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Socioeconomic status and pro-environmentalism: The role of time perspective

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I hereby declare that this Master's thesis is my original work

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Abstract

Human actions have caused unprecedented environmental problems, from air and water pollution to climate change. Understanding the demographic influences and psychological antecedents that can motivate more pro-environmentalism (PEV) in individuals could therefore aid in tackling these challenges. The present research aimed to uncover the role that time perspective plays in explaining PEV choices among those of specific socioeconomic contexts. In Study 1, parallel mediation analyses of correlational data (N = 301) found that higher subjective socioeconomic status (SES) was associated with a future time perspective, which in turn positively influenced stronger citizenship and personal intentions to act on climate change, even after controlling for objective SES, age and political ideology. However, the mediation model was non-significant for objective SES measures of income and education. Study 2 (N = 456) took an experimental approach to outline the implications of primed time perspectives on this mediation model, along with added pro-environmental behaviour measures. Although current time perspective was found to moderate a negative relationship between subjective SES in one's school community on commitment to support environmental organisations significantly more than past time perspective, this did not fully support the hypotheses, nor converge with the results from Study 1. Future research can benefit from developing stronger manipulations for time perspective studies and considering the possible cultural nuances involved in time perspective and PEV.

Keywords: socioeconomic status, time perspective, pro-environmentalism

Socioeconomic Status and Pro-Environmentalism: The Role of Time Perspective

At the start of 2021, results from the Peoples' Climate Vote revealed that nearly two-thirds (64%) of people across 50 countries believe that climate change is a global emergency (UNDP & University of Oxford, 2021). While this presents a convincing mandate for various governments to increase their commitment to adopt policies that can alleviate environmental challenges, such beliefs also reflect the capacity for individual-level pro-environmental action (Stern, 2000). If individuals were able to behave more pro-environmentally, environmental problems could potentially be reduced. This is especially since these issues have been widely-acknowledged to stem from anthropogenic causes (Stern et al., 2016).

Consequently, it is important to understand key antecedents of pro-environmentalism (PEV; consisting pro-environmental attitudes and behaviours) to better promote such action in individuals (Steg & Gifford, 2017). Some perspectives that have been well-explored include connectedness and personal responsibility toward nature (e.g., Clayton & Opotow, 2003; Kaiser et al., 1999), and theories on values (e.g., Balundė et al., 2019; Schultz et al., 2005; Steg & Gifford, 2017). Demographic factors have also been linked to PEV (e.g., van Liere & Dunlap, 1980). Of particular interest is socioeconomic status (SES), which can emerge as a form of culture that affords individuals with specific psychological tendencies influencing their thoughts, feelings and actions in various domains, including environmental issues (Eom et al., 2018; Fiske & Markus, 2012; Stephens et al., 2012). Identifying these mindsets can uncover the nuances of PEV and enable more viable access points to tackle environmental challenges, but research into this area has been inadequate. The current research sought to close this gap by diving into the psychological lever of time perspective which is present in SES contexts and has the potential to contribute to increased PEV.

SES and PEV

SES is a multifaceted concept that is typically defined as "one's access to financial, social, cultural and human capital resources" (Cowan et al., 2012), which can be captured by objective and material aspects (such as income, education, occupation), along with subjective experiences of one's perceived social standing relative to others in their community (Diemer et al., 2013; Kraus et al., 2011). A substantial body of literature has generally noted a positive association existing between SES and PEV (e.g., Gifford & Nilsson, 2014; Hornsey et al., 2016; Kennedy & Givens, 2019), although the strength of the relationship can differ to some degree according to the measure of SES used (Pampel, 2013). There are several arguments for this relationship.

For one, more educated individuals tend to be more engaged in PEV because they are exposed to more information about environmental consequences through schooling (Scott & Willits, 1994). By having a more in-depth understanding of the issues involved, these individuals grow to be more concerned for environmental quality and participate in more green behaviours (Diamantopolous et al., 2003). Medina et al. (2019) also found that environmental activists tend to be of higher SES. Another explanation deals with affluence. Sustaining environmental quality and participating in environmental action are known to have behavioural and monetary costs (Diekmann & Preisendörfer, 2003; Meyer & Liebe, 2010). High-income earners thus have more flexibility and luxury to readily afford environmentally friendly products, which tend to be more expensive, and emphasise PEV (Franzen & Meyer, 2010; van Liere & Dunlap, 1980). Nesbitt et al. (2018) and Schwarz et al. (2015) are also among the few studies that have demonstrated patterns of green inequity, where those living in communities with higher social and economic power, especially those with higher income and education, possess more green spaces, environmental amenities and urban vegetation in their community on average. Even free neighbourhood parks would tend

to be more utilised in high-income areas (Cohen et al., 2016), hinting that affluence may help individuals to offset the cost of time spent at such places. It could also be that these advanced education and economic opportunities of high-SES individuals promote adoption of post-materialist values of self-expression, subjective well-being and quality of life, compared to materialist values that are more focused on economic and physical security (Inglehart, 1995; Kidd & Lee, 1997). This shift in societal values can then foster more engagement with the environment and more support for environmental issues among high-SES individuals.

In a similar vein, leisure interests of high-SES groups that are associated with the environment could also prompt pro-environmental attitudes that "primarily embody 'status group' concerns" (Buttel & Flinn, 1978). For example, witnessing degradation effects of the natural environment through outdoor leisure pursuits may result in stronger concern about environmental quality. Furthermore, green behaviour tends to be a part of or related to political participation (e.g., enacting laws on conserving society's resources). These are activities that higher SES individuals are more likely to be responsible for and accustomed to, whereas lower SES individuals typically do not undertake (Buttel & Flinn, 1978).

However, these arguments seem to focus more on the direct effects that one's socioeconomic context has on environmental support (e.g., financial capacities allowing an individual to buy more eco-friendly products, or intellectual capacities enabling one with more environmental knowledge to engage in environmental behaviour). While valid, the understanding of SES should go beyond such material aspects, and realise SES' potential cultural influences on one's mindsets, which can motivate certain attitudes and behaviours (e.g., Manstead, 2018). Eom et al. (2018), for instance, is one of the few that explicitly looked at social class differences in potential psychological levers of pro-environmental action, such as sense of control. By teasing out such factors, it indicates that having the resources and ability to be pro-environmental may not always translate to it if one's psychological tendency

is not geared toward meaningfully engaging in PEV. In reality, contextual factors should be considered in tandem with their influences on motivational factors, as these interactions can generally facilitate more effective PEV (Steg & Vlek, 2009). Yet, limited studies have delved into, much less tested, the psychological and motivational factors that could mediate the relationship between socioeconomic contexts and PEV. Therefore, research into potential psychological antecedents for the SES-PEV link are warranted.

