 501 to EUR 1000' 3 'EUR 1001 to EUR 1500' 4 'EUR 1501 to EUR 2000'
   5 'EUR 2001 to EUR 2500' 6 'EUR 2501 to EUR 3000' 7 'EUR 3001 to EUR 3500' 8 'EUR 3501 to EUR 4000' 9 'EUR 4001 to EUR 4500'
   10 'EUR 4501 to EUR 5000' 11 'EUR 5001 to EUR 7500' 12 'More than EUR 7500' 13 'Do not know' 14 'Do not want to say'.
*adding value labels to oplzon, oplmet and oplcat.
VALUE LABELS oplzon 1 'Primary school' 2 'vmbo (intermediate secondary education, US: junior high school)'
   3 'havo/vwo (higher secondary education/preparatory university education, US: senior high school)'
   4 ' mbo (intermediate vocational education, US: junior college)' 5 ' hbo (higher vocational education, US: college)'
   6 'wo (university)' 7 'Other' 8 'Not yet completed any education' 9 'not (yet) started any education'.
VALUE LABELS oplmet 1 'Primary school' 2 'vmbo (intermediate secondary education, US: junior high school)' 3 'havo/vwo (higher secondary education/preparatory university education, US: senior high school)'
   4 'mbo (intermediate vocational education, US: junior college)' 5 'hbo (higher vocational education, US: college)'
   6 'Wo (university)' 7 'Other' 8 'Not (yet) completed any education' 9 'Not yet started any education'.
VALUE LABELS oplcat 1 'Primary school' 2 'vmbo (intermediate secondary education, US: junior high school)' 3 ' havo/vwo (higher secondary education/preparatory university education, US: senior high school)'
   4 'mbo (intermediate vocational education, US: junior college)' 5 'hbo (higher vocational education, US: college)' 6 'Wo (university)'.
*rename variable names of value categories.
RENAME VARIABLES (cp20l101 = EgoValues1) (cp20l109 = EgoValues2) (cp20l127 = EgoValues3) (cp20l133 = EgoValues4).
RENAME VARIABLES (cp20l099 = AltruValues1) (cp20l100 = AltruValues2) (cp20l102 = AltruValues3) (cp20l105 = AltruValues4)
   (cp20l106 =AltruValues5) (cp20l117 = AltruValues6) (cp20l120 = AltruValues7).
```

```
RENAME VARIABLES (cp20l119 = HedoValues1) (cp20l121 = HedoValues2) (cp20l128 = HedoValues3) (cp20l129
= HedoValues4)
   (cp20l132 = HedoValues5) (cp20l134 = HedoValues6).
*delete unnecessary variables.
DELETE VARIABLES cp20l103 TO cp20l131.
*Recoding reversed phrased questions and add new value labels at SHC3 and BioValues 2.
RECODE SHC3 BioValues2 (1=5) (2=4) (3=3) (4=2) (5=1).
EXECUTE.
VALUE LABELS SHC3 1 'Completely agree' 2 'Agree' 3 'Neither disagree, nor agree' 4 'Disagree' 5 'Completely
disagree'.
VALUE LABELS BioValues2 1 'Completely agree' 2 'Agree' 3 'Neither disagree, nor agree' 4 'Disagree' 5
'Completely disagree'.
*adding value labels to SHC variables and BioValues with option 6 Don't know.
VALUE LABELS SHC1 AND SHC2 1 'Completely disagree' 2 'Disagree' 3 'Neither disagree, nor agree' 4 'Agree' 5
'Completely agree' 6 'Do not know'.
VALUE LABELS SHC3 1 'Completely agree' 2 'Agree' 3 'Neither disagree, nor agree' 4 'Disagree' 5 'Completely
disagree' 6 'Do not know'.
VALUE LABELS BioValues1 BioValues3 BioValues4 BioValues5 1 'Completely disagree' 2 'Disagree' 3 'Neither
disagree, nor agree' 4 'Agree' 5 'Completely agree' 6 'Do not know'.
VALUE LABELS BioValues2 1 'Completely agree' 2 'Agree' 3 'Neither disagree, nor agree' 4 'Disagree' 5
'Completely disagree' 6 'Do not know'.
*after mistake recode SCH3 and BioValues2 into old values with original value labels.
