

## **Psychological Predictors of Sustainable Behavior in College Samples From the United States, Brazil and the Netherlands**

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### **Abstract**

*Using the super ordinate goal theory as a framework this study examined psychological predictors of environmentally sustainable behavior in college samples from the United States (N = 117), The Netherlands (N = 45) and Brazil (N = 116). Hypothesized predictors were: (a) perceived impact of globalization, (b) global-human and national identity, (c) world-minded value orientation, and (d) perceived personal risk from harmful environmental conditions. In partial support of the super ordinate goal theory, higher perceived environmental risk was a predictor of more sustainable behavior in the United States and the Netherlands samples. Also, stronger global-human identity was a significant predictor in the Netherlands sample, and approached significance in the United States and the Brazil samples. The Netherlands sample additionally had stronger national identity as a predictor. In all three samples higher global-human identity was related to more positive perceived impact of globalization, and to higher world-minded values in the United States and the Netherlands samples.*

**Key words:** Sustainable Behavior, Perceived Globalization Impact, Global-Human and National Identity, World-Mindedness, and Perceived Environmental Risk.

### **Introduction**

Recent reports have continued to highlight the impact of human behavior on the environment and the climate (Climate Change, 2014; Cole & McCarthy, 2015; Millennium Ecosystem Assessment, 2013). They urge the need to prepare for the negative consequences of environmental degradation and climate change. Echoing these warnings, Pope Francis's (2015) encyclical on environmental issues invites all of humanity to care for the "common home we all share." The challenges clearly transcend national boundaries pointing to the need for closer understanding of environmentally impactful human behavior globally (e.g. Leiserowitz, 2006; Veldman, 2012; winter, 1996). The purpose of this study is to examine psychological predictors of environmentally sustainable behavior in three countries using the super ordinate goal theory as an organizing framework. The super ordinate goal theory proposed by Sherif (1966) indicates that perception of a generalized common threat tends to promote group cohesion, enhances sense of super ordinate identity, and encourages collaboration among competing groups. By extension, the perception of the negative impact of environmental degradation may be considered a generalized common global threat.

The theory stipulates that the perception of the generalized global threat of environmental degradation would strengthen a sense of belonging to the global-human community. Together with the generalized perceived environmental threat the enhancement of super ordinate global identity could promote action that confronts the threat by motivating pro-environmental behavior. The extension of the super ordinate goal theory has been tested in over a dozen countries in the context of the nuclear threat (generalized threat) where stronger world-minded value orientation and perceive nuclear threat have been associated with anti-nuclear activism (Der-Karabetian, 1992; Kosterman & Feshbach, 1989), and more favorable attitude towards disarmament (Rigby, Metzger, & Dietz, 1990).

Similar relationships have been shown in multiple countries related to perceived environmental threat where the perception of greater environmental threat (generalized threat) has been associated with environmentally friendly behavior (Der-Karabetian, Cao, & Alfaro, 2014; Der-Karabetian, Stephenson, & Poggi, 1996), consumption patterns (Gatersleben, Steg, & Vlek, 2002; Zahran, Brody, Grover, & Vedlitz, 2006), and pro-social values (Leung, Koh, & Tam, 2015; Poortinga, Steg, & Vlek, 2004). Globalization and increasing economic interdependence has contributed to the generation of a superordinate/cosmopolitan identity that involves a sense of belonging to the global-human community (Arrow & Sandburg, 2004; Der-Karabetian & Balian, 1992; Elliott & Lemert, 2005; McFarland, Webb, & Crown, 2012; Savage, Bagnall, & Longhurst, 2005). However, a more negative perceived impact of globalization on environmental sustainability (e.g. Jorgenson & Kick, 2006; Rees, 2002) may be taken as a generalized threat to personal wellbeing. It would be consistent with the super ordinate goal theory to postulate that more perceived negative impact of globalization (a super ordinate threat) would also lead to a stronger sense of belonging to the global-human community, and to more environment friendly behavior.