Time Perspective

Time perspective, a socio-cognitive approach to psychological time developed by Lewin (1942), refers to the totality of an individual's view toward various time frames (thinking about the past, present or future). This concept subsumes a variety of other time-related variables that bring a mix of cognitive, motivational and affective components (Shipp et al., 2009). Cognitive aspects can be seen as part of a general, anticipatory cognitive schema that can be organised and structured in response to the thematic content of respective anticipations, while motivational and affective aspects can shape the cognitive structures in complex ways, depending on the situational context and any individually relevant goals (Trommsdorf, 1983).

One time-related variable of interest is temporal focus. This construct narrows the broad definition of time perspective and conceptualises it as an attentional bias (Shipp et al., 2009), where individuals allocate varying degrees of attention to the past, present and future. It captures the notion that people can have multiple temporal foci (Zimbardo & Boyd, 1999), and can shift their attention to and use different time frames according to their pertinence to specific occasions; yet, most individuals will still hold some predominant orientation, exhibiting some bias in their time perspective (Corral-Verdugo et al., 2006). Devoting attention to one's past, present and future can have important implications on attitudes, decisions and behaviours. This has been evidenced in various research on goal-setting and

motivation (Bandura, 2001; Fried & Slowik, 2004), strategic choice (Bird, 1988; Das, 1987) and more. To name a few examples, individuals who adopt a past focus can reflect and analyse past experiences meaningfully to uncover relevant lessons, though ruminating about mistakes may lessen one's well-being (Sanna et al., 2003); those with a present focus may be prompted to seize opportunities, but may also fall prey to impulsivity (Zimbardo & Boyd, 1999); those holding a future perspective can engage in more goal-setting and strive for achievements, although these pursuits may create pressures and anxiety (Fried & Slowik, 2004; Zimbardo & Boyd, 1999).

Various measures have been used to assess temporal focus, notably the Zimbardo Time Perspective Inventory (ZTPI; Zimbardo & Boyd, 1999) and Temporal Orientation Scale (TOS; Holman & Silver, 1998). However, these measures do not directly describe thinking about the past, present or future, but tend to confound such thinking with other time concepts, such as time attitude (e.g., regret, hope, worry), behaviours (e.g., impulsiveness), or individual differences (e.g., conscientiousness). Their scales also tend to be long and have poor psychometric properties (for a review, see Mohammed & Marhefka, 2020). A more recent scale, the Temporal Focus Scale (TFS; Shipp et al., 2009), offers a comparatively cleaner and simpler measure. It improves on the aforementioned two measures, mainly due to every scale item strictly assessing the extent to which attention is allocated to the three time frames, and thereby adhering to the construct's definitional focus on cognition. Another scale, the Consideration of Future Consequences Scale (CFCS; Strathman et al., 1994), has been widely used in environmental literature due to its ability to uniquely predict environmental behaviours beyond the ZTPI and other constructs, such as hope and optimism. However, this scale assesses the "extent to which people consider distant versus immediate consequences of potential behaviours" (Strathman et al., 1994; p. 742), and represents only the future (and somewhat present) time frame, without considering the past time frame.

SES and Time Perspective

Researchers have proposed that social contexts which individuals live in can set the stage for and maintain individuals' time perspectives (e.g., Ely & Mercurio, 2011; Guthrie et al., 2009; Lewin, 1942). This implies that early socialisation experiences can produce a general, stable tendency for individuals to focus attention on more pertinent time frames learnt in their situational contexts (for a review, see Trommsdorff, 1983). SES is one such contributor that has been examined for its associations with time perspective. While literature is scarce, most studies that have investigated this link find that higher SES individuals are more likely to have a future-oriented time perspective than their lower SES counterparts, while lower SES individuals tend to be more present-oriented (e.g., Banfield, 1974; Corral-Verdugo et al., 2006; Guthrie et al., 2009; Zimbardo & Boyd, 1999).

LeShan (1952) was the first to demonstrate temporal differences in how SES groups socialise, via evidence from child-rearing practices. Among lower classes, parental control and training methods were focused on the present and based on immediate punishments or rewards, without reference to past or future (e.g., "put that bottle down"). Meanwhile, methods used by parents in the middle class were based on probable consequences in a somewhat distant future (e.g., "Santa Claus won't come if you're bad"), while in the upper classes, past traditions were also incorporated (e.g., "What would your grandmother say?"). These phrases appear to capture varying degrees of urgency, with parents of lower SES having to live in the moment and resolve these issues more instantly, while those of higher SES having the luxury of time. Such mindsets implicit in these parenting practices are then transmitted to and reinforced in how children perceive the future as well. For example, children in the lowest SES group would view such parental responses as unpredictable and resultingly internalise that major changes in their lives occur suddenly and erratically. It follows that lower SES children do not learn to act in terms of future rewards since the future

is an unstable domain to work with, as compared to those from higher SES groups. School contexts can also reinforce and amplify increasing differences in socialisation and its effects on future time perspective. Füchsle and Trommsdorff (1980; cited by Trommsdorff, 1983) found that lower-class school children were initially more optimistic about their future than middle-class peers, but the relationship gradually reversed after the first year. Middle-class students also increasingly preferred to delay gratifications. Although the specific family or school factors that may have contributed to this were not investigated, the study did not find age-specific differences for such future-oriented preferences, which suggested that these future-oriented behaviours are determined by cognitive abilities and social motives that are better learned in a middle-class environment.