RECODE SHC3 BioValues2 (1=5) (2=4) (3=3) (4=2) (5=1) (6=6).
EXECUTE.
VALUE LABELS SHC3 BioValues2 1 'Completely disagree' 2 'Disagree' 3 'Neither disagree, nor agree' 4 'Agree' 5
'Completely agree' 6 'Do not know'.
*Recode into different variables the reversed items SHC3 and BioValues2.
RECODE SHC3 BioValues2 (1=5) (2=4) (3=3) (4=2) (5=1) (6=6) INTO RecodedSHC3 RecodedBioValues2.
EXECUTE.
VALUE LABELS RecodedSHC3 RecodedBioValues2 1 'Completely agree' 2 'Agree' 3 'Neither disagree, nor agree'
4 'Disagree' 5 'Completely disagree' 6 'Do not know'.
VARIABLE LABELS RecodedSHC3 'I prefer new products'.
VARIABLE LABELS RecodedBioValues2 'All that attention for nature and the environment is exaggerated'.
VARIABLE LEVEL RecodedSHC3 RecodedBioValues2 (ORDINAL).
*adding value labels to lftdcat.
VALUE LABELS lftdcat 1 '14 years and younger' 2 '15 - 24 years' 3 '25 - 34 years' 4 '35 - 44 years' 5 '45 - 54 years'
6 '55 - 64 years' 7 '65 years and older'.
*Changing measuring levels of the variables.
VARIABLE LEVEL lftdcat brutocat nettocat oplzon oplmet oplcat SHC1 TO BioValues5 (ORDINAL).
VARIABLE LEVEL brutoink_f (SCALE).
*Delete number of household variable.
DELETE VARIABLES nohouse_encr.
*define 6 as missing with all variables from the environmental policy dataset.
MISSING VALUES SHC1 TO SHC3 (6).
MISSING VALUES BioValues1 TO BioValues2 (6).
*create scale score of biovalues by mean and minimum of scoring on items must be 4.
COMPUTE BioValuesScale=MEAN.4 (BioValues1, RecodedBioValues2, BioValues3, BioValues4, BioValues5).
*analyze descriptives of Biovaluesscale.
DESCRIPTIVES VARIABLES=BioValuesScale
  /STATISTICS=MEAN STDDEV MIN MAX.
FREQUENCIES VARIABLES=BioValuesScale
  /STATISTICS=STDDEV MINIMUM MAXIMUM MEAN MEDIAN
  /ORDER=ANALYSIS.
*recode system missing values of Biovaluesscale in 99 and add value lable of missing value.
RECODE BioValuesScale (SYSMIS = 99).
EXECUTE.
ADD VALUE LABELS BioValuesScale 99 'Recoded system missing value'.
```

```
MISSING VALUES BioValuesScale (99).
*making a variable for missings on BioValuesScale.
COMPUTE missingBioScale = missing(BioValuesScale).
EXECUTE.
* move flagged cases to top of file.
SORT CASES missingBioScale (d).
*Delete missings of missingbiovaluescale.
SELECT IF (missingBioScale=0).
*analyze descriptives.
FREQUENCIES VARIABLES=BioValuesScale missingBioScale
  /STATISTICS=STDDEV MINIMUM MAXIMUM MEAN MEDIAN
  /ORDER=ANALYSIS.
*create scale score of SHC items by mean and minimum of scoring on items must be 3.
COMPUTE SHCScale=MEAN.3 (SHC1, SHC2, RecodedSHC3).
*analyze frequencies of SHCscale.
FREQUENCIES VARIABLES=SHCScale
  /STATISTICS=STDDEV MINIMUM MAXIMUM MEAN MEDIAN
  /ORDER=ANALYSIS.
*recode system missing values of SHCscale in 99 and add value lable of missing value.
RECODE SHCScale (SYSMIS = 99).
EXECUTE.
ADD VALUE LABELS SHCScale 99 'Recoded system missing value'.
MISSING VALUES SHCScale (99).
*making a variable for missings on SHCScale.
COMPUTE missingSHCScale = missing(SHCScale).
EXECUTE.
* move flagged cases to top of file.
SORT CASES missingSHCScale (d).
*Delete missings on missingshcscale.
SELECT IF (missingSHCScale=0).
*analyze frequencies.
