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Being environmentally responsible: Cosmopolitan orientation predicts pro-environmental behaviors

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ABSTRACT

Much research has examined individuals' values and beliefs as antecedents or correlates of pro-environmental behaviors (PEB). We approach this question from the novel perspective of individuals' cosmopolitan orientation (CO). We define CO as made up of three essential qualities. First, cultural openness captures individuals' receptiveness to immerse in and learn from other cultures. Second, global prosociality denotes a sense of collective moral obligation to universally respect and promote basic human rights. Third, respect for cultural diversity concerns high tolerance of and appreciation for cultural differences. Across two studies, we validated the Cosmopolitan Orientation Scale (COS) with theoretically related criterion measures across Singaporean, Australian, and American samples. Analyses showed good fit with a three-factor model. Next, we demonstrated the theoretical utility of CO, in particular the global prosociality subscale, in predicting PEB above and beyond pro-environmental worldview, motivation, and belief. We discussed the implications of studying cosmopolitanism on environmental psychology.

1. Introduction

Globalization has become a potent and inevitable force that enhances interconnectedness and integration among people, institutions, organizations, and governments in most parts of the world (Chiu, Gries, Torelli, & Cheng, 2011; Leung, Qiu, & Chiu, 2014). It has transformed individuals' relations to and their identifications with their nation, culture, ecology, work and family (Croucher, 2004; Fiss & Hirsch, 2005; Kellner, 2002; Robertson & White, 2007), impacting both individuals' everyday life and international relations across cultural, economic, political, and ecological realms at unprecedented levels.

Despite the upsurge of research interest in the concept of globalization in contemporary social science disciplines, until recently psychologists have largely remained impassive toward this concept (Bandura, 2001; Chiu et al., 2011). In the present research, we seek to contribute to the globalization scholarship by studying the link between individuals' cosmopolitan orientation (CO) and their environmental consciousness. Specifically, CO refers to the attitudinal and value orientations of individuals who immerse as part of the globalized world. We believe that cosmopolitanism, though understudied, is an important concept in environmental psychology for at least two reasons. First, a cosmopolitan conception enhances one's awareness and knowledge of the global and transnational scope of environmental issues. Second, adherence to cosmopolitan ideals affords a globally rooted sense of citizenship and morality that strengthens one's perceived connections with people in other parts of the world. This in turn encourages people to place precedence on intensity of needs over proximity of needs (Contorno, 2012), thus motivating them to eradicate environmental problems for the well-being of not only those in their own nation-state but also the whole humanity. In this light, we set out to demonstrate the theoretical utility of individuals' endorsement of cosmopolitan qualities in predicting their pro-environmental behaviors (PEB) when extant concepts of environmental worldviews, motivations, and beliefs are taken into account. To achieve this research goal, we develop a psychometric scale (i.e., the Cosmopolitan Orientation Scale, or COS) to measure individuals' CO. Theoretically, this new scale can enrich our understanding of the value, attitudinal, and behavioral orientations of cosmopolitan individuals. Practically, the concept of CO bears important implications for encouraging environmentalism in the public and assessing the degree of environmental consciousness in different populations across the globe.

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2. The construct of cosmopolitan orientation

2.1. Globalization and cosmopolitanism

Cosmopolitanism is an old idea, but is given a new context. First coined by Diogenes of Sinope (c. 412 B. C.) in Ancient Greece, the Greek term "Kosmopolitês" means "citizens of the world." The notion of cosmopolitanism is highly intertwined with the process of globalization, yet they refer to things that occur at different levels. As Beck and Sznaider (2010) succinctly put it:

> "globalization is something taking place 'out there', cosmopolitanization happens 'from within'… The question, then, is: how would we operationalize this conception of the world as a collection of different cultures and divergent modernities? Cosmopolitanization should be chiefly conceived of as globalization from *within*, as *internalized* cosmopolitanism." (p. 9)

Notably, although globalization and cosmopolitanism are closely linked concepts, globalization is neither a necessary nor sufficient condition for cosmopolitanization (Woodward, Skrbis, & Bean, 2008). On the one hand, people may have encountered globalization, but do not necessarily assume a cosmopolitan outlook to appreciate cultural diversity and to welcome the infusion of new experiences. Rather, they might hold that the hegemonic dominance of the global culture would eventually lead to erosion of local cultures. Such perception could spur their contested reactions to withdraw contacts with diverse cultures and to recede back to their comfort zone (see Chiu & Cheng, 2007, 2010; Chiu & Hong, 2006). On the other hand, people do not have to be geographically mobile in order to come into contact with different cultures. For example, nowadays with the power of the social media, individuals can develop cosmopolitan qualities even without extensively traveling to foreign places.

2.2. Three qualities representing a cosmopolitan orientation

Cosmopolitanism is a rather elusive concept. It has been conceptualized as a perspective or a state of mind (Hannerz, 1996), a set of attitudes, values, behaviors, and practices (Vertovec & Cohen, 2002; Woodward et al., 2008), a learnable skill (Thompson & Tambyah, 1999), and a personality trait (Cannon & Yaprak, 2002). A major gap in the literature of cosmopolitanism attests to defining the core attributes of the construct, given that much theoretical writings but relatively scant empirical research dominate this literature. To the best of our knowledge, there is no empirically established theory to provide the field a commonly shared conceptualization of the cosmopolitanism construct. We have therefore comprehensively reviewed the literature in an attempt to summarize common understanding of what cosmopolitanism represents. Our review of the literature has convinced us to propose three essential qualities of being a cosmopolitan. We then followed up with systematic empirical tests in three countries to confirm the psychometric properties of this dimensional view of CO.

First, cosmopolitan individuals are found to be receptive and outwardly open towards people, places, and experiences that belong to other cultures (Merton, 1968; Skrbis, Kendall, & Woodward, 2004). For instance, Hannerz (1990) characterized cosmopolitans as having a high level of intellectual and aesthetic openness to engage with divergent cultural experiences. Konrad (1984) described cosmopolitans as intellectuals who travel regularly but can easily feel at home when abroad. With an open mindset, cosmopolitan individuals are highly receptive to other cultures and are eager to learn through connecting to people and places beyond their local community. As suggested by the contemporary literature, this outward stance of cultural openness is often assumed to exemplify the core cosmopolitan characteristic (e.g., Hannerz, 1990; Kurasawa, 2004; Roudometof, 2005; Szerszynski & Urry, 2002), and therefore has become the dominant way of operationalizing the construct in existing measurements (e.g., Cleveland, Laroche, & Papadopoulos, 2009). Thus, we identify the first dimension of CO as *cultural openness*.

Second, it was theorized that cosmopolitan individuals embody a sense of global justice in that they recognize local and foreign people alike as being equally human and that they consider basic human rights as universally applicable to everyone in the world (Kant, 1991). Based upon the beliefs that all humans are born equal and that morality should be rooted globally (vs. locally), they tend to advocate a prosocial orientation to promote benevolence and generosity among human beings regardless of nationalities. As cosmopolitan individuals have often been characterized as aspiring towards universal affiliation with humankind (Bilsky, Janik, & Schwartz, 2011), they uphold a sense of collective moral obligation and endorse responsibilities to build a better world for all (Yeğenoğlu, 2005). Accordingly, cosmopolitans are also less likely to endorse ideologies of social dominance or inequality. We therefore identify the second dimension of CO as *global prosociality*.

Third, cosmopolitan individuals have been described as people who identify, respect, and protect cultural differences (Szerszynski & Urry, 2002, 2006) to the extent that they afford a "delight in difference" (Hannerz, 1990). Cosmopolitans' world-openness (i.e., the first dimension) provides them an impetus to gain global awareness and recognition of divergent cultural experiences. It follows that they are at an advantage to acquire cultural competence for navigating between different cultures (Hall, 2002). Some globalization researchers contend that the impact of globalization, rather than dissolve national boundaries and accelerate the emergence of a homogenous global culture, as often assumed, actually facilitates the differentiation of national cultures and affords active promotion and preservation of cultural differences (Ger, 1999). With globalization sharpening cultural contrasts, it affords and supports cosmopolitan individuals' tendency to search for cultural differences rather than uniformity (Hannerz, 1996). Presumably, cosmopolitan individuals presuppose positive attitude towards differences and they serve as "cultural brokers and gatekeepers" to interlink cultures and preserve different cultural practices (Hannerz, 1992, p. 258). We therefore identify the third dimension of CO as *respect for cultural diversity*.

It is worthwhile to point out the seemingly paradoxical meaning of cosmopolitanism in its Greek origin. The composition of the term "cosmopolis" is made up of two words: "cosmo" meaning the universal order of the nature and "polis" meaning the variable order of a society (Ribeiro, 2001). As a way to resolve this paradox that acknowledges both universality and variability, cosmopolitan individuals might adhere to a universalistic minimum by upholding the most basic and substantive norms at all costs (Beck & Sznaider, 2010). As long as they are certain that these minimal universalistic norms are protected, they appreciate diverse cultural forms and expressions and respect the difference of others. In this light, we presuppose that the qualities of global prosociality and respect for cultural diversity go hand in hand to epitomize a cosmopolitan ideal that seeks to reconcile and unite similarities and differences (Ribeiro, 2001).

In a recent research, Woodward et al. (2008) analyzed survey data from a representative sample of Australians to look into the attitudes and behaviors associated with cosmopolitan traits. Their findings largely coincide with the three dimensions of CO discussed above. Their data showed evidence of distinct domains for the expression of cosmopolitanism: increased flow of cultural goods,

openness to cultural differences, commitment to cultural diversity, and acknowledgement of human rights. Besides the first domain about increased flow of cultural products (which concerns less of a person's inclination or orientation), their empirical investigation confirms the theoretical utility of representing the central facets of CO as cultural openness, global prosociality, and respect for cultural diversity.