Aside from being a mechanical result of living conditions, time perspective has also been studied as an active resource for dealing with difficult conditions. For example, homeless men were found to be more present-oriented owing to the urgency of daily survival and cyclical schedules of soup kitchens and welfare (Wallace, 1986); subjects who were socially excluded became more centred on the present and less on the future (Twenge et al., 2003); those with lesser material and experiential deprivation appeared more oriented toward the distant future (Agarwal et al., 1983). These findings could likely reflect an adaptive 'temporal strategy' in the face of adverse situations that affects one's ability to foresee the future and to perceive other opportunities to come (Ogbu & Simons, 1998), resulting in disadvantaged groups adopting a more realistic attitude that excludes plans for the future (Cottle & Klineberg, 1974; Koenig et al., 1981). Therefore, immediate stressors dealt with by lower SES individuals may create a tendency in them to attend to the present (Epel et al., 1999), or even to the past in a ruminating manner, expressing regret and counterfactual thinking (Stolarski et al., 2018).

Mediating Role of Time Perspective

Differences in time perspective can influence one's general cognitions, attitudes, decisions and behaviours (e.g., Taber, 2013; Witowska & Zajenkowski, 2019; Zimbardo et al., 1997). For example, linking to the SES context, Lewin (1942) showed that unemployment reduced one's aspiration for the future, and this deeply affected the mood and action of the individual at that given time, regardless of whether the individual's picture of the future was right or not. Guthrie et al. (2009) also proposed time perspective as a mediator of socioeconomic disparities in health and highlighted the implications of future time perspective in motivating or inhibiting risky behaviours, such as smoking. Accordingly, it is likely that time perspective may also play a role in dealing with environmental challenges.

Environmental problems entail conflict in a combination of two dilemmas, temporal (Milfont & Gouveia, 2006) and interpersonal (Arnocky & Stroink, 2011), in which one has to weigh consequences of short-term self-interest against long-term common interest (Sircova et al., 2015; van Lange & Joireman, 2008). For instance, commuting by car produces short-term positive consequences for the individual via convenience and comfort, but have long-term negative consequences for both the individual and others with possible air pollution and global warming. Individual differences in time perspective thus serve to better distinguish and comprehend how people decide between these options. People with more long-term thinking have been posited to be better at analysing morally relevant behaviour abstractly and to foresee potential future consequences in greater detail (Agerström & Björklund, 2013). Such a time perspective would be conducive to PEV. Indeed, majority of studies show that future-oriented individuals tend to be more environmentally concerned than present-oriented individuals (Joireman et al., 2004; Milfont & Gouveia, 2006; Milfont et al., 2012). Meanwhile, present-oriented individuals are associated with trait impulsivity and propensity to take risks, which also tend to predominate in anti-environmental people. Past orientation,

while less studied, has been noted to have negligible relations to pro- or anti-environmental tendencies (Corral-Verdugo et al., 2006).

Seeing the importance of time perspective in accounting for socioeconomic gradients in a range of individual behaviours (e.g., Pepper & Nettle, 2017), along with the temporal nature of environmental issues (Kortenkamp & Moore, 2006), they suggest that time perspective could be a vital mediator in the SES-PEV link. In fact, a recent study by Grandin et al. (2022) did explore this mediation model. However, the authors used temporal discounting as their operationalisation of time perspective. This represents the more typical construct of time preference used in economics, which describes the idea that there is a natural preference to enjoy goods now and pay for them later (West et al., 2003). Since the future is uncertain, individuals should place more value on existing goods available while discounting the value of future goods. The extent that one chooses to discount future goods acts as a proxy to how much the individual values the present relative to the future. Notwithstanding conceptual similarities and shared associations, temporal discounting may be distinct from the psychological construct of time perspective (Teuscher & Mitchell, 2011), with the former including considerations of alternatives and hypotheticals that may not be present in psychometric measures of time perspective (Guthrie et al., 2009), and the act of discounting involving an added assessment, evaluation or value judgement to a particular situation.

Research Overview

The present studies aimed to test a similar mediation model to Grandin et al. (2022), but with focus on the broader psychological time perspective in contrast to a temporal discounting measure, which no studies to date have examined. Factoring in the existing literature, scoping time perspective to the definition of temporal focus for this research is apt as SES can produce particular psychological preferences in terms of time perspectives, and

pro-environmental attitudes and behaviours could also be a domain influenced by varying time perspectives. This operationalisation allows for the research to be more theoretically cohesive and grounded. TFS was chosen as the measure since it is more closely aligned to the construct by definition and can help to parse the varying relations that different time perspectives (past, current and future) have with SES and PEV for a more holistic understanding. Choosing this direction for the research considers time perspective more neutrally based on attentional biases rather than personal value judgement. In line with past literature, it is hypothesised that:

H1a: SES has a positive association with PEV.

H1b: Higher SES individuals are more likely to have a future time perspective, and less likely to have a current time perspective. SES will not be significantly associated with past time perspective.

H1c: Future time perspective will positively affect PEV; current time perspective will negatively affect PEV; past time perspective will have no effect on PEV.

H1d: Time perspective will mediate the positive relationship between SES and PEV, but this will only be significant through more future and less current time perspective.

Figure 1

Theoretical mediation model

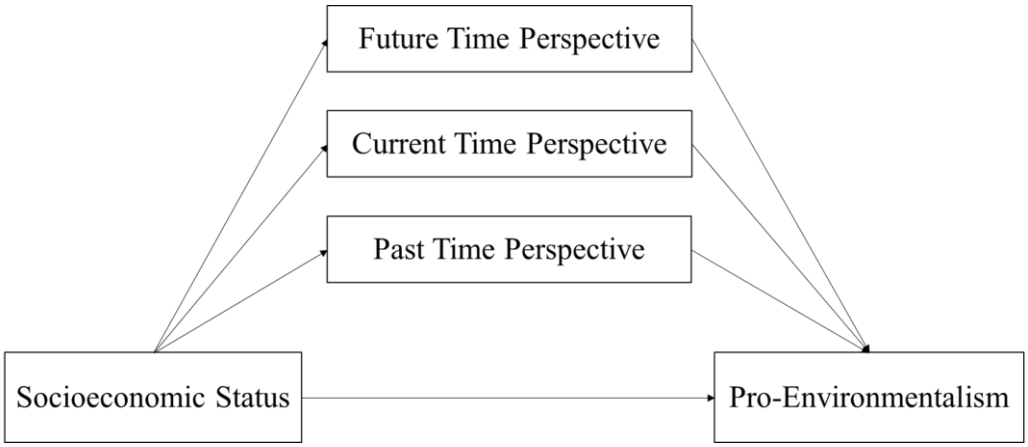


Figure 1 shows the theoretical model for this research. In Study 1, correlational data was used, while in Study 2, an experimental approach was implemented to investigate the influence of primed time perspectives in the model, which advances and differentiates from Grandin et al. (2022)'s study. Beyond self-reported measures of environmental attitudes or behaviours, concrete behavioural outcomes were examined as well, inclusive of donating to, volunteering for, and signing a petition on environmental causes. In our analyses, it was decided a priori to control for age (e.g., Wang et al., 2021) and political ideology (e.g., Dunlap et al., 2001) where relevant, due to their known associations with the main variables.