The perception of greater environmental threat and stronger sense of belonging to the global community have been associated with increased tendency for more sustainable behavior (Der-Karabetian et al., 2014; Der-Karabetian et al., 1996; Devine-Wright, Price, & Leviston, 2015; Grinstein & Reifler, 2015; Leung et al., 2015; Stern, Dietz, & Kalof, 1993; Szerszynski, 2006). Batalha and Reynolds (2012) and Buchan, Brown, Grimalda, Wilson, Fatas, and Foddy (2011) have pointed out the importance of invoking collective conscience and superordinate identity to facilitate more cooperative negotiations among international agencies and governments to mitigate the environmental impact of human activity. Leung et al. (2015) and Der-Karabetian et al. (2014) have shown in multiple countries a consistent relationship between globally oriented cosmopolitan pro-social world-minded value orientation and environmentally sustainable behavior. Moreover, Reese and Kohlmann, (2015), and Sener and Hazer (2008) have shown a connection between global-human identification and environmentally responsible consumer behavior. These findings are consistent with the stipulation of the super ordinate goal theory that greater perception of environmental risk (super ordinate threat) would be associated with a stronger sense of belonging to the global-human community.

The countries of interest in this study, like many others, are experiencing serious environmental challenges. The United States has been struggling to efficiently manage its water and energy resources (i.e. Hall, Lobina, & de la Monte, 2005; Reiss & White, 2008). The severe draught in California has intensified this debate and has led to large-scale mandatory water conservation legislation (Nisbet, 2015). Brazil is facing a potentially disastrous water shortage in major cities like San Paulo (i.e. Ware, 2015). The Netherlands is actively trying to align its energy tax structure to manage challenges presented by environmental damage and serious air quality issues (Netherlands Environmental Assessment Agency, 2015). Given such environmental challenges it would be informative to examine in these countries the psychological variables that contribute to pro-environment sustainable behavior as it relates to perceptions of threat from environmental degradation. In this study, samples from the United States, Brazil and the Netherlands were used because they were conveniently available and accessible.

Based on the super ordinate goal theory and earlier research it is hypothesized that more self-reported sustainable behavior will be predicted by the following psychological variables: Higher perceived personal environmental risk, higher world-minded value orientation, stronger sense of national and global belonging and identity, and more perceived negative globalization impact. Furthermore, it is expected that greater perception of environmental risk and more negative globalization impact (super ordinate threats) would be associated with stronger sense of identity and belonging to the national and the global-human communities, and greater world-minded value orientation. Culture-unique and culture-common aspects of the relationships between these variables from the perspective of the three different countries will also be identified. The focus is on the relationships among these variables within each country sample rather than comparisons across the samples.

## ***Method***

### **Participants**

The participants in the study were college students from the United States ( $N = 117$ ), Brazil ( $N = 116$ ) and the Netherlands ( $N = 45$ ). Table 1 summarizes the demographic information of the samples. The majority of the sample from Brazil had five or more years of college (73%), tended to be male (68%), and somewhat older on average ( $M = 32$  years).

The majority tended to have four and fewer years of college in the samples from the United States (63%) and the Netherlands (61%). There were about twice as many males in the samples from Brazil and the Netherlands than in the sample from the United States, 68%, 61% and 31%, respectively. All of the participants from Brazil and the Netherlands reported having traveled outside their country, compared to 86% of the participants from the United States, and more of them reported having communicated with people outside their own country within the last week. It is conceivable that the differential profiles of the samples may impact the nature of the relationships among the variables being examined. All three were convenient samples. Therefore the findings cannot be generalized to the respective countries or student populations.

### **Measures**

All the measures were rated on a 6-point Likert scale: 1 = *Disagree Strongly*, 2 = *Disagree*, 3 = *Disagree Somewhat*, 4 = *Agree Somewhat*, 5 = *Agree*, 6 = *Agree Strongly*.