3. The significance of developing a cosmopolitan orientation scale

We construe CO as reflecting a predisposition to display a specific set of attitudes, values, behaviors, and practices of being a cosmopolitan, namely the three core qualities we drew upon from the literature: cultural openness, global prosociality, and respect for cultural diversity. Notably, although we conceptualize the COS as capturing individuals' cosmopolitan disposition, we also acknowledge malleability of this disposition as individuals could develop their CO given favorable conditions (see Hatemi, McDermott, Eaves, Kendler, & Neale, 2013 for a discussion on fear as a malleable trait-based disposition). We recognize that the need for a scale to measure individual variability in CO across cultures is particularly timely for three reasons. First of all, in the next section we will discuss the numerous and highly significant roles played by cosmopolitanism in environmentalism. To promote this research agenda, we consider it as an essential first step to develop a reliable and valid measure of CO. Second, although cosmopolitanism is widely discussed in sociological, political, and philosophical contexts, it is not commonly and readily studied in psychology yet (Bandura, 2001; Chiu et al., 2011). Despite its place in contemporary social sciences, cosmopolitanism lacks the levels of systematic empirical investigations it deserves. Applications of this concept have been widespread, but mainly limited to theoretical or qualitative inquiries (Cleveland, Erdoğan, Arıkan, & Royraz, 2011; Skrbis et al., 2004; Thompson & Tambyah, 1999).

Finally, as the concept of cosmopolitanism comprises a wide range of attitudes, values, behaviors, and practices, it becomes difficult to try to locate its pure or ideal social expressions (Woodward et al., 2008). Perhaps for this reason, we notice a gap between theorization and measurement of CO. As abovementioned, the disposition of cultural openness has been commonly conceived as the defining factor of cosmopolitanism and thus has become the dominant way of operationalizing the concept. For example, we found a six-item cosmopolitanism scale (Cleveland et al., 2009) with items predominantly capturing the dimension of cultural openness (e.g., "I like to learn about other ways of life"; "I enjoy exchanging ideas with people from other cultures and countries"; "Coming into contact with people of other culture has greatly benefitted me"). A related eight-item scale on global identification, initially designed for managerial personnel (Erez & Gati, 2004), leans toward individuals' level of identification with or involvement in global work activities (e.g., I see myself as part of the global international community"; "I see myself as part of my society"). In all, we see a gap between how cosmopolitanism is commonly measured and how it is richly theorized in the literature. To close this gap, we take on the task to develop a scale on CO. We are confident that this effort can greatly contribute to systematic investigations on many social and psychological phenomena, including environmentalism.

4. The relationship between cosmopolitan orientation and environmentalism

Extant research has had much success in accounting for individual variability in environmental consciousness by focusing on social demographics (e.g., age, gender, party affiliation; Dunlap, 1975; Gifford & Nilsson, 2014; Malkis & Grasmick, 1977; McEvoy, 1972), personal values and beliefs (e.g., postmaterialist values, belief about humans' connection to nature; Inglehart, 1995; Tam, 2013), and personality traits (e.g., openness to experience; Markowitz, Goldberg, Ashton, & Lee, 2012). The present research seeks to go beyond these known factors and systematically investigates the role of individuals' CO. Although many of the person-level factors examined in past research were shown to be capable to different degrees of explaining individuals' PEB, they mainly capture relatively stable personality disposition, value orientations, or belief systems. In contrast, existing theorizing tends to construe CO as malleable. It is conceivable for individuals to acquire a cosmopolitan state of mind (Hannerz, 1996), to practice and behave like a cosmopolitan (Vertovec & Cohen, 2002; Woodward et al., 2008), or to learn the skills promoting cosmopolitanism (Thompson & Tambyah, 1999). Furthermore, cosmopolitanization is happening in response to the ever changing and globalizing world. As we will discuss below, globalization has cast substantial (typically negative) impacts on the environment, but CO, largely made possible and afforded by globalization, might be able to counteract these impacts.

We argue that the construct of cosmopolitanism can offer a novel framework for understanding the nexus between global interconnectedness and the environmental crisis. On the one hand, individuals are likely to enjoy the many benefits brought about by global hyperconnectivity, such as the less restricted flow of goods, services, ideas, technologies, cultural forms, and people (Kellner, 2002). On the other hand, inevitably they are likely to be informed of or even face upfront global risks and struggles including terrorist threats, economic turmoil, financial crisis, and environmental problems. Although public outcry against the negativity of globalization always brings to the fore socioeconomic and political impacts, the environmental impacts of globalization are equally important, yet largely ignored (Ehrenfeld, 2005). Ehrenfeld (2005) has stressed that acknowledging these environmental effects is not a political statement or a moral judgment, but that these changes are real and can frighteningly reach the extent that the environment becomes hostile and threatening to human survival. Trends that accompany globalization such as accelerated reduction in transport and communication costs, trade liberation, and market integration have expanded shares of world trade and global foreign investment in developing countries (e.g., China, India), thereby greatly increasing environmental pollution from intensive industrial activities in these areas (Donaghy, 2012; Mani & Wheeler, 1998). The disappearance of cheap energy and the loss of agricultural biodiversity and wild species are some of the irreversible environmental effects of globalization (Ehrenfeld, 2005). As a result of globalization, developed nations and cities cast a large environmental imprint damaging the ecological systems of not only regionally proximate, but also remote regions (Donaghy, 2012). If cosmopolitan oriented individuals are more likely to recognize that intensity of needs should take precedence over proximity of needs (Contorno, 2012), they may be more ready to act to mitigate and repair damage.

In the literature, there was some initial evidence showing a positive association between cosmopolitanism and PEB (Anderson & Cunningham, 1972; Swenson & Wells, 1997) and consumption of green products (Shamdasani, Ong, & Richmond, 1993). However, these existing studies were based on cosmopolitan measures with questionable validity. For example, as noted by Contorno (2012), some questions used by Swenson and Wells (1997) were arguably invalid to capture cosmopolitanism (e.g., "I have taken an airplane trip for personal reasons" and "I stayed at an upper-priced hotel on a personal trip"). In the study by Contorno (2012), a positive, but

weak relationship between cosmopolitan values and environmental concern was found across seven countries. Contorno (2012) suggested that the weak magnitude could have resulted from the fact that the items used were not precisely measuring the construct of cosmopolitanism (these items were selected from the 2005 World Value Survey and were only seemingly related to cosmopolitan values). To address this measurement limitation, in the present research we first developed a carefully operationalized and validated scale on CO, and then systematically investigated the link between CO and eco-consciousness. This is a timely research agenda as it is important to harness the dynamics of cosmopolitanization for understanding and resolving various environmental challenges facing the global world.

In our theorizing, CO is linked to heightened environmental concern through at least two paths. The first path has to do with *knowledge acquisition*. This path concerns knowledge about the global scope of environmental problems as well as knowledge about environmental protection practices (Najam, Runnalls, & Halle, 2007). First, embedded as part of the larger global community, cosmopolitan individuals become more aware of the transnational consequences of environmental degradation even if their local community has yet to suffer from immediate impacts of environmental damage. Given their extensive travel, some cosmopolitan people are also more likely to have first-hand knowledge with environmental issues that happen not only locally but also in other foreign locales. In other words, they have greater access to the channels of diffusion of environmental values through overseas education, travel abroad, reading of books and magazines from foreign countries, and intercultural contacts (Brechin & Kempton, 1994). Research showed that knowledge about increased environmental pollution and anthropogenic climate change is more likely to prompt individuals to engage in protest behaviors and limited environmental activism to mitigate aversive environmental impacts (Finger, 1994). Therefore, with increased knowledge about environmentalism cosmopolitan individuals might become part of the global environmental networks to participate in environmental campaigns or to join an environmental activist group. If they assume roles in environmental organizations or environmental ministries and legislation at the broader national or even international level, they are able to contribute substantially to the promotion of environmental awareness and activism throughout the world (Rohrschneider & Russell, 2002). Interestingly, research also revealed that knowledge learned through first-hand life experiences (vs. without first-hand experiences) with environmental issues appear to be more closely related to standard environmental behaviors such as recycling and using public transportation (Finger, 1994). It is because the kind of environmental learning acquired from real-life encounters are more likely to generate fear and anxiety, leading to social environmental action as a means to cope with negative life experiences with environmental problems. In a meta-analysis (Hines, Hungerford, & Tomera, 1987), it was found that knowledge of environmental issues and their consequences, as well as knowledge of action strategies to combat environmental problems, show a corrected correlation coefficient of .30 with environmental behaviors. This is one of the stronger correlations among other variables such as verbal commitment, locus of control, and attitude. Given this correlation, it seems reasonable to argue that knowledge can be regarded as a necessary (though not a sufficient) condition for pro-environmental decision-making (Gifford, 2014; Gifford & Nilsson, 2014).

Second, their global connectedness also allows cosmopolitan individuals to acquire information about new environmental practices and technologies (e.g., the use of alternative energy, new ways to DIY biodegradable products) more easily from different parts of the world. Diffusion of environmental scientific findings, environmental values, and environmental success in other countries through various forms of mass media or communication technologies might reach cosmopolitan individuals more effectively and efficiently (Brechin & Kempton, 1994). We posit that this knowledge acquisition path is linked to the three dimensions of CO. With cosmopolitan individuals' open attitude towards foreign cultures and their respect and appreciation of divergent cultural experiences, they could be more receptive to the diffusion of knowledge related to environmentalism. Further, their global prosocial attitude could also help transfer this knowledge to activist behaviors or environmentally friendly actions, thus benefiting mankind by contributing to environmental sustainability.

The second path has to do with awareness of *global interdependence*. Given that ecological systems are globally entwined, the environmental effects of globalization can be scaled back only if citizens in different nations restore a sense of communal obligation (Ehrenfeld, 2005). We contend that cosmopolitan ideals could contribute to a growing moral sense of mutual responsibility and a belief that environmental justice is owed to all regardless of nationalities (Donaghy, 2012). This frame of mind strengthens cosmopolitan individuals' perceived connections with people in other parts of the world and invigorates a culture of concern for each other. They become more aware of their mutual interdependence and more motivated to engage in passionate efforts to contain environmental damage not just for the well-being of those in their own nation-state, but for the humanity as a whole (Koster, 2007). Cosmopolitan individuals' global humanitarian concerns to alleviate aversive environmental impacts on fellow human beings might have reflected their cardinal identification or sense of connection with the human race (e.g., identification with all humanity; see McFarland, Brown, & Webb, 2013; McFarland, Webb, & Brown, 2012). As they are more likely to show genuine concern for global humanitarian rights and needs, they care for the well-being of mankind by doing what they can to mitigate environmental degradation.