FREQUENCIES VARIABLES=SHCScale missingSHCScale
  /STATISTICS=STDDEV MINIMUM MAXIMUM MEAN MEDIAN
  /ORDER=ANALYSIS.
DESCRIPTIVES VARIABLES=BioValuesScale missingSHCScale SHCScale missingBioScale
  /STATISTICS=MEAN STDDEV MIN MAX.
*delete unnecessary variables.
DELETE VARIABLES mis_1.
DELETE VARIABLES mis_2.
DELETE VARIABLES missingSHCScale.
DELETE VARIABLES missingBioScale.
*add value labels.
VARIABLE LABELS BioValuesScale 'Scale score of Bio Values items' SHCScale 'Scale score of SHC items'.
*rename variable.
RENAME VARIABLES (BioValuesScale = BioScale).
*adding a casenumber to each case.
COMPUTE respondentennummer=$casenum.
EXECUTE.
*reliability analysis of shc scale.
RELIABILITY
  /VARIABLES=SHC1 SHC2 RecodedSHC3
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA
  /STATISTICS=DESCRIPTIVE SCALE CORR
  /SUMMARY=TOTAL.
*reliability analysis of biovalues scale.
RELIABILITY
```

```
  /VARIABLES=BioValues1 RecodedBioValues2 BioValues3 BioValues4 BioValues5
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA
  /STATISTICS=DESCRIPTIVE SCALE CORR
  /SUMMARY=TOTAL.
*principal component analysis of hedo, altru and ego value items.
FACTOR
  /VARIABLES AltruValues1 AltruValues2 AltruValues3 AltruValues4 AltruValues5 AltruValues6
    AltruValues7 EgoValues1 EgoValues2 EgoValues3 EgoValues4 HedoValues1 HedoValues2 HedoValues3
    HedoValues4 HedoValues5 HedoValues6
  /MISSING LISTWISE
  /ANALYSIS AltruValues1 AltruValues2 AltruValues3 AltruValues4 AltruValues5 AltruValues6
    AltruValues7 EgoValues1 EgoValues2 EgoValues3 EgoValues4 HedoValues1 HedoValues2 HedoValues3
    HedoValues4 HedoValues5 HedoValues6
  /PRINT INITIAL CORRELATION KMO EXTRACTION ROTATION
  /FORMAT BLANK(.40)
  /PLOT EIGEN ROTATION
  /CRITERIA MINEIGEN(1) ITERATE(25)
  /EXTRACTION PC
  /CRITERIA ITERATE(25) DELTA(0)
  /ROTATION OBLIMIN
  /METHOD=CORRELATION.
FACTOR
  /VARIABLES AltruValues1 AltruValues2 AltruValues3 AltruValues4 AltruValues5 AltruValues6
    AltruValues7 EgoValues1 EgoValues2 EgoValues3 EgoValues4 HedoValues1 HedoValues2 HedoValues3
    HedoValues4 HedoValues5 HedoValues6
  /MISSING LISTWISE
  /ANALYSIS AltruValues1 AltruValues2 AltruValues3 AltruValues4 AltruValues5 AltruValues6
    AltruValues7 EgoValues1 EgoValues2 EgoValues3 EgoValues4 HedoValues1 HedoValues2 HedoValues3
    HedoValues4 HedoValues5 HedoValues6
  /PRINT INITIAL CORRELATION KMO EXTRACTION ROTATION
  /FORMAT BLANK(.3)
  /PLOT EIGEN ROTATION
  /CRITERIA MINEIGEN(1) ITERATE(25)
  /EXTRACTION PC
  /CRITERIA ITERATE(25) DELTA(0)
  /ROTATION OBLIMIN
  /METHOD=CORRELATION.
*reliability analysis altru scale items.
RELIABILITY
  /VARIABLES=AltruValues5 AltruValues6 AltruValues7
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA
  /STATISTICS=DESCRIPTIVE SCALE CORR
  /SUMMARY=TOTAL.
*calculate scale score altru values.
COMPUTE AltruScale=(AltruValues5 + AltruValues6 + AltruValues7) / 3.
EXECUTE.
*reliability analysis ego scale items.
RELIABILITY
  /VARIABLES=EgoValues3 EgoValues4
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA
  /STATISTICS=DESCRIPTIVE SCALE CORR
  /SUMMARY=TOTAL.
*calculate scale score ego values.