Study 1

The aim of Study 1 was to obtain preliminary evidence for the proposed mediation model. SES indices of income, education and subjective SES were collected. Time perspective (past, current and future) and PEV (citizenship and personal intentions) were measured using scale items.

Participants

Through Amazon Mechanical Turk using CloudResearch, a crowdsourcing data acquisition platform (https://www.cloudresearch.com/), 301 participants were gathered from the U.S., with 53.3% females, ranging in age from 19 to 75 years old (M = 40.81, SD = 13.28). The median monthly family household income was $25,000 to $50,000, while the median education level of participants was a Bachelor's degree. Participants were paid USD$1 for completing the study.

Measures

Socioeconomic Status

Family household income and personal education level were used to assess objective SES. Participants reported monthly household income in 10 bins, with the lowest and highest bins assigned "less than $25,000" and "over $500,000" respectively. Between $25,000 and

$100,000, incomes were grouped in bins with a $25,000 range. Thereafter, the increments were exponential: between $100,000 to $200,000, bins had a $50,000 range, followed by a $100,000 and $200,000 range. For education, a 6-point scale was used, with 1 = *some high school or less* to 6 = *advanced degree (e.g., Masters or PhD)*. Higher ratings on each scale indicated higher objective SES.

Additionally, subjective SES was measured using the MacArthur Scale of Subjective Socioeconomic Status (Adler et al., 2000). Participants were shown a picture of a ladder with 10 rungs and requested to think of the ladder as where people in America stood. The *highest rung* (10) represented people with "the most amount of money, most education, and best jobs" while the *lowest rung* (1) was the opposite, with "the least amount of money, least education, and worst jobs or no jobs". They were instructed to place themselves on the ladder by selecting a rung to represent where they felt they stood relative to others in their community (M = 4.92, SD = 1.77).

Time Perspective

Temporal Focus Scale (TFS; Shipp et al., 2009) was used given its alignment with this study's conceptual definition of time perspective. Participants were asked to think about their past, present and future in general, then rate the frequency with which they thought about the three time frames as indicated by 12 items (1 = *never*, 3 = *sometimes*, 5 = *frequently*, 7 = *constantly*). There were four items each for the past (TFS-P; e.g., "I reflect on what has happened in my life"), current (TFS-C; e.g., "I focus on what is currently happening in my life"), and future (TFS-F; e.g., "I think about times to come"). Each four-item subscale was averaged as a composite (TFS-P: M = 4.36, SD = 1.34; α = .92; TFS-C: M = 5.13, SD = 1.10; α = .89; TFS-F: M = 4.97, SD = 1.30; α = .93). Higher ratings in a particular time frame indicated stronger time preference for that dimension (e.g., higher ratings on TFS-F suggest a more future time perspective).

Pro-Environmentalism

The measure used focused on how strongly participants were motivated to act on climate change. Based on Bain et al. (2016), two distinct subscales with a total of 24 items were incorporated, one that assessed public and political actions (citizenship) and another that focused on household domestic behaviours (personal). For environmental citizenship intentions, participants reported how likely they were to engage in a list of 12 activities, such as to "sign a petition in support of protecting the environment," "write to a newspaper in support of protecting the environment," and "join public demonstrations or protests supporting environmental protection" (1 = *not at all likely* to 5 = *very likely*). Scores for the 12 items were averaged into a composite (M = 2.59, SD = 1.24; α = .95). Similarly, for personal sphere behavioural intentions, participants indicated how likely they were to engage in 12 activities, such as to "recycle," "turn off lights and appliances when not in use," and "conserve water at home (for example, when cooking or showering)". Likewise, scores were averaged from the 12 items to generate a composite (M = 3.67, SD = 0.94; α = .88). For both scales, higher scores indicated greater PEV.

Results

Table 1 presents the means and standard deviations of key variables, along with the bivariate correlations between them. Since the correlation between objective SES indices was significant but small, it did not warrant combining them into a composite measure (Kraus & Keltner, 2009). In fact, the three measures can contribute to SES distinctly (e.g., Tan et al., 2020), and hence, separate analyses of the model were run for each SES measure.

To validate the hypothesised mediation model, parallel mediation analysis was conducted using SPSS PROCESS Model 4, concurrently incorporating the three time perspectives as mediators. Twelve models were run in total, using each of the three SES indicators as predictors, and each of the two pro-environmental indicators as outcomes.

Thereafter, the other SES indicators were included as covariates accordingly (e.g., when subjective SES was used as the predictor, objective SES measures were added as covariates), along with age and political ideology, owing to their past known relations to the predictor and outcome variables. Political ideology (0 = *liberal*, 50 = *moderate*, 100 = *conservative*; *M* = 42.77, *SD* = 32.94) was significantly correlated with education (r = -.144, p = .012), subjective SES (r = .139, p = .016), citizenship intentions (r = -.280, p < .001) and personal intentions (r = -.177, p = .002). Age was not significantly associated with SES or PEV variables, but was significant with future time perspective (r = -.176, p = .002).