Another concept relevant to explaining the global interdependence pathway is place attachment on a global (vs. local) scale (Devine-Wright, 2013; Devine-Wright, Price, & Leviston, 2015). Place attachment is defined as the individuals' experience of positive bonds with their socio-physical environment (Brown & Perkins, 1992). Global place attachment, therefore, refers to people's positive relations to the global community and not just the locality where they live. We argue that a CO strengthens individuals' sense of global place attachment. Cosmopolitan individuals' global identity transcends a sense of belonging to the world in entirety (Der-Karabetian & Ruiz, 1997). For example, empirical data showed that some characteristic cosmopolitan qualities such as traveling regularly and having social networks outside of one's country increase the strength of attachment to the larger continental than the local or regional levels (Gustafson, 2009). In a recent survey study on over 1000 Australian respondents, findings show that individuals expressing stronger global (vs. national) place attachment were more likely to vote Green and hold beliefs in anthropogenic causes of climate change (Devine-Wright et al., 2015). We posit that as the global interdependence path emphasizes mutual responsibility, connection with all humanity, and global place attachment, it is well connected to the global prosociality dimension of CO.

Together, we predict that cosmopolitan people who immerse as part of the global world are more likely to be aware of or have first-hand experience with environmental crisis (i.e., the knowledge acquisition path) and to endorse a global sense of moral obligation to mitigate environmental damage (i.e., the global interdependence path). They are more likely to perceive environmentalism as a

global challenge and show higher levels of environmental awareness than their less cosmopolitan counterparts.

5. The present research

5.1. Research objectives

The aims of the present research are two-fold. First, we seek to gather evidence about the positive relationship between individuals' CO and their environmentalism. As the first empirical investigation, across two studies we set out to demonstrate the incremental validity of the COS in predicting PEB above and beyond standard measures of environmental worldview, motivation, and belief. This way we examine whether CO has added utility in explaining and predicting individuals' conservation behaviors. Second, as a means to achieve the first goal, we examine factorial properties and establish convergent and discriminant validity of the COS. With diverse samples that differ in cultural backgrounds (Singaporean, Australian, and American participants) and age groups (college students and general public), while achieving these research goals we were also able to cross-validate our findings.

5.2. Analytic approach

With an initial Singaporean sample, we devised a three-factored COS comprising of 15 items based on Exploratory Factor Analysis (EFA). Next, we adopted a three-step analytic approach across Studies 1 and 2. First, with three cultural samples recruited in Singapore, Australia, and the US in Study 1 and another Singaporean sample in Study 2, we assessed model fit of the three-factor model (cultural openness, global prosociality, respect for cultural diversity) by Confirmatory Factor Analysis (CFA) with full information maximum likelihood estimation. We examined the comparative fit index (CFI) and root mean squared error of approximation (RMSEA) to determine model fit. CFI compares the fit of the hypothesized model with a more restricted baseline model. CFI values $\geq$ .90 indicate an acceptable model fit to the data (Vandenberg & Lance, 2000). RMSEA reflects the degree to which the hypothesized model reasonably fits the population covariance matrix, while taking into account the degrees of freedom and sample size (Brown, 2006). It is a parsimony-adjusted index that favors simpler models. With RMSEA values $\leq$ .10, the model can be assumed to perform reasonably well (Vandenberg & Lance, 2000). We also used the chi-square change test (χ^2_{diff}) for model fit comparisons.

Second, we examined the inter-correlations between the COS and some criterion variables to evaluate whether the COS displays convergent and discriminant validity in Study 1. If the COS displays strong associations with theoretically relevant variables (i.e., global citizenship, global vs. local identity), then there is evidence of convergent validity (Fiske, 1971). It is also reasonable to predict that the COS displays moderate, but not strong, associations with conceptually related variables (i.e., multicultural personality, acculturation expectations, openness to experience, universalism orientation, social dominance). If this is found, then there is evidence of discriminant validity (Messick, 1989).

In the final step, we used hierarchical multiple regressions to test our substantive hypotheses that there is incremental contribution for one or more specific factors of COS and for the composite COS to positively predict PEB above and beyond generalized attitude and belief measures of environmentalism in both studies.

6. Scale development study

6.1. Sample and procedures

Development of the COS began with a review of the relevant literature, from which we yielded three distinct factors to define the conceptual meanings of CO: cultural openness, global prosociality, and respect for cultural diversity. Through an iterative process of generating and removing items to ascertain the items' content validity, 40 items were retained for the scale. A Singaporean sample of 217 participants (68 males and 149 females; M_{age} = 22.16 years, SD_{age} = 1.70) completed the 40-item scale by indicating their degree of agreement with each of the items on a 6-point Likert scale (1 = *strongly disagree* to 6 = *strongly agree*). Applying the Principal Components method of extraction and Direct Oblimin rotation, the 40 items were subjected to exploratory factor analyses.

6.2. Results

Examination of the eigenvalues identified three factors to be retained. We selected 15 items with the highest factor loading, with most of them being loaded distinctively on their respective factor. Although a few items load on another factor with loadings larger than .40, these items do not cross-load with equal or highly similar factor loadings. The final three-factor structure explained 65.78% of the total variance and revealed good psychometric adequacy (KMO = .88; Bartlett's Test of Sphericity: χ^2 (105) = 1783.88, $p < .0001$). As shown in Table 1, these 15 items load on three factors positively and uniquely, with the three factors accounting for 42.61%, 13.74%, and 9.43% of the variance and the eigenvalues being 6.39, 2.06, and 1.42, respectively. The first factor is termed cultural openness (five items; e.g., "It is exciting to immerse in a foreign culture"; factor loadings ranged from .70 to .85; α = .86). The second factor is termed global prosociality (five items; e.g., "I want to play my part to help make the world a better place for all"; factor loadings ranged from .79 to .86; α = .89). The third factor is termed respect for cultural diversity (five items; e.g., "I embrace cultural diversity"; factor loadings ranged from .60 to .79; α = .78). The bivariate correlations among the three COS factors are moderate to high in strength (cultural openness and global prosociality: r = .40, $p < .0001$; cultural openness and respect for diversity: r = .51, $p < .0001$; global prosociality and respect for diversity: r = .46, $p < .0001$). Thus, the COS is able to measure three theoretically related dimensions underlying individuals' CO (cultural openness, global prosociality, and respect for cultural diversity) with high internal consistency. The five items represent their corresponding dimensions rather accurately as this is apparent in factor loadings that fell between .60 and .89. We further confirm the psychometric properties of the COS with CFA in Studies 1 and 2.

7. Study 1

7.1. Samples and procedures

Data were collected from three countries: Singapore (N = 309; 97 males and 212 females; M_{age} = 22.05 years, SD_{age} = 1.66), Australia (N = 99; 25 males and 74 females; M_{age} = 20.09 years, SD_{age} = 2.34), and the U.S. (N = 251; 113 males and 138 females; M_{age} = 37.96 years, SD_{age} = 12.60). Participants from Singapore and Australia were students recruited from the Singapore Management University and the University of Melbourne respectively; participants from the U.S. were general public recruited online via the Amazon Mechanical Turk platform. All participants voluntarily and anonymously filled out a set of online questionnaires in exchange for a cash incentive or course credits.

Table 1
Factor loadings of the 15 COS items. Factor 1 represents cultural openness, Factor 2 represents global prosociality, and Factor 3 represents respect for cultural diversity, Scale Development Study.

Items	Factor		
	1	2	3
I am willing to study or work abroad in another culture.	**.85**	.32	.35
I am open to living in a different culture.	**.84**	.30	.34
I enjoy learning more about different cultures in the world.	**.83**	.35	.36
I want to travel to experience many different cultures.	**.81**	.23	.24
It is exciting to immerse in a foreign culture.	**.70**	.33	.17
I would serve the world community by helping human beings.	.32	**.86**	.21
I get upset when people do not want to offer help when those in need are foreigners.	.35	**.85**	.27
I want to play my part to help make the world a better place for all.	.30	**.83**	.24
When people from other countries are in need, I will help them to the best of my abilities.	.36	**.80**	.46
I want to help the unfortunate ones even if they are from other countries.	.34	**.79**	.35
I respect cultural differences.	.43	.36	**.79**
It is important to preserve the authenticity of native cultures.	.44	.50	**.79**
I embrace cultural diversity.	.54	.46	**.77**
We should celebrate cultural differences.	.54	.38	**.75**
I am against having one dominating culture.	.004	.12	**.60**

Note: The highest loadings are in bold. All items load distinctively on their respective factor and do not cross-load with equal or highly similar factor loading.

7.2. Measures

To validate the COS, we measured several criterion variables. Because in the current investigation it is infeasible to exhaust all of the variables related to one or more of the concepts pertaining to CO, we chose two sets of criterion variables. The first set was identified as highly relevant to the construct of CO in a general theoretical sense (i.e., Global Citizenship Scale, Local–Global Identity Scale). The second set was chosen because they are presumably related to one or more of the factors underlying CO. Specifically, universalism orientation and (the opposite of) social dominance orientation are expected to be related to the factor of global prosociality; openness to experience is expected to be related to the factor of cultural openness; multicultural personality and acculturation expectations are expected to be related to the factors of respect for cultural diversity and cultural openness.

Participants filled out the COS, the above criterion scales, the New Ecological Paradigm (NEP) scale as a measure of environmental attitude or worldview, two scales of PEB (support for environmental movement and the use of environmental impact as a national development indicator), and finally some basic demographic questions (e.g., gender, age, ethnicity).

Descriptive statistics, alpha coefficients, and mean differences by country samples for each of the measurement scales are shown in Table 2. All measures had acceptable to high internal consistency. We derived composite scores for all measures by reverse coding negatively phrased scale items (when necessary) and averaging across items.

7.2.1. Cosmopolitan orientation scale (COS)

Participants filled out the 15-item COS by indicating their degree of agreement with each of the items on a 6-point Likert scale (1 = *strongly disagree* to 6 = *strongly agree*). Cronbach's alphas are high in the three cultural samples ($\alpha_{Singapore} = .90$, $\alpha_{Australia} = .81$, $\alpha_{US} = .93$).