COMPUTE EgoScale=(EgoValues3 + EgoValues4) / 2.
```

```
EXECUTE.
*reliability analysis hedo scale items.
RELIABILITY
  /VARIABLES=HedoValues4 HedoValues5 HedoValues6
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA
  /STATISTICS=DESCRIPTIVE SCALE CORR
  /SUMMARY=TOTAL.
*calculate scale score hedo values.
COMPUTE HedoScale=(HedoValues4 + HedoValues5 + HedoValues6) / 3.
EXECUTE.
*analysis of descriptives.
DESCRIPTIVES VARIABLES=SHCScale BioScale AltruScale EgoScale HedoScale
  /STATISTICS=MEAN STDDEV MIN MAX.
FREQUENCIES VARIABLES=geslacht
  /ORDER=ANALYSIS.
*recode system missing values of sex in 99 and add value lable of missing value.
RECODE geslacht (SYSMIS = 99).
EXECUTE.
ADD VALUE LABELS geslacht 99 'Recoded system missing value'.
MISSING VALUES geslacht (99).
*making a variable for missings on geslacht.
COMPUTE mis_1 = missing(geslacht).
EXECUTE.
* move flagged cases to top of file.
SORT CASES mis_1 (d).
*delete everybody not scoring on mis_1.
SELECT IF (mis_1=0).
*analysis of descriptives.
FREQUENCIES VARIABLES=geslacht
  /ORDER=ANALYSIS.
*pca of values.
FACTOR
  /VARIABLES AltruValues1 AltruValues2 AltruValues3 AltruValues4 AltruValues5 AltruValues6
    AltruValues7 EgoValues1 EgoValues2 EgoValues3 EgoValues4 HedoValues1 HedoValues2 HedoValues3
    HedoValues4 HedoValues5 HedoValues6
  /MISSING LISTWISE
  /ANALYSIS AltruValues1 AltruValues2 AltruValues3 AltruValues4 AltruValues5 AltruValues6
    AltruValues7 EgoValues1 EgoValues2 EgoValues3 EgoValues4 HedoValues1 HedoValues2 HedoValues3
    HedoValues4 HedoValues5 HedoValues6
  /PRINT INITIAL CORRELATION KMO EXTRACTION ROTATION
  /FORMAT BLANK(.3)
  /PLOT EIGEN ROTATION
  /CRITERIA MINEIGEN(1) ITERATE(25)
  /EXTRACTION PC
  /CRITERIA ITERATE(25) DELTA(0)
  /ROTATION OBLIMIN
  /METHOD=CORRELATION.
*reliability analysis hedo scale.
RELIABILITY
  /VARIABLES=HedoValues4 HedoValues5 HedoValues6
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA
  /STATISTICS=DESCRIPTIVE SCALE CORR
  /SUMMARY=TOTAL.
*reliability analysis bio scale.
RELIABILITY
```

```
  /VARIABLES=BioValues1 RecodedBioValues2 BioValues3 BioValues4 BioValues5
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA
  /STATISTICS=DESCRIPTIVE SCALE CORR
  /SUMMARY=TOTAL.
*reliability analysis altru scale.
RELIABILITY
  /VARIABLES=AltruValues5 AltruValues6 AltruValues7
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA
  /STATISTICS=DESCRIPTIVE SCALE CORR
  /SUMMARY=TOTAL.
*reliability analysis ego scale.
RELIABILITY
  /VARIABLES=EgoValues3 EgoValues4
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA
  /STATISTICS=DESCRIPTIVE SCALE CORR
  /SUMMARY=TOTAL.
*reliability analysis shc scale.
RELIABILITY
  /VARIABLES=SHC1 SHC2 RecodedSHC3
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA
  /STATISTICS=DESCRIPTIVE SCALE CORR
  /SUMMARY=TOTAL.
*create dummy variable of sex and add value labels.
RECODE geslacht (1=0) (2=1) INTO DummySex.
VARIABLE LABELS  DummySex 'Dummy variable of sex'.
EXECUTE.
VALUE LABELS DummySex 1 'Female' 0 'Male'.
*analyze frequencies.
FREQUENCIES VARIABLES=geslacht DummySex
  /ORDER=ANALYSIS.
*Create dummy variable of high education and add value labels. .
RECODE oplcat (5=1) (6=1) (ELSE=0) INTO DummyEducation.