Table 1

Means and standard deviations of Study 1 variables and bivariate correlations between them

	M (*SD*)	1	2	3	4	5	6	7	8
1. Income	2.80 (1.48)	-							
2. Education	4.33 (1.27)	.230***	-						
3. Subjective SES	4.92 (1.77)	.567***	.296***	-					
4. TFS-P	4.36 (1.34)	.045	-.010	.073	-				
5. TFS-C	5.13 (1.10)	.156**	.053	.248***	.112	-			
6. TFS-F	4.97 (1.30)	.166**	.003	.225***	.311***	.328***	-		
7. Citizenship Intentions	2.59 (1.24)	.068	.139*	.175**	.267***	.194***	.344***	-	
8. Personal Intentions	3.67 (0.94)	.101	.183**	.191***	.237***	.323***	.333***	.638***	-

***p < .001, **p < .01, *p < .05

After accounting for critical covariates (refer to Table 2), subjective SES was the only predictor that contributed to a significant mediation model. Its positive associations with PEV remained significant, and more importantly, those with higher subjective SES continued to have significantly more future time perspective, which in turn predicted PEV (greater motivation for citizenship actions on climate change, as well as for personal ones). Current time perspective also remained a significant mediator for the relationship between subjective SES and personal intentions. In contrast, these significant mediations that were likewise initially detected in the income analyses without covariates (see Table A1) disappeared. The income-PEV links became inverse and non-significant. Meanwhile, education maintained its significant positive direct effect on personal intentions, but not on citizenship intentions. Despite the former effect, it still had non-significant indirect effects with all time perspectives.

Those with higher education surprisingly held lower future time perspective, although this was non-significant. Given that past time perspective was not significantly correlated with any SES measure, none of the mediation pathways with it were significant. However, it is noted that the direct effect of past time perspective on both PEV measures was significant.

Discussion

Study 1 offered initial evidence in line with the hypothesis that time perspective, particularly the future orientation, would mediate the positive SES-PEV relationship. The findings showed that the mediation model with covariates was significant only with subjective SES, and principally with future time perspective: higher subjective SES was linked to more future time perspective, and subsequently, higher levels of PEV (for both citizenship and personal intentions). However, the mediation was non-significant for objective measures of income and education. This may be attributed to subjective SES providing a more comprehensive appraisal of social position by considering the individual's perceived, and more relative, financial and social status. It is generally known to be a more robust predictor of psychological functioning (Adler et al., 2000; Singh-Manoux et al., 2005; Tan et al., 2020). Likewise in this study, it may have made the relevant time perspective more impressionable and yielded some variations in environmental outcomes beyond what is accounted for in typical objective SES measures. Another consideration is that the objective measure of education may not be as closely linked to time perspective for a significant mediation to have surfaced. The positive direct effect that education had on personal intentions for PEV was likely by reason of knowledge about and exposure to information on the cause, such as being updated on global climate change policies, rather than of time perspective. It may also be worth noting that our sample mainly comprised of low-income individuals. This may partially account for the lack of significant differences in income's direct associations with future time perspective as well as PEV.

Table 2

Study 1 analyses of hypothesised mediation model, with covariates of other SES measures, age and political ideology

	Y (Citizenship Intentions)					*Y* (Personal Intentions)				
Pathway	*β*	*b*	*SE*	*t*	*p*	*β*	*b*	*SE*	*t*	*p*
					M_1 (TFS-F); M_2 (TFS-C); M_3 (TFS-P)					
Model summary	R^2 = .250, $F(8, 291)$ = 12.103, p < .001					R^2 = .255, $F(8, 291)$ = 12.423, p < .001				
Direct effect of M_1 on Y	.202	0.193	0.056	3.442	< .001***	.215	0.156	0.042	3.682	< .001***
Direct effect of M_2 on Y	.076	0.086	0.062	1.391	.165	.214	0.182	0.047	3.905	< .001***
Direct effect of M_3 on Y	.193	0.179	0.050	3.601	< .001***	.143	0.100	0.038	2.667	.008**
X (Income)										
Effect of X on M_1	.064	0.056	0.059	0.945	.346	.064	0.056	0.059	0.945	.346
Effect of X on M_2	.021	0.016	0.051	0.305	.761	.021	0.016	0.051	0.305	.761
Effect of X on M_3	.007	0.006	0.064	0.093	.926	.007	0.006	0.064	0.093	.926
Total effect of X on Y	-.072	-0.060	0.055	-1.083	.280	-.043	-0.027	0.043	-0.641	.522
Direct effect of X on Y	-.088	-0.073	0.052	-1.408	.160	-.062	-0.040	0.039	-1.008	.314
Indirect effect of X on Y via M_1	β = .013, b = 0.011 (SE = 0.012), 95% CI = [-.011, .039], p = .380					β = .014, b = 0.009 (SE = 0.010), 95% CI = [-.009, .031], p = .376				
Indirect effect of X on Y via M_2	β = .002, b = 0.001 (SE = 0.006), 95% CI = [-.009, .014], p = .808					β = .005, b = 0.003 (SE = 0.010), 95% CI = [-.015, .023], p = .768				
Indirect effect of X on Y via M_3	β = .001, b = 0.001 (SE = 0.012), 95% CI = [-.024, .027], p = .929					β = .001, b = 0.001 (SE = 0.007), 95% CI = [-.014, .018], p = .931				
X (Education)										
Effect of X on M_1	-.078	-0.079	0.061	-1.299	.195	-.078	-0.079	0.061	-1.299	.195
Effect of X on M_2	-.034	-0.030	0.053	-0.566	.572	-.034	-0.030	0.053	-0.566	.572
Effect of X on M_3	-.040	-0.042	0.066	0.320	.749	-.040	-0.042	0.066	0.320	.749
Total effect of X on Y	.048	0.047	0.057	0.822	.412	.087	0.064	0.044	1.454	.147
Direct effect of X on Y	.074	0.072	0.053	1.347	.179	.116	0.086	0.040	2.125	.034*
Indirect effect of X on Y via M_1	β = -.016, b = -0.015 (SE = 0.013), 95% CI = [-.042, .007], p = .241					β = -.017, b = -0.012 (SE = 0.010), 95% CI = [-.032, .006], p = .235				
Indirect effect of X on Y via M_2	β = -.003, b = -0.003 (SE = 0.006), 95% CI = [-.017, .008], p = .663					β = -.007, b = -0.005 (SE = 0.010), 95% CI = [-.028, .013], p = .587				
Indirect effect of X on Y via M_3	β = -.008, b = -0.008 (SE = 0.012), 95% CI = [-.035, .018], p = .548					β = -.006, b = -0.004 (SE = 0.007), 95% CI = [-.020, .012], p = .563				
X (Subjective SES)										
Effect of X on M_1	.230	0.169	0.051	3.286	.001**	.230	0.169	0.051	3.286	.001**
Effect of X on M_2	.252	0.157	0.045	3.528	< .001***	.252	0.157	0.045	3.528	< .001***
Effect of X on M_3	.082	0.062	0.056	1.120	.264	.082	0.062	0.056	1.120	.264
Total effect of X on Y	.245	0.171	0.048	3.573	< .001***	.216	0.115	0.037	3.089	.002**
Direct effect of X on Y	.164	0.114	0.046	2.470	.014*	.101	0.054	0.035	1.531	.127
Indirect effect of X on Y via M_1	β = .047, b = 0.032 (SE = 0.014), 95% CI = [.009, .061], p = .020*					β = .050, b = 0.026 (SE = 0.011), 95% CI = [.008, .050], p = .016*				
Indirect effect of X on Y via M_2	β = .019, b = 0.013 (SE = 0.011), 95% CI = [-.005, .036], p = .211					β = .054, b = 0.029 (SE = 0.011), 95% CI = [.010, .054], p = .010*				
Indirect effect of X on Y via M_3	β = .016, b = 0.011 (SE = 0.011), 95% CI = [-.011, .035], p = .302					β = 0.012, b = .006 (SE = 0.006), 95% CI = [-.007, .022], p = .329				