7.2.2. Global citizenship scale

The 22-item scale measures the notion of global citizenship (Reysen, Larey, & Katzarska-Miller, 2012), which captures the dimensions of global awareness (e.g., "I understand how various cultures of this world interact socially"), global citizenship identification (e.g., "I strongly identify with global citizens"), normative environment (e.g., "Most people who are important to me think that being a global citizen is desirable"), and pro-social values (e.g., "I am able to empathize with people from other countries"). Respondents indicated their ratings on a 7-point Likert scale (1 = *strongly disagree* to 7 = *strongly agree*). Internal consistencies are high across samples ($\alpha_{Singapore} = .91$, $\alpha_{Australia} = .91$, $\alpha_{US} = .95$).

7.2.3. Local–global identity scale

The scale is intended to capture the extent of participants' local and global identities with eight items on a 7-point Likert scale (1 = *strongly disagree* to 7 = *strongly agree*; Tu, Khare, & Zhang, 2012). A local identity represents recognition of and interest in local traditions and communities (four items; e.g., "I care about knowing local events"; $\alpha_{Singapore} = .82$, $\alpha_{Australia} = .74$, $\alpha_{US} = .85$), whereas a global identity reflects a positive belief in globalization and greater awareness of similarities shared across different communities (four items; e.g., "My heart mostly belongs to the whole world"; $\alpha_{Singapore} = .81$, $\alpha_{Australia} = .81$, $\alpha_{US} = .89$).

7.2.4. Multicultural personality questionnaire (short form)

Participants indicated their intercultural success with 40 items anchored on a 5-point Likert scale (1 = *totally not applicable* to 5 = *completely applicable*). The scale measures five traits that are deemed desirable for enhancing multicultural adaptability (van der Zee, van Oudenhoven, Ponterotto, & Fietzer, 2013). These traits include cultural empathy (e.g., "Pays attention to the emotions of others"), open-mindedness (e.g., "Tries out various approaches"), social initiative (e.g., "Takes the lead"), emotional stability (e.g., "Gets upset easily"; reverse scored), and flexibility (e.g., "Works according to strict rules"; reverse scored). The scale is internally consistent across samples ($\alpha_{Singapore} = .83$, $\alpha_{Australia} = .76$, $\alpha_{US} = .79$).

7.2.5. Acculturation expectations scale (dominant group version)

The scale measures expectations by members' from the dominant group about immigrants' acculturation strategies when adapting to the host country (Berry, 1997). Specifically, it measures the participants' expectations of the immigrants to adopt the strategies of separation (four items; e.g., "Immigrants should have only immigrant friends"; $\alpha_{Singapore} = .54$, $\alpha_{Australia} = .50$, $\alpha_{US} = .62$), marginalization (four items; e.g., "Immigrants should not engage in either the [national]'s or their own group's social activities"; $\alpha_{Singapore} = .58$, $\alpha_{Australia} = .41$, $\alpha_{US} = .60$), assimilation (four items; e.g., "Immigrants should engage in social activities that involve [nationals] only"; $\alpha_{Singapore} = .67$, $\alpha_{Australia} = .53$, $\alpha_{US} = .72$), and integration (four items; e.g., "I feel that immigrants/ethnics should maintain their own

Table 2
Descriptive statistics and sample mean comparisons for criterion variables and COS, Study 1.

Criterion or COS variables	Singaporeans (SG) ($N = 309$)		Australians (Aus) ($N = 99$)		Americans (US) ($N = 251$)		One-way ANOVA, F		
	α	M (SD)	α	M (SD)	α	M (SD)	SG vs. Aus	SG vs. US	Aus vs. US
Global Citizenship	.91	5.36 (0.68)	.91	5.72 (0.78)	.95	5.22 (1.06)	19.27**	3.73	18.32**
Global Identity	.81	5.04 (1.05)	.81	5.45 (1.13)	.89	5.12 (1.36)	10.86**	0.58	4.59*
Local Identity	.82	5.54 (0.99)	.74	5.16 (1.00)	.85	4.92 (1.28)	11.41**	42.73**	2.81
Multicultural Personality	.83	3.51 (0.33)	.76	3.60 (0.32)	.79	3.43 (0.36)	6.38*	6.68**	17.12**
Openness to Experience	.73	3.38 (0.51)	.75	3.77 (0.56)	.80	3.61 (0.61)	40.07**	23.29**	4.71*
Acculturation Expectations									
Marginalization	58.	2.03 (0.67)	.41	1.81 (0.60)	.60	1.89 (0.65)	8.22**	6.05*	1.06
Separation	.54	2.19 (0.56)	.50	1.96 (0.41)	.62	2.01 (0.62)	13.21**	13.33**	0.36
Integration	.66	4.22 (0.60)	.66	4.26 (0.61)	.77	4.08 (0.72)	0.32	6.49*	4.91*
Assimilation	.67	2.14 (0.69)	.53	1.67 (0.56)	.72	2.13 (0.75)	37.40**	0.02	29.93**
Universalism Orientation	.68	3.68 (0.46)	.77	3.90 (0.56)	.80	3.76 (0.61)	15.81**	3.47	3.80
Social Dominance Orientation	.86	3.27 (0.82)	.84	2.20 (0.70)	.96	2.17 (1.18)	137.39**	167.97**	0.40
Environmental Movement Support	.89	4.71 (0.94)	.92	4.84 (1.25)	.95	4.43 (1.44)	1.23	7.32**	6.04*
National Development Indicators									
Economic Output	–	7.90 (1.63)	–	7.08 (2.04)	–	7.56 (1.92)	16.66**	5.19*	4.23*
Life Expectancy	–	7.68 (1.63)	–	8.12 (1.69)	–	7.40 (2.26)	5.51*	2.78	8.22**
Life Satisfaction	–	8.61 (1.61)	–	8.86 (1.42)	–	8.05 (1.92)	1.97	13.79**	14.36**
Environmental Impact	–	7.59 (1.69)	–	8.52 (1.65)	–	7.57 (2.30)	22.64**	0.02	13.92**
NEP	.73	3.47 (0.41)	.69	3.64 (0.42)	.92	3.66 (0.75)	11.92**	14.52**	0.11
Overall COS	.90	5.08 (0.58)	.81	5.47 (0.43)	.93	4.79 (0.84)	38.09**	29.97**	59.68**
Factor 1: Cultural Openness	.88	4.89 (0.76)	.83	5.42 (0.66)	.91	4.70 (1.03)	39.64**	6.66*	42.15**
Factor 2: Global Prosociality	.89	5.27 (0.74)	.84	5.52 (0.62)	.92	4.63 (1.15)	9.45**	62.82**	52.90**
Factor 3: Respect for Cultural Diversity	.80	5.09 (0.66)	.72	5.47 (0.58)	.86	5.04 (0.83)	26.88**	0.57	22.18**

**$p < .01$; *$p < .05$.

cultural traditions but also adopt those of [nationals]"; $\alpha_{Singapore} = .66$, $\alpha_{Australia} = .66$, $\alpha_{US} = .77$). Responses were reported on a 6-point Likert scale (1 = *totally disagree* to 6 = *totally agree*).

7.2.6. Openness to experience subscale

This is a 12-item subscale from the NEO Five-Factor Inventory (NEO-FFI; Costa & McCrae, 1992). Participants rated the extent to which they agreed with each statement on a 5-point Likert scale (1 = *strongly disagree* to 5 = *strongly agree*). Sample items are "I have a lot of intellectual curiosity" and "I am intrigued by the patterns I found in art and nature" ($\alpha_{Singapore} = .73$, $\alpha_{Australia} = .75$, $\alpha_{US} = .80$).

7.2.7. Universalism orientation scale

Participants reported their universalism orientation (Phillips & Ziller, 1997) on 17 items with a 5-point Likert scale (1 = *strongly disagree* to 5 = *strongly agree*). Sample statements are "The same spirit dwell in everyone" and "At one level of thinking we are all of a kind" ($\alpha_{Singapore} = .68$, $\alpha_{Australia} = .77$, $\alpha_{US} = .80$). The scale seeks to measure the belief that humans are inherently similar across the world.

7.2.8. Social dominance orientation scale

The scale measures participants' endorsement of a hierarchical social structure in that some social groups are more superior over others (Pratto, Sidanius, Stallworth, & Malle, 1994). Participants indicated their feelings towards each of 14 statements on a 6-point Likert scale (1 = *very positive* to 6 = *very negative*). Sample items are "It's OK if some groups have more of a chance in life than others" and "We should do what we can to equalize conditions for different groups" (reverse scored). The scale is internally consistent in our samples ($\alpha_{Singapore} = .86$, $\alpha_{Australia} = .84$, $\alpha_{US} = .96$).

7.2.9. Environmental worldview

We measured environmental worldview with the 15-item New Ecological Paradigm (NEP) scale (Dunlap, VanLiere, Mertig, & Jones, 2000). Participants indicated the extent of their agreement or disagreement with 15 statements (e.g., "Humans are seriously abusing the environment"; $\alpha_{Singapore} = .73$, $\alpha_{Australia} = .69$, $\alpha_{US} = .92$) on a 5-point scale (1 = *strongly disagree* to 5 = *strongly agree*).

7.2.10. Pro-environmental behaviors

We included two measures of PEB. First, we adapted the 10-item scale on environmental movement support from the Environmental Attitudes Inventory (Milfont & Duckitt, 2010; e.g., "If I ever get extra income, I will donate some money to an environmental organization"; $\alpha_{Singapore} = .89$, $\alpha_{Australia} = .92$, $\alpha_{US} = .95$). Participants indicated their agreement with each statement on a 7-point scale (1 = *strongly disagree* to 7 = *strongly agree*). Second, in a less explicit measure, participants indicated their support for advising the government to adopt an indicator to assess the nation's development (Tam, Lee, & Chao, 2013). They were told that a nation's development is typically evaluated by its economic output (e.g., GDP), but recently alternative indicators had been called for. Participants were presented four indicators (economic output, life expectancy, life satisfaction, and environmental impact) and indicated their support for each on a 7-point scale (1 = *not at all* to 7 = *very much*). Their support score on environmental impact constitutes the measure on environmental impact indicator advocacy.