The mean ratings across the items were used as the scores on all the measures. Higher scores reflect more or stronger aspects of the properties or dispositions being measured. Items of all the measures as well as sources, reliability and validity information are provided by Der-Karabetian et al. (2014). The utility of these measures have been established across multiple countries and cultural groups. Cronbach's score reliability *alphas*, inter-correlations among the measures, means, and standard deviations for the current samples are provided in Table 2. To improve the reliability of the scores some items were dropped in several of the measures, which varied across the samples.

**Sustainable Behavior (SB):** Self-reported pro-environment behavior was measured using the Sustainable Behavior scale (Der-Karabetian et al., 2014; 1996). The six original items address recycling, conservation and consumption activities. Examples: "Whenever possible I recycle paper, plastic and other material," and "I try to save water and electricity as much as possible."

The score reliability *alpha* for the United States sample was .72 (6 items, 95% *CI*: .63 - .79), for the Brazil sample it was .66 (6 items, 95% *CI*: .55 - .75), and for the Netherlands sample it was .66 (5 items, 95% *CI*: .47 - .80). Higher scores indicate more self-reported environmentally sustainable behavior. The *alpha* reliability levels for the Netherlands and the Brazil samples are a little lower than the generally preferred level of .70 but are marginally acceptable (Pedhazur & Padhazur-Schmelkin, 1991).

**Personal Environmental Risk (PER):** Perception of personal risk from environmental degradation was measured using the Personal Environmental Risk scale (Der-Karabetian et al., 2014; 1996). Items include potential perceived hazards to the health and wellbeing of one's self and family. Examples: "It is possible that my family or I could develop health problems as a result of dangerous chemicals in the environment," and "It is likely that during my lifetime my family and I might experience serious water shortage, limiting use per household." The score reliability *alpha* for the United States sample was .81 (7 items, 95% *CI*: .75 - .86), for the Brazil sample it was .84 (5 items, 95% *CI*: .79 - .88), and for the Netherlands sample it was .81 (5 items, 95% *CI*: .70 - .89). Higher scores indicate stronger perception of personal risk.

**World-Mindedness (WM):** The world-minded value orientation was measured using the Cross-Cultural World-Mindedness scale (Der-Karabetian, 1992; Der-Karabetian et al., 2014; Der-Karabetian et al., 1994). This measure was derived from earlier work by Sampson and Smith (1957) and Silvernail (1979). The items address sense of concern for less fortunate peoples of the world, sharing of resources, tolerance of diversity, and international cooperation. Examples: "We have a moral obligation to share our country's wealth with the less fortunate people of the world," and "Our responsibility to people of other races ought to be as great as our responsibility to people of our own race." The score reliability *alpha* for the United States sample was .75 (26 items, 95% *CI*: .68 - .81), for the Brazil sample it was .64 (16 items, 95% *CI*: .53 - .73), marginally acceptable, and for the Netherlands sample it was .82 (15 items, 95% *CI*: .73 - .89). Higher scores indicate stronger world-minded value orientation.

**Global Belonging (GB):** Global Belonging was measured using somewhat modified version of the Global-Human Identity measure (Der-Karabetian et al., 2014; Der-Karabetian & Ruiz, 1997). The items deal with affective sense of identification with and belonging to the global-human community. Examples: "I feel I am related to everyone in the world as if they were my family," and "I think of myself as a citizen of the world." The score reliability *alpha* for the United States was .78 (7 items, 95% *CI*: .71 - .84), for the Brazil sample it was .84 (7 items, 95% *CI*: .79 - .88), and for the Netherlands sample it was .75 (7 items, 95% *CI*: .67 - .85). Higher scores indicate stronger sense of global belonging and identity.