***p < .001, **p < .01, *p < .05

Individuals with higher subjective SES were also discovered to have higher current time perspective, and this higher current focus contributed to increased PEV, even though the effects were not as strong as with future time perspective. While this may seem contrary to theory, such a mediation pathway may still be plausible. According to our conceptualisation of time perspective, multiple temporal foci can exist in individuals, implying that higher SES individuals could hold higher future time perspective (which is more prominent in existing research) as well as current time perspective. Moreover, in the majority of literature, SES has been found to be negatively associated with the current time frame, but this is mainly with present-fatalistic scores from the Zimbardo Time Perspective Inventory (ZTPI) while the present-hedonistic subscale was not correlated with SES (e.g., Archer & Berger, 2021; Guthrie et al., 2009; Sugisawa et al., 2020). Shipp et al. (2009) found that the current thoughts measured in their TFS scale (used in this study) were similar to the present-hedonistic factor in the ZTPI and more positively than negatively toned, indicating that a positive relationship between SES and TFS-C may not be entirely ruled out. The present-hedonistic dimension has also been negatively linked to environmental utilisation (i.e., more PEV; Milfont & Gouveia, 2006). Hence, these positive correlations found among subjective SES, current time perspective, and PEV, along with the significant mediation model, may still be theoretically sound.

It was also found that past time perspective was positively and significantly related to both PEV measures (in models with and without covariates), a result uncommon in literature. A conceivable reason for this could be intergenerational reciprocity (Bang et al., 2017; Wade-Benzoni, 2002), where reflecting on sacrifices by past generations may evoke feelings of gratitude toward them (Markowitz, 2012), and consequently engender a moral obligation toward future generations. Leveraging on one's increased moral obligations toward future generations may then prompt individuals to be more concerned for the environmental

degradation effects on the future generation and display more PEV, even if it may only be to a small extent (Watkins & Goodwin, 2020). In the TFS-P subscale used in this study, it captured the cognitive and reflective aspect of past time perspective ("I reflect on what has happened in my life"; "I replay memories of the past in my mind"), which makes it plausible for intergenerational reciprocity or similar concepts to have been activated as a motivator for PEV, and to explain the significant positive results obtained. Yet, it can also be argued that essentially, a more future-thinking perspective could have been generated through this consideration of the past time frame. This reinforces the strength of future time perspective as the key mediator between SES and PEV.

One of the most crucial limitations in this study is its correlational nature that does not allow for causal interpretations of the relationships found. Another limitation is the comprehensiveness of our PEV measures. As previously highlighted in the literature review, PEV encompasses environmental attitudes and behaviours, which may be implicated differently (e.g., Grandin et al., 2022). This study only utilised two facets of PEV outlined by Bain et al. (2016), citizenship and personal intentions, which primarily measure one's willingness and motivations to engage in certain activities, but did not include their third facet of financial (donation) behaviour. Such self-report attitudinal measures are susceptible to social desirability biases, and do not necessarily translate to actual behaviour, seeing how a weak attitude-behaviour link is often noted in environmental literature. Therefore, Study 2 was designed with an experimental approach along with PEV behavioural outcomes.

Study 2

This follow-up study sought to obtain experimental evidence for the proposed mediation model by employing a moderation-of-process design (Spencer et al., 2005) that can provide stronger support for time perspective being the psychological process in the SES-PEV link. The mediator, time perspective, was manipulated to investigate how the effects of

SES on PEV differ as a function of it. Doing so is comparable to a moderation design that inherently results in the mediator being a moderator (Pirlott & MacKinnon, 2016). Future, current and past time perspectives are three conditions that encourage the value of the mediator in descending order. With time perspective as a moderator, it means that future time perspective will have the most influence on the positive relationship between SES and PEV, current time perspective will have a moderate influence, and past time perspective would have the least influence. Lower SES individuals being placed in the future condition should have an elevated future time perspective that motivates them to act more pro-environmentally. Similarly, placing higher SES individuals in the current condition should prompt a current time perspective that diminishes their green behaviour. However, as noted in Study 1, the indirect effects were stronger for future time perspective compared to current; hence, the current condition should not affect the SES-PEV link as much. Since past time perspective usually has negligible relations with both SES and PEV, it can be reasonably asserted that the association between SES and PEV should not be weakened as much, if not at all.

Through the randomisation of participants to different conditions of time perspective, temporal precedence can be established from time perspective to PEV, and alternative explanations for the observed moderation pattern can be reduced. A manipulation check measuring time perspective was included to ascertain the causal effects of the mediator. In addition, this study boosted the measurement of PEV; attitudinal measures from Study 1 were retained, alongside new behavioural measures of commitment to support environmental organisations and monetary donation. The following main hypotheses were posited:

H2a: Higher SES has a positive association with PEV across all conditions.

H2b: Time perspective will moderate the positive relationship between SES and PEV. Future time perspective will weaken the positive effect of SES on PEV the most and SES differences will be the smallest. Current time perspective will moderately weaken the SES-

PEV relationship and the SES gap will be larger than with future time perspective, but smaller than with past time perspective, which will have the least influence on SES and PEV.