7.3. Results

7.3.1. Model fit of the COS

We conducted comparative CFAs to validate fit of the three-factor COS model. Fit statistics for the unconstrained three-factor model meet standard criteria across the three samples (Singapore: $\chi^2 = 177.32$ (87, $N = 309$), $p < .0001$, CFI = .97, RMSEA = .06; Australia: $\chi^2 = 118.98$ (87, $N = 99$), $p = .01$, CFI = .94, RMSEA = .06; US: $\chi^2 = 301.39$ (87, $N = 251$), $p < .0001$, CFI = .93, RMSEA = .099). Fit statistics for the one-factor model with the covariance between the three latent COS factors set equal to one do not meet standard criteria (Singapore: $\chi^2 = 1013.04$ (90, $N = 309$), $p < .0001$, CFI = .65, RMSEA = .18; Australia: $\chi^2 = 384.23$ (90, $N = 99$), $p < .0001$, CFI = .48, RMSEA = .17; US: $\chi^2 = 1143.52$ (90, $N = 251$), $p < .0001$, CFI = .63, RMSEA = .22). We carried out chi-squared difference tests to assess whether or not the three-factor model fits the data better than the one-factor model. Results confirm that our three-factor model is significantly better than the one-factor model for all samples (Singapore: $\chi^2_{diff} = 835.72$ (2,

Table 3
Correlations between COS and criterion variables across samples, Study 1.

Criterion variables	Overall COS			Factor 1: cultural openness			Factor 2: global prosociality			Factor 3: respecting diversity		
	SG	Aus	US	SG	Aus	US	SG	Aus	US	SG	Aus	US
Global Citizenship	.55**	.70**	.78**	.40**	.27**	.58**	.47**	.69**	.72**	.45**	.50**	.64**
Global Identity	.42**	.59**	.73**	.30**	.24*	.55**	.38**	.57**	.72**	.33**	.42**	.54**
Local Identity	.31**	.14	−.06	.19**	.03	−.12	.27**	.10	.02	.29**	.17	−.06
Multicultural Personality	.35**	.26**	.47**	.22**	.07	.36**	.33**	.30**	.46**	.28**	.18	.35**
Openness to Experience	.17**	.30**	.56**	.17**	.24*	.49**	.12*	.20*	.46**	.11	.18	.43**
Acculturation Expectations												
Marginalization	−.22**	.01	−.12	−.18**	−.06	−.01	−.12*	.07	−.08	−.24**	.02	−.24**
Separation	−.06	.02	.05	−.07	.01	.11	−.00	−.15	.05	−.07	.20*	−.07
Integration	.36**	.08	.25**	.26**	.12	.08	.23**	−.07	.25**	.40**	.12	.34**
Assimilation	−.25**	−.25**	−.47**	−.15**	−.10	−.32**	−.21**	−.23**	−.36**	−.24**	−.19	−.51**
Universalism Orientation	.36**	.44**	.61**	.25**	.23*	.42**	.29**	.34**	.59**	.34**	.35**	.53**
Social Dominance Orientation	−.29**	−.38**	−.66**	−.14*	−.06	−.53**	−.31**	−.34**	−.47**	−.25**	−.40**	−.66**
Environmental Movement Support	.20**	.30**	.50**	.10	.18	.37**	.25**	.36**	.50**	.14*	.07	.37**
National Development Indicators												
Economic Output	.24**	−.09	.12	.15**	−.03	.10	.20**	−.14	.06	.24**	−.02	.15*
Life Expectancy	.21**	−.04	.29**	.11	−.06	.26**	.27**	.02	.27**	.14**	−.05	.19**
Life Satisfaction	.24**	.11	.36**	.16**	.06	.23**	.24**	.02	.39**	.17**	.15	.27**
Environmental Impact	.30**	.19	.44**	.17**	.10	.29**	.28**	.05	.41**	.28**	.27*	.42**
NEP	.17**	.41**	.35**	.12*	.22**	.26**	.12*	.32**	.21**	.18**	.33**	.42**

**$p < .01$; *$p < .05$.

$N = 309$), $p < .001$; Australia: $\chi^2_{diff} = 265.25$ (2, $N = 99$), $p < .001$; US: $\chi^2_{diff} = 842.13$ (2, $N = 251$), $p < .001$).

Additional comparative CFAs confirm that the fit statistics for two-factor models (i.e., Factors 1 and 2 combined vs. Factor 3; Factors 1 and 3 combined vs. Factor 2; Factors 2 and 3 combined vs. Factor 1) with the covariance among all of the subsets of the three factors of CO set equal to one are worse than those for the three-factor model. Results of chi-squared difference tests also confirm that the three-factor model is significantly better than the two-factor models (all *p's* < .01).

Cronbach's alphas for the three subscales are highly reliable (cultural openness: $\alpha_{Singapore} = .88$, $\alpha_{Australia} = .83$, $\alpha_{US} = .91$; global prosociality: $\alpha_{Singapore} = .89$, $\alpha_{Australia} = .84$, $\alpha_{US} = .92$; respect for cultural diversity: $\alpha_{Singapore} = .80$, $\alpha_{Australia} = .72$, $\alpha_{US} = .86$). Overall, the correlations among the three COS factors are in moderate degree (correlations between cultural openness and global prosociality: $r_{Singapore} = .49$, $r_{Australia} = .27$, $r_{US} = .46$, all *p*'s < .01; correlations between cultural openness and respect for diversity: $r_{Singapore} = .48$, $r_{US} = .63$, all *p*'s < .01; $r_{Australia} = .10$, *ns.*; correlations between global prosociality and respect for diversity: $r_{Singapore} = .46$, $r_{Australia} = .32$, $r_{US} = .52$, all *p*'s < .01). Given the positive correlations of the three factors, we also computed an overall COS score operationalized as the mean of the scores of the three factors. We looked at the three factor scores and the overall COS score in our analyses. Taken together, the CFA results and the overall moderate correlations among the three COS factors indicate that cultural openness, global prosociality, and respect for cultural diversity represent conceptually distinct, yet interrelated indicators of individuals' CO.

7.3.2. Convergent and discriminant validity

For the sake of parsimony of presenting the results, we reported the inter-correlations between the scores of the overall COS and those of criterion variables. Table 3 reports all of the inter-correlations pertaining to the overall COS as well as its three subscales. We established convergent validity by examining the degree to which the participants' COS scores were related to other theoretically relevant indicators of CO (i.e., global citizenship, global vs. local identity). Among the three samples, the inter-correlations between the COS and global citizenship ($r_{Singapore} = .55$, $r_{Australia} = .70$, $r_{US} = .78$, all *p*'s < .01) and global identity ($r_{Singapore} = .42$, $r_{Australia} = .59$, $r_{US} = .73$, all *p*'s < .01) were statistically significant and strong in magnitude, and these correlations fall close to large to very large effect sizes ($r = .50$ to .70, Cohen, 1988). Interestingly, COS was either moderately or not related to local identity depending on the sample ($r_{Singapore} = .31$, $p < .01$; $r_{Australia} = .14$, $r_{US} = -.06$, *ns.*).[1]

Demonstrating discriminant validity, with generally medium effect sizes ($r = .30$, Cohen, 1988), the COS was positively and significantly associated with multicultural personality ($r_{Singapore} = .35$, $r_{Australia} = .26$, $r_{US} = .47$, all *p*'s < .01), openness to experience ($r_{Singapore} = .17$, $r_{Australia} = .30$, $r_{US} = .56$, all *p*'s < .01), universalism orientation ($r_{Singapore} = .36$, $r_{Australia} = .44$, $r_{US} = .61$, all *p*'s < .01), and the expected use of integration as an acculturation strategy ($r_{Singapore} = .36$, $r_{US} = .25$, all *p*'s < .01; except for Australians, $r_{Australia} = .08$, *ns.*). The COS was negatively and significantly associated with social dominance ($r_{Singapore} = -.29$, $r_{Australia} = -.38$, $r_{US} = -.66$, all *p*'s < .01) and the expected use of assimilation as an acculturation strategy ($r_{Singapore} = -.25$, $r_{Australia} = -.25$, $r_{US} = -.47$, all *p*'s < .01).[2]

Together, our results confirm that the COS displays convergence with theoretically relevant constructs such as global citizenship

[1] These findings suggest that cosmopolitan individuals in Singapore can be high in both global identity and local identity, whereas cosmopolitan individuals in Australia and the US are likely to be high in global identity but they may be high or low in local identity. As a speculation, we posit that given Singapore being a multiethnic nation, its rich multicultural environment might have enabled cosmopolitans to assume both global and local identities without conflict. Based on the current results, we suppose that cosmopolitans are generally high in global identity, but for some cosmopolitans they might assume dual affiliations by identifying themselves as both a world citizen and a citizen of their own nation. In other words, global and local identities can co-exist and are not invariably oppositional.

[2] The findings about acculturation expectations are interesting as potentially they point to an important implication on dominant groups' acculturation expectations of their immigrants. Across the three samples, we found no or minimal correlation between CO and the dominant groups' expected use of separation and marginalization strategies by the immigrants. However, there were consistent negative correlations with the use of assimilation as the expected acculturation strategy, but positive correlations with the use of integration as the expected strategy (except for Australians). The results imply that cosmopolitan oriented individuals expect immigrants to integrate by adapting to the host country while maintaining their native cultural heritage, but do not expect immigrants to assimilate into the host country while giving up on their ethnic culture. This indeed reflects the ideal of cosmopolitanism – members of the dominant group who assume higher levels of CO tend to encourage immigrants to smoothly acculturate into the host culture and at the same time to preserve the cherished traditions of their native culture.

Table 4a
Hierarchical regression results of regressing environmental movement support on New Ecological Paradigm (NEP) scale and COS across samples, Study 1.