VARIABLE LABELS  DummyEducation 'Dummy variable of Education, High edu vs. Low Edu'.
EXECUTE.
VALUE LABELS DummyEducation 0 'Low Education' 1 'High Education'.
*define missings at nettocat variable.
MISSING VALUES nettocat (13, 14).
*create dummy variable SEP based on netto income and add value label.
RECODE nettocat (12=1) (11=1) (10=1) (9=1) (8=1) (7=1) (6=1) (5=1) (4=0) (3=0) (2=0) (1=0) (0=0)
    (MISSING=99) INTO SEP.
VARIABLE LABELS  SEP 'High SEP vs. low SEP'.
EXECUTE.
VALUE LABELS SEP 0 'Low SEP' 1 'High SEP'.
MISSING VALUES SEP (12).
*delete unnecessary variable.
DELETE VARIABLES mis_1.
*add variable labels.
VARIABLE LABELS AltruScale 'Scale score of Altru items'.
VARIABLE LABELS EgoScale 'Scale score of Ego items'.
VARIABLE LABELS HedoScale 'Scale score of Hedo items'.
*analyzing descriptives and frequencies.
DESCRIPTIVES VARIABLES=AltruScale BioScale EgoScale HedoScale SHCScale leeftijd
  /STATISTICS=MEAN STDDEV MIN MAX.
```

```
FREQUENCIES VARIABLES=AltruScale BioScale EgoScale HedoScale SHCScale leeftijd
  /STATISTICS=STDDEV MINIMUM MAXIMUM MEAN MEDIAN
  /ORDER=ANALYSIS.
FREQUENCIES VARIABLES=DummySex SEP DummyEducation
  /STATISTICS=STDDEV MINIMUM MAXIMUM MEAN MEDIAN
  /ORDER=ANALYSIS.
*analysis of correlations between variables.
CORRELATIONS
  /VARIABLES=SHCScale AltruScale BioScale EgoScale HedoScale SEP DummyEducation DummySex leeftijd
  /PRINT=TWOTAIL NOSIG FULL
  /MISSING=PAIRWISE.
* Chart Builder of SHC scale histogram.
GGRAPH
  /GRAPHDATASET NAME="graphdataset" VARIABLES=SHCScale MISSING=LISTWISE REPORTMISSING=NO
  /GRAPHSPEC SOURCE=INLINE
  /COLORCYCLE COLOR1(150,145,145), COLOR2(0,93,93), COLOR3(159,24,83), COLOR4(250,77,86),
    COLOR5(87,4,8), COLOR6(25,128,56), COLOR7(0,45,156), COLOR8(238,83,139), COLOR9(178,134,0),
    COLOR10(0,157,154), COLOR11(1,39,73), COLOR12(138,56,0), COLOR13(165,110,255),
    COLOR14(236,230,208), COLOR15(69,70,71), COLOR16(92,202,136), COLOR17(208,83,52),
    COLOR18(204,127,228), COLOR19(225,188,29), COLOR20(237,75,75), COLOR21(28,205,205),
    COLOR22(92,113,72), COLOR23(225,139,14), COLOR24(9,38,114), COLOR25(90,100,94), COLOR26(155,0,0),
    COLOR27(207,172,227), COLOR28(150,145,145), COLOR29(63,235,124), COLOR30(105,41,196)
  /FRAME OUTER=NO INNER=NO
  /GRIDLINES XAXIS=NO YAXIS=YES
  /STYLE GRADIENT=NO.
BEGIN GPL
  SOURCE: s=userSource(id("graphdataset"))
  DATA: SHCScale=col(source(s), name("SHCScale"))
  GUIDE: axis(dim(1), label("Scale score of SHC items"))
  GUIDE: axis(dim(2), label("Frequency"))
  GUIDE: text.title(label("Simple Histogram of Scale score of SHC items"))
  ELEMENT: interval(position(summary.count(bin.rect(SHCScale))), shape.interior(shape.square))
  ELEMENT: line(position(density.normal(SHCScale)))
END GPL.
*create centered variables of predictors and add variable labels.
DATASET ACTIVATE DataSet1.
COMPUTE CtAltruScale=AltruScale - 6.022234.
EXECUTE.
VARIABLE LABELS CtAltruScale 'Centered altru scale score'.