**National Belonging (NB):** National Belonging was measured using somewhat modified version of the Affective National Identity measure (Der-Karabetian et al., 2014; Der-Karabetian & Ruiz, 1997) that was partially based on Zak (1973). The items deal with affective sense of identification and belonging to one's country. Examples: "My destiny is closely connected to the destiny of my country," and "If I were to be born all over again, I would wish to be born in my country." The score reliability *alpha* for the United States sample was .76 (7 items, 95% CI: .68 - .82), for the Brazil sample it was .79 (7 items, 95% CI: .73 - .85), and for the Netherlands sample it was .77 (7 items, 95% CI: .65 - .86). Higher scores indicate stronger sense of national belonging and identity.

**Globalization General Impact (GGI):** Globalization General Impact was measured using the measure developed by Der-Karabetian et al. (2014). The items deal with issues related to the perceived negative and positive impact of globalization around the world. Examples: "Globalization contributes to better economic conditions for everyone," and "Globalization has led to people working in bad and unhealthy work environments." The score reliability *alpha* for the United States sample was .77 (8 items, 95% CI: .71 - .83), for the Brazil sample it was .78 (8 items, 95% CI: .71 - .84), and for the Netherlands sample it was .72 (5 items, 95% CI: .56 - .83). Higher scores indicate more positive impact of globalization in general.

**Globalization Impact on Own Country (IOC):** The impact of globalization on one's country was measured using the Globalization Impact on Own Country scale developed by Der-Karabetian et al. (2014). The items deal with issues related to the perceived negative and positive impact of globalization on one's own country. Examples: "Globalization has impacted the economy of my country positively by raising the standard of living," and "Globalization has increased social problems such as poverty and crime in my country." The number of items used in this measure varied somewhat across the three samples. The score reliability *alpha* for the United States sample was .74 (3 items, 95% CI: .64 - .81), for the Brazil sample it was .61 (8 items, 95% CI: .48 - .71), and for the Netherlands sample it was .71 (3 items, 95% CI: .52 - .83). Higher scores indicate more positive impact of globalization on own country.

### **Procedure**

The data from college students in the Netherlands (Leiden) and Brazil (San Paulo) were collected through the Qualtrics online survey platform, recruited partly by classroom instructors and partly by using the snowball convenience sampling method. The dropout rate on the online surveys was around 30% which is not unusual for online surveys. The United States participants were from southern California who completed the hard copy version of the survey in classroom settings, or were recruited by peers. The data were collected during the 2013-2014 academic year. The sample from Brazil completed the Portuguese version of the measures that were translated from English using the back-translation method. The sample from the Netherlands had the option of completing the Dutch version of the measures but preferred to use the English version. The order of the measures was the same for all three samples. The measure of perceived personal environmental risk was presented last, and it was preceded by the measure on sustainable behavior.

### **Results**

The results are presented separately for each country. Inter-correlations among the measures are reported in Table 2. Table 3 summarizes the standard linear multiple regressions for the three samples using Sustainable Behavior as the predicted (dependent) variable. The following were the predictor (independent) variables: Globalization General Impact, Globalization Impact on Own Country, National Belonging, Global Belonging, World-Mindedness, and Personal Environmental Risk. No differences between the samples were hypothesized or examined.

#### **United States Sample**

Correlations in Table 2 show that, as expected, stronger sense of global belonging was correlated with more self-reported sustainable behavior ( $r = .21, p < .05$ ). Not surprisingly, higher world-minded value orientation was associated with stronger sense of global belonging ( $r = .37, p < .001$ ), suggesting some overlap of their underlying constructs. It may be worth noting that national belonging and global belonging were uncorrelated, suggesting that these two identity domains may be independent rather than bipolar or co-extensive. Contrary to expectations, more positive rather than more negative perceived general impact of globalization was associated with stronger sense of national belonging ( $r = .22, p < .05$ ), stronger sense of global belonging ( $r = .40, p < .001$ ), and higher world-minded value orientation ( $r = .31, p < .001$ ).