Criterion predictors	Criterion outcome variable: environmental movement support											
	SG				Aus				US			
	Step 1		Step 2		Step 1		Step 2		Step 1		Step 2	
Gender	.07	(.13)	.05	(.13)	.02	(.27)	.01	(.28)	.11#	(.17)	.04	(.16)
Age	−.03	(.04)	.01	(.04)	.19#	(.05)	.22*	(.05)	.06	(.01)	.05	(.01)
NEP	.34**	(.13)	.33**	(.12)	.34**	(.29)	.28**	(.31)	.39**	(.11)	.31**	(.11)
COS Factor 1: Cultural Openness			−.05	(.08)			−.04	(.19)			.17*	(.09)
COS Factor 2: Global Prosociality			.23**	(.08)			.36**	(.19)			.37**	(.09)
COS Factor 3: Respect for Cultural Diversity			−.02	(.09)			.18#	(.22)			−.07	(.13)
Overall COS (in a separate model)			.13*	(.09)			.16	(.31)			.40**	(.10)
With Three COS Factors:												
R^2	.13		.17		.17		.28		.19		.36	
Change in R^2			.04**				.11**				.17**	
With Overall COS:												
R^2	.13		.15		.17		.19		.19		.32	
Change in R^2			.02*				.02				.13**	

Note: The entries are standardized coefficient estimates with standard errors in parentheses. $^{**}p \leq .01$; $^{*}p < .05$, $^{\#}p < .10$.

and global identity and sufficient divergence with conceptually related but distinct constructs such as multicultural personality, the Big 5 trait of openness to experience, acculturation expectations, universalism, and social dominance.

7.3.3. Incremental validity in predicting pro-environmental behaviors

Table 3 shows the inter-correlations of COS and its respective factors with each of the environment-related criterion variables. The overall COS score was significantly and positively correlated with environmental movement support, environmental impact indicator advocacy, and NEP across all samples (except for environmental impact indicator advocacy in the Australian sample). The three COS factors were also significantly positively correlated with each of the environment-related criterion variables, with the following exceptions: cultural openness was not significantly correlated with environmental movement support in both the Singaporean and Australian samples and with environmental impact indicator advocacy in the Australian sample; global prosociality was not correlated with environmental impact indicator advocacy in the Australian sample; respect for cultural diversity was not correlated with environmental movement support in the Australian sample. Comparing across the three COS factors, the correlations associated with global prosociality and respect for cultural diversity are stronger in magnitude, with some of them reaching moderate to high correlations (r ranged from .30 to .50; Cohen, 1988).

To demonstrate the unique power of CO in predicting PEB above and beyond environmental worldview, we conducted a two-step hierarchical regression analysis. In Step 1, environmental movement support was regressed on NEP as well as gender and age as controls. In Step 2, the three COS factors were added. We repeated this regression procedure for environmental impact indicator advocacy.

The results are shown in Tables 4a and 4b. For both environmental movement support and environmental impact indicator advocacy, across the three samples, the predictors entered in Step 1 explained a substantial proportion of variance (R^2 ranging from .13 to .19 for environmental movement support and .11 to .23 for environmental impact indicator advocacy). NEP was significantly positively associated with environmental movement support (β ranges from .34 to .39, all p's < .01) and environmental impact indicator advocacy (β ranges from .33 to .47, all p's < .01) across all samples. Importantly, in Step 2 there is evidence for incremental validity of the distinct COS factors. In all but one regression analyses, the incremental contribution of adding COS factors into the model emerged to be statistically significant (R^2 changes ranging from .04 to .17 for environmental movement support and ranging from .07 to .11 for environmental impact indicator advocacy, all p's < .001). In the model predicting environmental

Table 4b
Hierarchical regression results of regressing environmental impact indicator advocacy on New Ecological Paradigm (NEP) scale and COS across samples, Study 1.

Criterion predictors	Criterion outcome variable: environmental impact indicator advocacy											
	SG				Aus				US			
	Step 1		Step 2		Step 1		Step 2		Step 1		Step 2	
Gender	.002	(.23)	−.05	(.23)	−.01	(.35)	−.04	(.38)	.09	(.27)	.02	(.26)
Age	−.05	(.07)	−.02	(.06)	.07	(.07)	.05	(.07)	.11#	(.01)	.09#	(.01)
NEP	.33**	(.22)	.29**	(.22)	.47**	(.38)	.47**	(.42)	.42**	(.18)	.31**	(.18)
COS Factor 1: Cultural Openness			−.01	(.15)			.10	(.27)			.02	(.14)
COS Factor 2: Global Prosociality			.18**	(.14)			.20#	(.26)			.24**	(.15)
COS Factor 3: Respect for Cultural Diversity			.14*	(.17)			.15	(.30)			.15#	(.21)
Overall COS (in a separate model)			.24**	(.16)			0	(.41)			.32**	(.16)
With Three COS Factors:												
R^2	.11		.18		.23		.28		.21		.32	
Change in R^2			.07**				.05#				.11**	
With Overall COS:												
R^2	.11		.17		.23		.23		.21		.30	
Change in R^2			.06**				–				.09**	

Note: The entries are standardized coefficient estimates with standard errors in parentheses. $^{**}p \leq .01$; $^{*}p < .05$; $^{\#}p < .10$.

impact indicator advocacy in the Australian sample, R^2 change after entering COS factors in Step 2 was marginally significant ($\Delta R^2 = .05$).

When predicting environmental movement support (see Table 4a), global prosociality was incrementally important across all samples (β ranges from .23 to .37, all p's < .01), suggesting that global prosociality is an important cosmopolitan quality that can reliably add explanatory power to understand individuals' support for environmental movements above and beyond their environmental worldview. In addition, the incremental validity of cultural openness was significant in the American sample ($\beta = .17$, $t = 2.41$, $p = .02$) and the incremental validity of respect for cultural diversity reached marginal significance in the Australian sample ($\beta = .18$, $t = 1.67$, $p = .10$).

When predicting environmental impact indicator advocacy (see Table 4b), global prosociality was incrementally important across all samples ($\beta_{Singapore} = .18$, $\beta_{US} = .24$, all p's < .01; $\beta_{Australia} = .20$, $p = .06$). In addition, the incremental validity of respect for cultural diversity was significant in the Singaporean sample ($\beta = .14$, $t = 2.18$, $p = .03$) and reached marginal significance in the American sample ($\beta = .15$, $t = 1.91$, $p = .06$).

We also explored the incremental ability of the overall COS score in predicting support for environmental movement and the use of environmental development indicator. We repeated the above two-step hierarchical regression procedure by entering the overall COS score in Step 2. In both Singaporean and American samples, the incremental contribution of adding the overall COS score into the model emerged to be statistically significant (Singaporean sample: $\Delta R^2 = .02$, $p = .02$; $\beta = .13$, $t = 2.37$, $p = .02$ for environmental movement support; $\Delta R^2 = .06$, $p < .0001$; $\beta = .24$, $t = 4.45$, $p < .0001$ for environmental impact indicator advocacy. American sample: $\Delta R^2 = .13$, $p < .0001$; $\beta = .40$, $t = 6.96$, $p < .0001$ for environmental movement support; $\Delta R^2 = .09$, $p < .0001$; $\beta = .32$, $t = 5.65$, $p < .0001$ for environmental impact indicator advocacy). In the Australian sample, however, R^2 did not change when predicting environmental impact indicator advocacy and changed insignificantly when predicting environmental movement support ($\Delta R^2 = .02$, $p = .15$), after entering overall COS in Step 2.

Overall, there is considerable evidence of incremental contribution of CO, in particular the factor of global prosociality, in positively predicting support for pro-environmental efforts across our Singaporean, Australian, and American samples. However, one shortfall of Study 1 is that in establishing the incremental validity of the COS we used the NEP scale only. It remains to be demonstrated whether CO is incrementally useful when other concepts of environmental values and beliefs are considered. Thus, in Study 2, we further tested the incremental contribution of CO above and beyond two other measures of motivations and beliefs toward environmental conservation.

8. Study 2

8.1. Sample and procedures

Participants in Study 2 were undergraduate students in Singapore ($N = 98$; 40 males and 58 females; $M_{age} = 21.56$ years, $SD_{age} = 1.58$). All participants voluntarily and anonymously filled out a set of online questionnaires in exchange for course credits.

8.2. Measures

Participants filled out the COS, a few measures on pro-environmental motivations, beliefs, and behaviors, and finally some basic demographic questions. Descriptive statistics and alpha coefficients for each of the measurement scales are shown in Table 5. All measures had acceptable to high internal consistency. We derived composite scores for all measures by reversely coding negatively phrased scale items (when necessary) and averaging across items.

8.2.1. Pro-environmental motivations and beliefs

We measured pro-environmental motivations with the Motivation toward the Environment Scale (Pelletier, Tuson, Green-Demers, Noels, & Beaton, 1998). The scale requires participants to indicate the degree to which 24 statements correspond to their motivations or reasons for engaging in environmental protection with a 7-point scale (1 = *does not correspond at all* to 7 = *corresponds exactly*; $\alpha = .86$). These motivations are intrinsic (e.g., "for the pleasure I get from contributing to the environment"); integrated (e.g., "because it's part of the way I've chosen to live my life"); identified (e.g., "because it's a way I've chosen to contribute to a better environment"); introjected (e.g., "I think I'd regret not doing something for the environment"); externally regulated (e.g., "for the recognition I get from others"); and amotivated (e.g., "I wonder why I'm doing things for the environment, the situation is simply not improving"). We averaged the scores of the 24 statements to represent the pro-environmental motivation measure.

We measured pro-environmental beliefs with the Environmentalism Measure developed by Banerjee and McKeage (1994). Seven items measure *Personal or Internal Environmentalism* that reflects beliefs about the relationship between humanity and nature and personal relevance of environmental issues (e.g., "I often think about the harm we are doing to our environment", "I think of myself as an environmentalist"). Six items measure *External Environmentalism* that reflects beliefs about the need to radically change one's current lifestyle and the society's economic systems in order to ameliorate environmental damage (e.g., "pollution control measures have created unfair burdens on industry" [reverse scored], "I really don't see how the destruction of the rainforests in Brazil affects my everyday life" [reverse scored]). Participants indicated their degree of agreement with each statement on a 1 (*strongly disagree*) to 5 (*strongly agree*) Likert scale ($\alpha = .79$). We averaged the scores of the 13 statements to represent the pro-environmental belief measure.

8.2.2. Pro-environmental behaviors

Aside from the two measures on environmental movement support ($\alpha = .90$) and environmental impact indicator advocacy we used in Study 1, we added a behavioral intention measure. This measure asked participants how likely they would engage in 12 specific ecological behaviors in near future on a seven-point scale

Table 5
Descriptive statistics for criterion variables and COS, Study 2.