COMPUTE CtBioScale=BioScale - 3.888166.
EXECUTE.
VARIABLE LABELS CtBioScale 'Centered bio scale score'.
COMPUTE CtEgoScale=EgoScale - 4.648467.
EXECUTE.
VARIABLE LABELS CtEgoScale 'Centered ego scale score'.
COMPUTE CtHedoScale=HedoScale - 5.255514.
EXECUTE.
VARIABLE LABELS CtHedoScale 'Centered hedo scale score'.
*create interactionterms for moderationanalyses and add variable labels.
COMPUTE altruXsep=CtAltruScale * SEP.
EXECUTE.
VARIABLE LABELS altruXsep 'Interaction centered altru scale and sep'.
COMPUTE bioXsep=CtBioScale * SEP.
EXECUTE.
VARIABLE LABELS bioXsep 'Interaction centered bio scale and sep'.
COMPUTE egoXsep=CtEgoScale * SEP.
EXECUTE.
```

```
VARIABLE LABELS egoXsep 'Interaction centered ego scale and sep'.
COMPUTE hedoXsep=CtHedoScale * SEP.
EXECUTE.
VARIABLE LABELS hedoXsep 'Interaction centered hedo scale and sep'.
*moderation analysis of centered altru scale and sep and controls on shc.
REGRESSION
  /DESCRIPTIVES MEAN STDDEV CORR SIG N
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS CI(95) BCOV R ANOVA COLLIN TOL CHANGE ZPP
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT SHCScale
  /METHOD=ENTER DummySex leeftijd
  /METHOD=ENTER CtAltruScale
  /METHOD=ENTER altruXsep
  /SCATTERPLOT=(*ZRESID ,*ZPRED)
  /RESIDUALS DURBIN HISTOGRAM(ZRESID) NORMPROB(ZRESID)
  /SAVE COOK.
REGRESSION
  /DESCRIPTIVES MEAN STDDEV CORR SIG N
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS CI(95) BCOV R ANOVA COLLIN TOL CHANGE ZPP
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT SHCScale
  /METHOD=ENTER DummySex leeftijd
  /METHOD=ENTER CtAltruScale SEP
  /METHOD=ENTER altruXsep
  /SCATTERPLOT=(*ZRESID ,*ZPRED)
  /RESIDUALS DURBIN HISTOGRAM(ZRESID) NORMPROB(ZRESID)
  /SAVE COOK.
*moderation analysis of centered bio scale and sep and controls on shc.
REGRESSION
  /DESCRIPTIVES MEAN STDDEV CORR SIG N
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS CI(95) BCOV R ANOVA COLLIN TOL CHANGE ZPP
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT SHCScale
  /METHOD=ENTER DummySex leeftijd
  /METHOD=ENTER CtBioScale SEP
  /METHOD=ENTER bioXsep
  /SCATTERPLOT=(*ZRESID ,*ZPRED)
  /RESIDUALS DURBIN HISTOGRAM(ZRESID) NORMPROB(ZRESID)
  /SAVE COOK.
*moderation analysis of centered ego scale and sep and controls on shc.
REGRESSION
  /DESCRIPTIVES MEAN STDDEV CORR SIG N
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS CI(95) BCOV R ANOVA COLLIN TOL CHANGE ZPP
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT SHCScale
  /METHOD=ENTER DummySex leeftijd
  /METHOD=ENTER CtEgoScale SEP
  /METHOD=ENTER egoXsep
  /SCATTERPLOT=(*ZRESID ,*ZPRED)
```

```
  /RESIDUALS DURBIN HISTOGRAM(ZRESID) NORMPROB(ZRESID)
  /SAVE COOK.
*moderation analysis of centered hedo scale and sep and controls on shc.
REGRESSION
  /DESCRIPTIVES MEAN STDDEV CORR SIG N
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS CI(95) BCOV R ANOVA COLLIN TOL CHANGE ZPP
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT SHCScale
  /METHOD=ENTER DummySex leeftijd
  /METHOD=ENTER CtHedoScale SEP
  /METHOD=ENTER hedoXsep
  /SCATTERPLOT=(*ZRESID ,*ZPRED)
  /RESIDUALS DURBIN HISTOGRAM(ZRESID) NORMPROB(ZRESID)
  /SAVE COOK.
*create interactionterms and add variable labels.