Procedure

Singapore Management University (SMU) undergraduates were recruited for a study on "Imagination and Pro-sociality" and compensated with 1 course credit or SGD$4. The sample consisted of 456 psychology students, of which 76.1% were females, and the age range was from 18 to 28 years old (M = 21.86, SD = 1.87). Median monthly household income was $7,001 to $8,000, and median parents' education level of participants was between a Polytechnic diploma and professional qualification or degree.

The study was fully conducted online on participants' personal computers. At the outset of each session, subjects provided their informed consent and were reminded to take the study in a quiet space, free from distractions. This was important as it could implicate the manipulation of time perspective. Participants were then randomly assigned to one of three time perspective conditions: future (N = 153), current (N = 153), or past condition. In each condition, participants received prompts related to their assigned time perspective for a guided imagery task, then proceeded to the PEV and demographic markers. Any deceptions were addressed in the debrief sheet at the end.

Manipulation Materials

Guided imagery utilises the power of one's thoughts to stimulate particular psychological and physiological states (Fors et al., 2002). Adapting from Arnocky et al. (2014) and Cheng et al. (2012), this was used to induce a future-, current- or past-oriented mindset. Participants in the future condition were given 4 minutes to read and adhere to the following instructions (a timer was provided at the bottom of the questionnaire page), meant to stimulate a future time perspective:

Take a few minutes to envision what your everyday life circumstances might be like FIVE years in the future. Visualise what happens on a typical day from the time you wake up until you go to sleep, FIVE years in the future. Think of at least one positive and one negative event. Include as much detail as possible (sights, sounds, smells, etc.). Take three deep breaths before you begin. Feel free to close your eyes during this task. Please write your response in the box below. You will only be brought to the next page after 4 minutes.

For the current condition, participants received a nearly identical set of instructions, meant to generate a current time perspective:

Take a few minutes to envision what your everyday life circumstances are currently like. Visualise what happens on a typical day (such as today) from the time you wake up until you go to sleep. Think of at least one positive and one negative event. Include as much detail as possible (sights, sounds, smells, etc.). Take three deep breaths before you begin. Feel free to close your eyes during this task. Please write your response in the box below. You will only be brought to the next page after 4 minutes.

Finally, participants in the past condition received a similar set of instructions, meant to evoke a past time perspective:

Please take a few minutes to envision what your everyday life circumstances have been like FIVE years in the past. Visualise what happens on a typical day from the time you wake up until you go to sleep, FIVE years in the past. Think of at least one positive and one negative event. Include as much detail as possible (sights, sounds, smells, etc.). Take three deep breaths before you begin. Feel free to close your eyes during this task. Please write your response in the box below. You will only be brought to the next page after 4 minutes.

The choice for 5 years as the target visualisation time frame in the past and future primes was based on prior research, such as Addis et al. (2007), which suggested that individuals extemporaneously produce past and future events approximately ±3.6 years from the present day.

Measures

Manipulation Check

Participants were asked to rate the frequency of their current thoughts and feelings on a scale of 1 = *not at all*, 2 = *slightly*, 3 = *moderately*, 4 = *very*, 5 = *extremely*. Three simple questions were used to assess if the manipulation in each condition was successful: "I am thinking about my (past / present / future) right now." Further, mood questions (e.g., "I am feeling (happy / angry / worried) right now") were added as fillers to reduce demand characteristics from participants.

Socioeconomic Status

The three SES indices from Study 1 (income, education and subjective SES) were collected, but revised for Singaporean undergraduates. Participants reported monthly household income in 10 bins, with the lowest and highest bins adjusted to "under $2,000" and "over $10,000" respectively, and the ones in between each having a $1,000 range. Parents' education was used as the proxy of SES instead, since this sample consisted of students. A 9-point scale was used, with 1 = *Pre-primary* to 9 = *Masters / PhD / Other Post-graduate degree*. Subjective SES was measured using the MacArthur Scale, with a minor modification to the ladder's prompt to represent the community in Singapore (M = 5.78, SD = 1.43) and SMU (M = 5.27, SD = 1.59). Higher ratings on each four scales indicated higher SES.

Pro-Environmentalism

To enable a more comprehensive measure of PEV, a modified 10-item version of the citizenship intentions scale (M = 2.56, SD = 0.89; α = .90) and the same 12-item personal intentions scale (M = 3.61, SD = 0.65; α = .79) from Study 1 (Bain et al., 2016) were used, along with two other measures more analogous to pro-environmental behaviour. The two items removed from the citizenship intentions scale asked participants if they would "join public demonstrations or protests supporting environmental protection," and "if a local, state

or Federal election was called, vote for a candidate at least in part because he or she was in favour of strong environmental protection", both of which are not as relevant and valid for Singapore's context.

Commitment to Support Environmental Organisations. Behavioural commitment to environmental organisations were assessed by asking participants to join various initiatives from local non-profit organisations (modified from Sasaki et al., 2013). Participants were given a list of six real local organisations (name, logo and company description), four of which were environmental-related while the remaining two were non-environmental ones (e.g., charity for poverty) included as fillers. For each organisation, participants checked *yes* or *no* for each of the four given options: Whether or not they (1) would like to be contacted by the organisation with more information about their initiatives, (2) would like to be contacted by the organisation when there is a volunteer opportunity, (3) would be willing to donate to the organisation, and (4) would sign a petition to support the organisation (with their names reflected in a list of supporters on the organisation's website and in documents used to request for government and donor fundings). The number of *yes* responses (for environmental organisations only) were summed to generate an index of pro-environmental support ($M = 5.59$, $SD = 4.38$; $\alpha = .88$). At the end of the study, participants were debriefed and made known that their responses were not given to any of the organisations.

Financial Donation. In line with Bain et al. (2016)'s third facet of PEV and adapted from Eom et al. (2021), participants were told they would be entered into a prize draw for $10 as a participation bonus. They were also informed that they could donate part of their prize to a non-profit environmental advocacy organisation, Singapore Environment Council. Information about the organisation, together with a link to their website, were provided. Participants then nominated the amount of the bonus they wished to donate, from $0 to $10, if they won the prize. This donation amount was used to conduct analyses, with a greater

amount representing greater pro-environmental behaviour (M = 6.59, SD = 3.46). In reality, there was no actual prize draw and participants were fully debriefed about this deception at the end of the study.