Criterion or COS variables	Singaporeans (SG) ($N = 98$)	
	α	*M* (*SD*)
Environmental Movement Support	.89	4.71 (0.94)
Pro-environmental Behavioral Intention	.86	4.45 (0.79)
National Development Indicators		
Economic Output	–	7.90 (1.63)
Life Expectancy	–	7.68 (1.63)
Life Satisfaction	–	8.61 (1.61)
Environmental Impact	–	7.59 (1.69)
Pro-environmental Motivations	.73	3.47 (0.41)
Pro-environmental Beliefs	.73	3.47 (0.41)
Overall COS	.90	5.08 (0.58)
Factor 1: Cultural Openness	.88	4.89 (0.76)
Factor 2: Global Prosociality	.89	5.27 (0.74)
Factor 3: Respect for Cultural Diversity	.80	5.09 (0.66)

(1 = *extremely unlikely* to 7 = *extremely likely*). Samples of the behaviors include "looking for ways to reuse things," "using energy-efficient household devices such as light bulbs," and "volunteering time to help an environmentalist group" ($\alpha = .86$). These behaviors were adopted from past studies (e.g., Kaiser, Doka, Hofstetter, & Ranney, 2003; Schultz & Zelezny, 1998; Tam, 2013). We averaged the scores of the 12 ecological behavior items to represent participants' pro-environmental behavioral intention to commit to specific ecological acts.

8.3. Results

8.3.1. Model fit of the COS

We again conducted CFA to validate fit of the three-factor COS model. Fit statistics for the unconstrained three-factor model meet standard criteria, $\chi^2 = 155.655$ (90, $N = 98$), $p < .0001$, CFI = .90, RMSEA = .09. Fit statistics for the one-factor model with all observed variables loaded directly on a global factor did not meet the recommended threshold, $\chi^2 = 391.489$ (87, $N = 98$), $p < .0001$, CFI = .56, RMSEA = .19. A chi-square difference test indicated that the three-factor model is a better fit to the data, χ^2_{diff} (3, $N = 98$) = 235.834, $p < .001$. Cronbach's alphas for the three subscales demonstrate high internal consistency (α for cultural openness = .89; α for global prosociality = .81; α for respect for cultural diversity = .77) and the same is true for the second order overall COS with all 15 items ($\alpha = .87$).

Additionally, comparative CFAs confirm that the three-factor model is a better fit than all two-factor models (i.e. combining two factors, Factors 1 and 2, Factors 2 and 3, or Factors 1 and 3). Two of these models could not be identified, and the last combination yielded a non-positive definite product matrix. In succinct, CFA results support a three-factor solution.

8.3.2. Incremental validity in predicting pro-environmental behaviors

Table 6 shows the inter-correlations of COS and its respective factors with each of the environment-related criterion variables. The overall COS score tended to be positively associated with pro-environmental behaviors and pro-environmental motivations and beliefs, although some of these correlations did not reach statistical significance. Specifically, overall COS was significantly and positively correlated with environmental movement support ($r = .28$, $p < .01$) and environmental impact indicator advocacy ($r = .36$, $p < .0001$), but was only marginally correlated with pro-environmental beliefs ($r = .19$, $p = .08$) and not related to pro-environmental behavioral intention ($r = .02$, $p = .86$) and pro-environmental motivations ($r = .14$, $p = .19$).

As in Study 1, we conducted a two-step hierarchical regression analysis to examine the unique power of CO in predicting PEB above and beyond pro-environmental motivations and pro-environmental beliefs. Step 1 regressed one of the three dependent measures (environmental movement support, pro-environmental behavioral intention, and environmental impact indicator advocacy) on the two scales measuring pro-environmental motivations and beliefs and the control variables of gender and age. In Step 2, the three COS factors were added.

The results are shown in Table 7. For the three PEB outcome measures, the predictors entered in Step 1 explained a substantial proportion of variance ($R^2 = .47$, $p < .0001$ for environmental movement support; $R^2 = .26$, $p < .0001$ for pro-environmental behavioral intention; $R^2 = .30$, $p < .0001$ for environmental impact indicator advocacy). Pro-environmental motivations were positively associated with environmental movement support ($\beta = .23$, $p = .02$), pro-environmental behavioral intention ($\beta = .25$, $p = .02$), and environmental impact indicator advocacy, though the latter positive association did not reach statistical significance ($\beta = .15$, $p = .17$). Pro-environmental beliefs were significantly positively associated with environmental movement support ($\beta = .54$, $p < .0001$), pro-environmental behavioral intention ($\beta = .33$, $p < .01$), and environmental impact indicator advocacy ($\beta = .37$, $p = .001$). As in Study 1, there is evidence for incremental validity of the distinct COS factors in predicting PEB. R^2 changes from Step 1 to Step 2 were .07 ($p = .01$) for environmental movement support and .07 ($p = .04$) for environmental impact indicator advocacy. However, R^2 change for pro-environmental behavioral intention was not significant ($\Delta R^2 = .04$, $p = .22$).

When predicting environmental movement support, both global prosociality ($\beta = .21$, $p = .03$) and respect for cultural diversity ($\beta = .29$, $p < .001$) had incremental explanatory power above and beyond pro-environmental motivations and beliefs. When predicting pro-environmental behavioral intention, global prosociality was incrementally important ($\beta = .24$, $p = .05$). When predicting environmental impact indicator advocacy, global prosociality was again incrementally important ($\beta = .24$, $p = .04$). We also checked the incremental ability of the overall COS. By entering the overall COS score in Step 2, the R^2 change was non-significant when predicting environmental movement support ($\Delta R^2 = .01$ $p = .15$) and pro-environmental behavioral intention ($\Delta R^2 = .01$ $p = .23$). When predicting environmental impact indicator advocacy, the R^2 change was significant with the overall COS entered in Step 2 ($\Delta R^2 = .05$, $p = .01$; $\beta = .24$, $p = .01$).

Taken together, Study 2 replicates what was found in Study 1 concerning the theoretical significance of CO, in particular its component factor of global prosociality, in explaining PEB beyond generalized environmental worldviews, motivations, and beliefs.

9. General discussion

Recent research in environmental psychology has witnessed an upsurge of interest in the antecedents or correlates of

Table 6
Correlations between COS and criterion variables, Study 2.

Criterion Variables	Overall COS	Factor 1: cultural openness	Factor 2: global prosociality	Factor 3: respect for diversity
Environmental Movement Support	.28**	.14	.18#	.34**
Pro-environmental Behavioral Intention	.02	.03	.02	.09
National Development Indicators				
Economic Output	.24*	.21*	.08	.28**
Life Expectancy	.15	.02	.18	.16
Life Satisfaction	.15	.14	.16	.06
Environmental Impact	.36**	.25*	.34**	.25**
Pro-environmental Motivations	.14	.03	.15	.15
Pro-environmental Beliefs	.19#	.03	.29**	.13

**$p \leq .01$; *$p < .05$; #$p < .10$.

Table 7
Hierarchical regression results of regressing environmental movement support, pro-environmental behavioral intention, and environmental impact indicator advocacy on pro-environmental motivations, pro-environmental beliefs, and COS, Study 2.

Criterion predictors	Criterion outcome variables											
	Environmental movement support				Pro-environmental behavioral intention				Environmental impact indicator advocacy			
	Step 1		Step 2		Step 1		Step 2		Step 1		Step 2	
Gender	−.13	(.18)	−.03	(.18)	−.09	(.19)	−.04	(.20)	−.21#	(.30)	−.23*	(.30)
Age	.02	(.06)	−.04	(.06)	−.02	(.06)	−.05	(.07)	.36**	(.10)	.36**	(.10)
Pro-environmental Motivations	.23*	(.14)	.21*	(.13)	.25*	(.15)	.26*	(.15)	.15	(.22)	.14	(.22)
Pro-environmental Beliefs	.54**	(.16)	.57**	(.16)	.33**	(.17)	.39**	(.18)	.37**	(.26)	.30**	(.27)
COS Factor 1: Cultural Openness			.08	(.12)			.02	(.13)			.08	(.20)
COS Factor 2: Global Prosociality			.21*	(.14)			.24*	(.16)			.24*	(.24)
COS Factor 3: Respect for Cultural Diversity			.29**	(.13)			.11	(.15)			−.01	(.22)
Overall COS (in a separate model) With Three COS Factors:			.12	(.15)			.12	(.16)			.24**	(.23)
R^2	.47		.54		.26		.30		.297		.364	
Change in R^2			.07**				.04				.07*	
With Overall COS:												
R^2	.47		.48		.26		.27		.30		.35	
Change in R^2			.01				.01				.05**	

**$p \leq .01$; *$p \leq .05$; #$p < .10$.

environmental concern and pro-environmental behaviors (e.g., Gifford & Nilsson, 2014; Inglehart, 1995; Markowitz et al., 2012; Tam, 2013). While most studies have been focused on the role of individuals' values and beliefs (e.g., postmaterialist values, belief about connection to nature; Inglehart, 1995; Tam, 2013), very limited research has approached this research question from the perspective of cosmopolitanism. The present research aims to empirically demonstrate the theoretical utility of cosmopolitanism. Controlling for generalized environmental worldviews, motivations, and beliefs enables us to investigate whether CO has a unique contribution to the understanding of individuals' PEB. As predicted, the new COS shows incremental contribution. Specifically, although there is general support that the composite COS adds unique power in predicting environmental movement support and environmental impact indicator advocacy among the Singaporean and American samples in Study 1 and predicting environmental impact indicator advocacy in Study 2, we found the dimension of global prosociality and to a lesser extent the dimension of respect for cultural diversity to be particularly incrementally useful. Those cosmopolitan individuals who endorse pro-social behaviors to uphold universalistic rights and duties on a global scale and those who appreciate the rich diversity of cultures are more likely to display stronger behavioral commitment to environmental practices. However, the dimension of cultural openness is deemed less incrementally useful.