COMPUTE altruXedu=CtAltruScale * DummyEducation.
EXECUTE.
VARIABLE LABELS altruXedu 'Interaction centered altru scale and high education'.
COMPUTE bioXedu=CtBioScale * DummyEducation.
EXECUTE.
VARIABLE LABELS bioXedu 'Interaction centered bio scale and high education'.
COMPUTE egoXedu=CtEgoScale * DummyEducation.
EXECUTE.
VARIABLE LABELS egoXedu 'Interaction centered ego scale and high education'.
COMPUTE hedoXedu=CtHedoScale * DummyEducation.
EXECUTE.
VARIABLE LABELS hedoXedu 'Interaction centered hedo scale and high education'.
*moderation analysis of centered altru scale and education and controls on shc.
REGRESSION
  /DESCRIPTIVES MEAN STDDEV CORR SIG N
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS CI(95) BCOV R ANOVA COLLIN TOL CHANGE ZPP
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT SHCScale
  /METHOD=ENTER DummySex leeftijd
  /METHOD=ENTER CtAltruScale DummyEducation
  /METHOD=ENTER altruXedu
  /SCATTERPLOT=(*ZRESID ,*ZPRED)
  /RESIDUALS DURBIN HISTOGRAM(ZRESID) NORMPROB(ZRESID)
  /SAVE COOK.
*moderation analysis of centered bio scale and education and controls on shc.
REGRESSION
  /DESCRIPTIVES MEAN STDDEV CORR SIG N
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS CI(95) BCOV R ANOVA COLLIN TOL CHANGE ZPP
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT SHCScale
  /METHOD=ENTER DummySex leeftijd
  /METHOD=ENTER CtBioScale DummyEducation
  /METHOD=ENTER bioXedu
  /SCATTERPLOT=(*ZRESID ,*ZPRED)
  /RESIDUALS DURBIN HISTOGRAM(ZRESID) NORMPROB(ZRESID)
  /SAVE COOK.
```

```
*moderation analysis of centered ego scale and education and controls on shc.
REGRESSION
  /DESCRIPTIVES MEAN STDDEV CORR SIG N
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS CI(95) BCOV R ANOVA COLLIN TOL CHANGE ZPP
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT SHCScale
  /METHOD=ENTER DummySex leeftijd
  /METHOD=ENTER CtEgoScale DummyEducation
  /METHOD=ENTER egoXedu
  /SCATTERPLOT=(*ZRESID ,*ZPRED)
  /RESIDUALS DURBIN HISTOGRAM(ZRESID) NORMPROB(ZRESID)
  /SAVE COOK.
*moderation analysis of centered hedo scale and education and controls on shc.
REGRESSION
  /DESCRIPTIVES MEAN STDDEV CORR SIG N
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS CI(95) BCOV R ANOVA COLLIN TOL CHANGE ZPP
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT SHCScale
  /METHOD=ENTER DummySex leeftijd
  /METHOD=ENTER CtHedoScale DummyEducation
  /METHOD=ENTER hedoXedu
  /SCATTERPLOT=(*ZRESID ,*ZPRED)
  /RESIDUALS DURBIN HISTOGRAM(ZRESID) NORMPROB(ZRESID)
  /SAVE COOK.
*regression analysis of all predictors on shc.
DATASET ACTIVATE DataSet1.
REGRESSION
  /DESCRIPTIVES MEAN STDDEV CORR SIG N
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS CI(95) R ANOVA COLLIN TOL CHANGE
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT SHCScale
  /METHOD=ENTER CtAltruScale CtBioScale CtEgoScale CtHedoScale SEP
  /METHOD=ENTER DummyEducation DummySex leeftijd
  /SCATTERPLOT=(*ZRESID ,*ZPRED)
  /RESIDUALS DURBIN HISTOGRAM(ZRESID) NORMPROB(ZRESID)
  /SAVE COOK.
* Chart Builder to create scatterplot of altruistic values on shc with education as groups.