Also contrary to theoretical expectation, perceived personal risk was not associated with higher world-minded value orientation or national and global belonging. The multiple regression analysis in Table 3 shows that, in the United States sample, the overall model was significant ( $F = 6.36, p < .001$ ), explaining 22% of the variance. As expected, personal environmental risk was a significant independent predictor of sustainable behavior ( $p < .001$ ), and global belonging approached significance ( $p < .10$ ), partially consistent with expectations. The other hypothesized variables were not independent predictors.

#### **Netherlands Sample**

Correlations in Table 2 show that stronger perceived environmental risk was unrelated to global or national sense of belonging, and to world-minded value orientation, thus not supporting the expectation based on the superordinate goal theory. Contrary to expectations, but similar to the United States sample, more positive rather than more negative perceived impact of globalization was associated with stronger sense of global belonging ( $r = .37, p < .05$ ). Similar to the United States sample stronger sense of global belonging was associated with higher world-minded value orientation ( $r = .48, p < .001$ ). Unlike the United States sample, global belonging and national belonging were negatively correlated ( $r = -.30, p < .01$ ), suggesting the bipolar nature of these two identity domains in the Netherlands sample. In the Netherlands sample the overall regression model was significant ( $F = 2.83, p < .05$ ), explaining 20% of the variance (Table 3). As expected, greater personal environmental risk, stronger global belonging, and stronger national belonging were significant independent predictors of sustainable behavior. However, world-minded value orientation and globalization general impact were not independent predictors.

#### **Brazil Sample**

Correlations in Table 2 show that there was a tendency for greater sustainable behavior to be associated with stronger sense of global belonging ( $r = .23, p < .05$ ), and with national belonging ( $r = .21, p < .05$ ). Similar to the United States and Netherlands samples, and contrary to expectations, more positive general globalization impact rather than negative impact, was associated with stronger sense of global belonging ( $r = .47, p < .001$ ), and with national belonging ( $r = .33, p < .01$ ). It was unrelated to world-minded value orientation ( $r = .05$ ). As expected, and in line with the super ordinate goal theory, stronger perception of environmental risk was associated with stronger sense of global belonging ( $r = .22, p < .05$ ). Unlike the United States and the Netherlands samples, stronger sense of global belonging and national belonging were positively correlated ( $r = .25, p < .01$ ), suggesting that these two identity domains may be somewhat co-extensive in the Brazil sample. Also unlike the United States and the Netherlands samples, sense of global belonging and world-minded value orientation were uncorrelated ( $r = .10$ ) for the Brazil sample. In the Brazil sample, the overall model was barely significant ( $F = 2.14, p = .05$ ). However, none of the predictor variables were significant independent predictors of sustainable behavior, contrary to expectations, although global belonging approached significance ( $p < .10$ ). This may be partially due to the restriction of the range of scores on the sustainable behavior measure in this sample ( $M = 1.88, SD = 0.60$ ), and partially to the relatively low Cronbach's  $\alpha$  of .66 on the same measure.

#### **Discussion**

In line with the super ordinate goal theory higher perceived environmental risk turned out to be a significant predictor of more sustainable behavior in the United States and the Netherlands samples, but not in the Brazil sample. In the Brazil sample, the correlation between perceived risk and sustainable behavior approached significance. While the overall regression models were significant, the other predictors were not independent significant predictors of sustainable behavior in the United States and Brazil samples. However, stronger sense of global belonging approached significance as a predictor in both samples. In the Netherlands sample, stronger sense of national and global belongs were independent predictors of more sustainable behavior, in addition to perceived personal risk, as stipulated by the super ordinate goal theory. The finding of perceived personal risk as a predictor of sustainable behavior in the United States and Netherlands samples is consistent with findings by Der-Karabetian et al. (2014) who reported a similar relationship in samples from China, Taiwan and the United States. A comparable relationship has been also reported by Der-Karabetian et al. (1996) in samples of British and United States college students, and in a French adult sample by Fleury-Bahi (2008). These findings reinforce the possible etic or culture common nature of this relationship that cuts across multiple cultures (Pike, 1966; Triandis, 1972).