The notable finding that global prosociality is consistently more powerful than the other two dimensions in predicting PEB across samples in both Studies 1 and 2 deserves some discussion. We argue that global prosociality confers a global conception of moral citizenship that fosters a stronger sense of collective obligation, identification with humankind, and global-level place attachment to eradicate environmental problems. As cosmopolitan individuals base their moral rights to go beyond a local context (Kant, 1991), they are more likely to feel an obligation to preserve the integrity of nature not just for the benefit of the fellow citizens of their own nation-state, but also for the collective benefit of the citizens around the world. For example, they may take steps not to waste food and water because they know that people in other nations suffer from depletion of food and water. Besides global prosociality, respect for cultural diversity also has some incremental value in predicting environmental movement support among Australians and predicting environmental impact indicator advocacy among Singaporeans and Americans in Study 1, as well as predicting environmental movement support in Study 2. As cosmopolitan individuals respect and appreciate cultures that are different from their own (Hannerz, 1990, 1996), they are more motivated to preserve the rich diversity and to derive meaningful interactions with things that belong to these other cultures, including their landscapes, wilderness, geography, and cultural heritage. Together, as cosmopolitan people are characterized by a stronger sense of connection or identification with people and cultures on a global scale, as well as a respect for differences in things that do not belong to the locality where they live, these qualities make their pro-environmental efforts all the more spontaneous and sustainable.

9.1. Implication for environmental psychology

Globalization is a dominant force in the modern world. Understanding its influence on the environment is an imperative for environmental researchers. Past studies in this regard have often been focused on the direct impacts, particularly negative ones, of globalization on environmental quality (see Donaghy, 2012; Ehrenfeld, 2005). We argue that to fully appreciate the environmental implications of globalization, apart from examining its direct impacts on environmental quality, researchers should also take note of its psychological impacts, particularly its influence on people's environmentalism. Research in this respect is still scanty. Past studies tended to focus on the economic aspects of globalization. For instance, Jorgenson and Givens (2014) suggested that through globalization individuals around the world recognize both the environmental benefits and environmental harms of economic integration, and thereby might experience either increased or decreased concern for the environment. Other studies focused on the role of modernization and affluence of societies in shaping citizens' postmaterialist values and hence concern for the environment (e.g., Dunlap & York, 2008; Givens & Jorgenson, 2011). The present study adds to this literature on globalization and environmentalism by identifying a previously unexplored psychological pathway: Through the connectedness to people over the world afforded by globalization, cosmopolitan oriented people could become more conscious than their less cosmopolitan counterparts of the worldwide problems of environmental degradation and anthropogenic climate change (even if their own community does

not suffer from any immediate impacts), and more likely than the less cosmopolitan people to view themselves as a member of the humanity as a whole. These psychological changes brought about by globalization, which we refer to as cosmopolitan orientation (as measured by the newly developed COS), in turn motivate people's contribution to environmental conservation.

The present findings also connect to the research on the role of identity in environmental consciousness. Identity refers to the way an individual defines and describes himself or herself. Past studies on identity and the environment mainly examined the following two forms of identity: environmental identity and pro-environmental self-identity. Environmental identity refers to a person's emotional connection to the natural world and belief that the environment is an important part of the self (see Clayton & Opotow, 2003; Tam, 2013). Pro-environmental self-identity refers to the extent to which an individual defines himself or herself as someone who is environmentally friendly and concerned about environmental issues (see Sparks & Shepherd, 1992; Whitmarsh & O'Neill, 2010). Both types of identity have been found to be associated with environmental concern and pro-environmental behavior (see Clayton, 2012). It is argued that the concept of CO, given its strong association with global identity and global citizenship (see Table 2), can be understood as a form of identity that emphasizes one's membership of and connection to the global community (see also Devine-Wright et al., 2015; McFarland et al., 2013). The environmental implications of this form of identity have rarely been considered in past studies, however. There are two relevant studies we are aware, one of which is Buchan et al. (2011). They measured the extent to which their participants felt attached to the global community and defined the self as a member of the world as a whole. They found that this tendency was positively correlated with an aggregate of expressed concern for four global issues, including global warming. Another study is by Schultz (2001) who showed that biospheric environmental concerns are positively correlated with self-transcendence, which reflects the degree to which people include other people and living things within the notion of the self. This tendency to self-transcend heightens the interconnection between the self and the general others. The present findings are in line with what Buchan et al. (2011) and Schultz (2001) found. They imply that identification with the global community, though apparently social and non-environmental, also contributes to environmentalism.

That the global prosociality component of CO robustly predicts environmental consciousness in our studies is worth noting. Prosociality, or concern for the welfare of other people, has been found to predict environmental concern in previous studies. According to Stern and Dietz (1994), environmental attitudes and behavior are formulated upon a person's more general set of values. Specifically, they proposed that people could be motivated by egoistic values, altruistic values, and biospheric values. Recent studies provided support to this view. These three sets of values can be distinguished from each other, and they predict environmental behavior and environmental concern to different extents, with biospheric values being the most robust predictor (see De Groot & Steg, 2007; Steg, Perlaviciute, van der Werff, & Lurvink, 2014). The present findings regarding the component of global prosociality contribute to this model in two ways. First, because past studies on altruistic values did not provide a detailed description of what “other people” refers to (some examples of the altruistic values items include “helpful” and “social justice”), it is difficult to determine exactly whose welfare motivates individuals to care about the environment. The present findings suggest that the welfare of even people in other parts of the world is able to motivate pro-environmental efforts, at least in some individuals. Second, past studies seldom discussed the context in which altruistic values arise. The present findings highlight that the process of cosmopolitanization can be one way to support the development of altruism or prosociality.

The above discussions on identity and altruism imply that there might be a boundary for the association between CO and environmentalism. That is, CO motivates pro-environmental efforts mainly because it arouses a person's concern for the welfare of other members in the global community. In other words, if certain environmental behavior is understood as benefiting only the self (i.e., egoistic) or the environment (i.e., biospheric), we should no longer expect a positive association between it and CO. Future studies may test this hypothesis by experimentally manipulating the meaning of certain environmental behavior and then observe whether the predictive power of CO for this behavior varies accordingly.

9.2. Implications for environmental promotion

What are the implications of the present findings to the promotion of environmental consciousness? An intuitive argument is that it is worthwhile for governments and environmental organizations to promote CO in citizens. Nevertheless, how this can be achieved is yet to be determined. Our findings merely suggest that CO varies across individuals, and it explains individual variability of environmentalism. But how such cross-individual variations in CO arise in the first place needs to be examined in future studies. Only with such findings we can provide more specific recommendations for the promotion of CO.

Another implication concerns the concept of message-motivation congruency. Past studies in the persuasion literature showed that a persuasive message is more effective when its content is congruent with the recipient's motivational orientations (e.g., Dijkstra, 2008; Hirsh, Kang, & Bodenhausen, 2012; Tam, 2015). For instance, gain-framed messages tend to elicit more positive attitudes for recipients who are concerned about gains (i.e., promotion-focused), whereas loss-framed messages tend to be more effective for recipients who are concerned about losses (i.e., prevention-focused) (e.g., Lee & Aaker, 2004). Based on these findings, it is suggested that environmental organizations should take note of the characteristics, such as value orientations, of their target audience and tailor their messages accordingly (Dijkstra, 2008; Tam, 2015). For example, when targeting individuals with a strong CO, messages that appeal to the pro-social outcomes or cultural maintenance functions of pro-environmental behavior are likely to be effective because they can address the recipients' motivational needs. On the contrary, for recipients with a weak CO, perhaps messages that contain other appeals are more likely to be effective. Furthermore, given that environmental concern among individuals with a strong CO appears to be pro-socially motivated, one might expect that messages that appeal to purely egoistic or biospheric reasons are ineffective for these individuals. These hypotheses can be tested in an experiment using a message-person fit vs. non-fit paradigm.

9.3. Limitations

It appears that CO differs across not only individuals but also nations. Our findings show that it is highest in our Australian participants, and lowest in the American sample (see Table 2). It remains to be explained how these cross-national variations arise. Given our argument that CO is the internalized form of globalization (see also Beck & Sznaider, 2010), one might expect that different extents of globalization lead to different levels of CO in

different countries. With a sample of multiple countries that vary in terms of the extent of globalization, this hypothesis can be tested. If this hypothesis is supported, then researchers may test whether CO mediates the influence of globalization on environmental concerns and behaviors across different cultural contexts.

The current investigation only shows the correlational link between CO and pro-environmental support; the causal direction of this link is yet to be demonstrated. In fact, it is conceivable that this link could be reciprocal. As suggested by Beck and Sznaider (2010), the awareness of global threats can sharpen global consciousness of the public and promote their cosmopolitan outlook. This might also further lead to the development of cosmopolitan norms and agreements, thereby forming formal organizations to institutionalize the development of cosmopolitanism. Environmental problems are global and transnational issues; alleviation of these problems requires a global sense of citizenship and multilateral effort in individuals. It is plausible that endorsing a cosmopolitan orientation makes one more aware of the urgency of global environmental protection, which in turn further enhances their adherence to cosmopolitan qualities. Future research that looks into how CO and environmentalism are causally related to each other is needed.

We propose and elaborate on two pathways—knowledge acquisition and global interdependence—that explain the link between CO and environmentalism, but we did not test them in our studies. Because the concept of CO is new in the research on environmentalism, we set out to establish the most straightforward implication of it (i.e., its association with PEB) first. Now this implication has been established in the present studies, we urge that future studies examine the psychological mechanisms underlying the association between CO and environmentalism. In particular, future studies should test if knowledge acquisition and global interdependence really mediate the association. For instance, if the knowledge acquisition pathway is really important, as we argue, then it is conceivable to hypothesize that individuals with higher levels of CO possess more knowledge about and awareness of environmental problems in not only the local region but also other remote areas in the world, which in turn motivate behavioral efforts to protect the environment. Further, an important follow-up would be to compare the two proposed pathways in future studies to examine the possibilities whether both are viable, whether one is stronger than the other, or whether one is viable and the other is not.

10. Concluding remarks

The present findings contribute to the theoretically and practically significant yet understudied link between CO and environmentalism. Considered as globalization taken place within (Beck & Sznaider, 2010), cosmopolitanization is a process experienced by individuals, who then develop and acquire a cosmopolitan orientation characterized by qualities reflecting cultural openness, global prosociality, and respect for cultural diversity. Environmental issues are happening on a global scale. It appears that a cosmopolitan value orientation is needed for one to fully appreciate the macro impacts of advanced environmental damage and thereby contribute to the mitigation of such damage. The present research successfully demonstrates that the manifestation of CO and the awareness of the environmental crisis, both embedded in and afforded by a globalizing world community, are related to each other. We believe our findings can motivate further research that looks into the other aspects (e.g., mediating mechanisms) of the relationship between cosmopolitanism and environmentalism.

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