GGRAPH
  /GRAPHDATASET NAME="graphdataset" VARIABLES=CtAltruScale SHCScale DummyEducation
MISSING=LISTWISE
    REPORTMISSING=NO
  /GRAPHSPEC SOURCE=INLINE
  /FITLINE TOTAL=NO SUBGROUP=YES
  /COLORCYCLE COLOR1(255,255,255), COLOR2(0,0,0), COLOR3(159,24,83), COLOR4(250,77,86),
    COLOR5(87,4,8), COLOR6(25,128,56), COLOR7(0,45,156), COLOR8(238,83,139), COLOR9(178,134,0),
    COLOR10(0,157,154), COLOR11(1,39,73), COLOR12(138,56,0), COLOR13(165,110,255),
    COLOR14(236,230,208), COLOR15(69,70,71), COLOR16(92,202,136), COLOR17(208,83,52),
    COLOR18(204,127,228), COLOR19(225,188,29), COLOR20(237,75,75), COLOR21(28,205,205),
    COLOR22(92,113,72), COLOR23(225,139,14), COLOR24(9,38,114), COLOR25(90,100,94), COLOR26(155,0,0),
    COLOR27(207,172,227), COLOR28(150,145,145), COLOR29(63,235,124), COLOR30(105,41,196)
  /FRAME OUTER=NO INNER=NO
```

```
  /GRIDLINES XAXIS=NO YAXIS=YES
  /STYLE GRADIENT=NO.
BEGIN GPL
  SOURCE: s=userSource(id("graphdataset"))
  DATA: CtAltruScale=col(source(s), name("CtAltruScale"))
  DATA: SHCScale=col(source(s), name("SHCScale"))
  DATA: DummyEducation=col(source(s), name("DummyEducation"), unit.category())
  GUIDE: axis(dim(1), label("Centered altru scale score"))
  GUIDE: axis(dim(2), label("Scale score of SHC items"))
  GUIDE: legend(aesthetic(aesthetic.color.interior), label("Dummy variable of Education, High ",
    "edu vs. Low Edu"))
  GUIDE: text.title(label("Scatter Plot of Scale score of SHC items by Centered altru scale ",
    "score by Dummy variable of Education, High edu vs. Low Edu"))
  SCALE: cat(aesthetic(aesthetic.color.interior), include(
"0", "1"))
  ELEMENT: point(position(CtAltruScale*SHCScale), color.interior(DummyEducation))
END GPL.
*additional analyses of SEP on value scales.
DATASET ACTIVATE DataSet1.
REGRESSION
  /DESCRIPTIVES MEAN STDDEV CORR SIG N
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS R ANOVA CHANGE
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT AltruScale
  /METHOD=ENTER SEP
  /SCATTERPLOT=(*ZPRED ,*ZRESID)
  /RESIDUALS DURBIN HISTOGRAM(ZRESID) NORMPROB(ZRESID)
  /SAVE COOK.
REGRESSION
  /DESCRIPTIVES MEAN STDDEV CORR SIG N
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS CI(95) R ANOVA CHANGE
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT BioScale
  /METHOD=ENTER SEP
  /SCATTERPLOT=(*ZPRED ,*ZRESID)
  /RESIDUALS DURBIN HISTOGRAM(ZRESID) NORMPROB(ZRESID)
  /SAVE COOK.
REGRESSION
  /DESCRIPTIVES MEAN STDDEV CORR SIG N
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS CI(95) R ANOVA CHANGE
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT EgoScale
  /METHOD=ENTER SEP
  /SCATTERPLOT=(*ZPRED ,*ZRESID)
  /RESIDUALS DURBIN HISTOGRAM(ZRESID) NORMPROB(ZRESID)
  /SAVE COOK.
REGRESSION
  /DESCRIPTIVES MEAN STDDEV CORR SIG N
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS CI(95) R ANOVA CHANGE
  /CRITERIA=PIN(.05) POUT(.10)
```

```
  /NOORIGIN
  /DEPENDENT HedoScale
  /METHOD=ENTER SEP
  /SCATTERPLOT=(*ZPRED ,*ZRESID)
  /RESIDUALS DURBIN HISTOGRAM(ZRESID) NORMPROB(ZRESID)
  /SAVE COOK.
REGRESSION
  /DESCRIPTIVES MEAN STDDEV CORR SIG N
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS CI(95) R ANOVA CHANGE
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT AltruScale
  /METHOD=ENTER SEP
  /SCATTERPLOT=(*ZPRED ,*ZRESID)
  /RESIDUALS DURBIN HISTOGRAM(ZRESID) NORMPROB(ZRESID)
  /SAVE COOK.
```