In support of this contention, examining predictors of sustainable behavior across 25 countries, Mostafa (2012) demonstrated the importance of including personal and individual level factors in predicting sustainable behavior. Moreover, based on an analysis of the empirical literature, Kasser (2010) highlights the contribution of the sense of personal wellbeing to encourage pro-environmental behavior. Also, Portinga et al. (2004) have shown in a Dutch study the contribution of general and specific environmental concerns to managing environmental problems, and support for pro-environment government regulations. Perceived personal impact of environmental problems on wellbeing appears to be related to pro-environment behaviors across different country-samples, and is consistent with the super ordinate goal theory.

Along the same line of argument, the theory of super ordinate goals would suggest that greater perceive personal environmental risk would lead to a stronger sense of belonging and affiliation with the global-human community, and engender stronger world-minded value orientation. The data did not support this expectation in the United States and the Netherlands samples; perceived environmental risk was unrelated to sense of global belonging or world-minded value orientation. In the Brazil sample, there was a significant association between higher perceived personal risk and stronger sense of global belonging, but was unrelated to world-minded value orientation. Consistent with the super ordinate goal theory, Der-Karabetian et al. (2014) have shown an association between higher perceived environmental risk and stronger global belonging in college samples from the United States, China and Taiwan. They also reported that higher perceived risk was associated with strong world-minded value orientation in the United States and Taiwan samples, but not in the sample from China. Global identity and cosmopolitan world-minded value orientation have also been shown by others to play a role in greater awareness of environmental problems and sustainable behavior (Der-Karabetian et al., 1996; Leung et al., 2015; Nijssen & Douglas, 2008; Stern et al., 1993; Winter, 1996). Findings from this and other studies seem to suggest that correlates of perceived environmental risk may have factors that are common across different countries, as well as ones that are unique to each country.

The super ordinate goal theory would also suggest that when the impact of globalization is perceived as a more negative threat nationally or globally, it could lead to greater sense of belonging and solidarity with one's nation or the general global community, respectively, as a way of countering the threat. The present data contradicted this expectation. In all three samples more negatively perceived impact of globalizations was associated with weaker sense of belonging to the global-human community and it was unrelated to a world-minded value orientation in the Netherlands and the Brazil samples. However, it was positively related to world-minded value orientation in the United States sample. Der-Karabetian et al. (2014) have reported similar findings in college samples from China, Taiwan and the United States. It appears that more negative perceived impact of globalization may be leading to distancing one's self from a sense of belonging to the global community that may be seen as the possible source of the negative impact. This might make some sense when viewed in the context of the discourse regarding the possible negative impact of globalization that might increase inequalities in economic conditions and overall wellbeing (e.g. Brune & Garrertt, 2005; Milanovic, 2005; Mukherjee & Kriekhaus, 2011).

### ***Implications and Limitations***

The findings of this study provide partial support to the stipulations of Sherif's (1966) super ordinate goal theory. As predicted, perceiving the pervasive environmental degradation as a personal threat that may negatively impact the wellbeing of one's self and close family may be fostering pro-environmental behavior independent of other contributing factors. The fact that this seems to hold across multiple countries suggests the possible culture-common (etic) nature of the relationship. In an attempt to develop a generalized model of influences on pro-environmental behavior, Kallmuss and Agyeman (2002) identify a host of complex variables including, but not limited to, demographics, knowledge, awareness, economy, culture, values and motivation. Perhaps perception of personal risk may be one of the psychological factors that may be incorporated in the model, given its consistent presence across multiple countries, and as an independent contributor. World-minded value orientation and identification with all of humanity may also help promote to pro-environment behavior (Buchan et al., 2011; Leung et al., 2015; McFarland et al., 2012; Poortinga et al., 2004). It may be helpful to consider incorporating perception of personal risk to encourage sustainable behavior in formal educational settings (e.g. Bolscho & Hauenschild, 2006; Carrier, 2009; Heimlich, 2010), as well as in community-based interventions (e.g. McKenzie-Mohr, 2000; Tal, 2004). Alongside perception of risk, where appropriate, perceived impact of globalization as well as a sense of belonging to the global-human community may be used to foster pro-environment behavior.

Also, cultivating a world-minded value orientation with a sense of the collective common fate of humanity may further help promote sustainable behavior. Several limitations of this study should be acknowledged. The student samples from the three countries were obtained because they were conveniently available and accessible. Consequently, the results cannot be generalized to college populations or to the general public in these countries. The differences in the demographic profiles of the samples did not allow meaningful comparisons, and may have partially contributed to the differential relationship of the variables within each sample. Moreover, the relatively small sample size from the Netherlands could have impacted the power of the statistical analyses in that sample. Also, the order of the measures was not randomized. This might have caused a possible order effect. But the fact that there were theoretically predictable findings suggests the robustness of the relationship among the variables. With increased sample sizes, and given that some of the predictors are correlated, future research could use structural equation modeling to assess the path of various psychological variables that predict sustainable behavior. To enhance the reliability of the measures some items in several of the measures were eliminated, resulting in somewhat different item content in the three samples. These did not seem to be extensive enough to jeopardize the meanings of the underlying constructs. The reliability *alpha* scores of the sustainable behavior measure in the Brazil and the Netherlands samples were marginally acceptable. This may have contributed to some of the predictor variables not showing up as independent predictors.

Future research should continue to study the complex set of variables that contribute to pro-environmental behavior to identify common elements that cut across multiple countries as well as isolate elements that are country and culture specific. Also, more non-student community-based samples should be studied to broaden the generalizability of psychological factors contributing to sustainable behavior. Alongside psychological variables of perceptions, identity, and value orientation, broader variables such as institutional, cultural, economic, globalization exposure, and national policies should be incorporated in cross-cultural studies. Efforts to develop models of sustainable behavior (e.g. Kallmuss & Agyeman, 2002; Stern, 2000) should continue, accompanied by empirical evaluation of policy driven intervention efforts.

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**Table 1: Demographic information of the United States, the Netherlands, and Brazil samples of college students**

	United States (N = 117)	Netherlands (N = 45)	Brazil (N = 116)
	Mean or %	Mean or %	Mean or %
Age	Mean = 21.1 (R = 17-40)	Mean = 24.6 (R = 18-64)	Mean = 32.0 (R = 22-61)
Sex			
Male	31%	61%	68%
Female	69%	39%	32%
Years in College			
4 and fewer years	63%	61%	27%
5 and more years	37%	39%	73%
Traveled outside own country			
No	14%	0%	0%
Yes	86%	100%	100%
Times communicated with people outside own country last week			
None	48%	37%	25%
1 or 2 times	20%	17%	21%
3 or more times	32%	46%	54%
Politically active to influence local or national decisions			
Not at all	53%	48%	46%
Somewhat	40%	37%	42%
Active/Very Active	7%	15%	12%

**Table 2: Inter-correlation (Pearson r) of measures, Cronbach's alphas, Means and Standard Deviations for the United States (N=117), the Netherlands (N=45), and Brazil (N=116) samples of college students**

<b>United States</b>		SB	GGI	IOC	NB	GB	WM	Alpha (95% CI)	# of Items			
<b>Mean</b>	<b>SD</b>											
Sustainable Behavior (SB)	0.85	-				.72 (.63-.79)	6	4.31				
Globalization General Impact (GGI)	-0.01	-				.77 (.71-.83)	8	4.26	0.68			
Impact on Own Country (IOC)		-.01	-.24*	-		.74 (.64-.81)	3	3.52	0.99			
National Belonging (NB)	-.12	.22*	.01	-		.76 (.68-.82)	7	4.01	0.86			
Global Belonging (GB)		.21*	.40**	-.08	.05	-.78 (.71-.84)	7	3.55	0.91			
World Mindedness (WM)	0.49	.06	.31**	-.09	.08	.37**	.75 (.68-.81)	26	3.33			
Personal Environmental Risk (PER)		.47**	-.07	.21*	-.16 <sup>+</sup>	.11	-.01	.81 (.75-.86)	7	3.95	0.87	
<b>The Netherlands</b>			SB	GGI	IOC	NB	GB	WM	Alpha (95% CI)	# of Items		
<b>Mean</b>	<b>SD</b>											
Sustainable Behavior (SB)	2.93	0.74	-				.66 (.47-.80)	5				
Globalization General Impact (GGI)	0.84		.06	-			.72 (.56-.83)	5	3.24			
Impact on Own Country (IOC)			-.11	.28 <sup>+</sup>	-		.71 (.52-.83)	3	2.30	0.88		
National Belonging (NB)	-.17		-.19	-.06	-		.77 (.65-.86)	7	3.23	0.75		
Global Belonging (GB)	0.78		.34*	.37*	.17	-.30*	-	.75 (.62-.85)	7	3.69		
World Mindedness (WM)	0.62		.10	.27 <sup>+</sup>	.16	-.42**	.48***	-	.82 (.73-.89)	15	3.32	
Personal Environmental Risk (PER)			.33*	-.23	-.22	-.04	.07	.13	.81 (.70-.89)	5	4.13	0.92
<b>Brazil</b>			SB	GGI	IOC	NB	GB	WM	Alpha (95% CI)	# of Items		
<b>Mean</b>	<b>SD</b>											
Sustainable Behavior (SB)	1.88	0.66	-				.66 (.55-.75)	6				
Globalization General Impact (GGI)	0.63		.10	-			.78 (.71-.84)	8	2.33			
Impact on Own Country (IOC)	3.05	0.59		.11	.34**	-		.61 (.48-.71)	8			
National Belonging (NB)	0.83		.21*	.33**	.30**	-		.79 (.73-.85)	7	2.75		
Global Belonging (GB)			.23*	.47***	.26**	.25**	-	.84 (.79-.88)	7	2.90	0.85	
World Mindedness (WM)	-.08		.05	.10	-.01	.10	-	.64 (.53-.73)	16	4.35	0.43	
Personal Environmental Risk (PER)			.18 <sup>+</sup>	.11	.03	.08	.22*	-.07	.84 (.79-.88)	5	3.11	0.98

+  $p < .10$  \*  $p < .05$  \*\*  $p < .01$  \*\*\*  $p < .001$

**Table 3: Standard Multiple Regression analyses for the United States, the Netherlands and Brazil Samples of College Students Using Sustainable Behavior as the Predicted Variable**

	United States (N = 117)			Netherlands (N = 45)			Brazil (N = 116)											
	B	SEB	$\beta$	B	SEB	$\beta$	B	SEB	$\beta$									
Globalization General Impact			-.086	.118	-.070		-.070	.137	-.080		-.065	.102	-					
Impact on Own Community	-.089	.074	-.104		-.096	.122	-.113		.039	.101	.038							
National Belonging			-.034	.084	-.035		.303	.148	.308*		.113	.071	.158					
Global Belonging				.160	.088		.172+		.386	.153	.408*							
World-Mindedness			.134	.074	.191+				.032	.156	.019		-.018	.199	-.015	-.145	.127	-.104
Personal Environmental Risk			.446	.083	.461**		.247	.117	.306*		.082	.057	.135					
$R^2$ Adj. (% of Variance)			.22	(22%)		.20	(20%)		.06	(6%)								
SE of Estimate			.75			.66			.58									
F (df)					6.36	(6, 110)			2.83	(6, 38)				2.14	(6, 109)			
p					< .001				< .05					=.05				

+  $p < .10$ ; \*  $p < .05$ ; \*\*  $p < .001$