Results

One-way ANOVA ran on each of the three manipulation check questions (on past, current and future) revealed a significant effect of the manipulation conditions on participants' reported future thinking (F(2, 453) = 8.770, p < .001). Bonferroni post-hoc comparisons showed that participants in the future condition (M = 3.03, SD = 1.19) indicated significantly higher future thinking than those in the past condition (M = 2.46, SD = 1.21), p < .001, but not those in the current condition (M = 2.76, SD = 1.24), p = .146. There was no difference in future thinking between participants in the past and current condition, p = .083. Additionally, the manipulation conditions did not have a significant effect on getting participants to think more about their past (F(2, 453) = 0.784, p = .457) or present (F(2, 453) = 0.733, p = .481).

Table 3

Means and standard deviations of Study 2 variables and bivariate correlations between them

	M (*SD*)	1	2	3	4	5	6	7	8
1. Income	6.77 (3.14)	-							
2. Parents' Education	5.39 (2.01)	.383***	-						
3. Subjective SES (SG)	5.78 (1.43)	.485***	.439***	-					
4. Subjective SES (SMU)	5.27 (1.59)	.371***	.343***	.073	-				
5. Citizenship Intentions	2.56 (0.89)	.053	.036	.000	-.004	-			
6. Personal Intentions	3.61 (0.65)	-.054	-.070	-.062	-.030	.561***	-		
7. Support for Organisations	5.59 (4.38)	.035	.079	-.004	-.012	.476***	.335***	-	
8. Donation	6.59 (3.46)	.086	-.002	.031	.070	.204***	.128**	.213***	-

***p < .001, **p < .01, *p < .05

Table 3 presents the means and standard deviations of key variables, along with the bivariate correlations between them. As with Study 1, the correlation between objective SES indices was significant but small, so it did not warrant combining them into a composite measure and separate analyses of the model were run for the four SES measures against each

of the four PEV measures. Age was found to have significant correlations with parents' education (r = -.295, p < .001), citizenship intentions (r = -.105, p = .025) and support for organisations (r = -.125, p = .007), signifying it could be a confound, and thus, it was included as a covariate in this study.

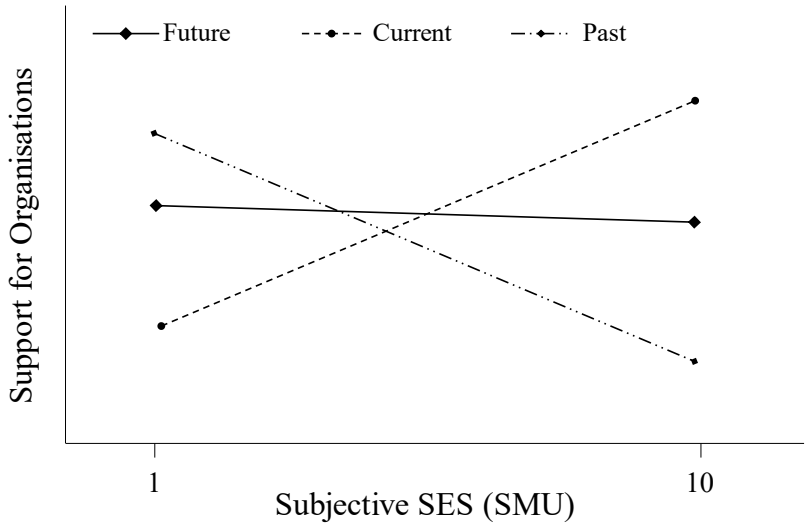
To verify hypothesis 2a, simple regressions for SES-PEV associations were run. The results were non-significant (refer to Table A2) and the hypothesis was not fully supported, even after accounting for other SES measures and age. As reflected in Table 4, income had a positive effect on all PEV measures, except on personal intentions; parents' education levels only positively influenced commitment to support environmental organisations; subjective SES at the country level had negative associations with all PEV measures; and subjective SES in relation to one's school community was positively related to all PEV measures, except commitment to support environmental organisations.

Moderation analyses of the time perspective conditions on each SES-PEV relationship were then conducted to verify hypothesis 2b. In the model using subjective SES in SMU and commitment to support environmental organisations (refer to Table 5), their main effects of SES on PEV, as well as time perspective on PEV, were non-significant, but the interaction effect was significant, suggesting that the effect of SES on PEV depended on time perspective. Results detected that the impact of subjective SES in SMU on support for organisations among those with current time perspective was significantly higher than those with past time perspective, but there was neither an interaction for those with future time perspective versus past time perspective, nor for those with future time perspective versus current time perspective. The simple slopes for this SES-PEV association at all three time perspectives were non-significant: future, b = -0.081, SE = 0.219, t(449) = -0.370, p = .712; current, b = 0.395, SE = 0.236, t(449) = 1.671, p = .095; past, b = -0.331, SE = 0.213, t(449) = -1.552, p = .121. Figure 2 illustrates the interaction, where those with higher subjective

SES in SMU predicted greater commitment to support environmental organisations when holding a current time perspective, and lesser of this measure of PEV with a future or past time perspective. Further analysis of this significant interaction was conducted on the other set of simple slopes that details condition differences between current and past time perspectives at high subjective SES in SMU (1 SD above the centred mean) as well as low subjective SES in SMU (1 SD below the centred mean). Compared to past time perspective, current time perspective increased support for environmental organisations at high levels of subjective SES in SMU (β = .141, b = 1.306, SE = 0.701, t(449) = 1.863, p = .063) and decreased this PEV at low levels of this SES measure (β = -.108, b = -1.001, SE = 0.723, t(449) = -1.384, p = .167). Nonetheless, these simple slopes were also non-significant. Ancillary analysis of subjective SES in SMU on commitment to support non-environmental organisations (indexed by the sum of *yes* responses to them) was also performed, but did not reveal any significant relationship or interaction (refer to Table S1). Time perspective did not moderate the relationship between any of the other SES and PEV measures (see Table A3).

Figure 2

Time perspective moderates impact of subjective SES in SMU on support for organisations



Discussion

Employing the experimental approach of manipulating the mediator for Study 2 was intended to bolster this research's theoretical argument by showing time perspective, especially future time perspective, being a key psychological component in order for the SES-PEV link to exist. This study also included the attitudinal PEV measures from Study 1, as well as added behavioural outcomes, to allow increased reliability regarding drawn conclusions from the first study, and to facilitate a more thorough examination into the mediation model to reaffirm that it holds across a range of PEV measures.

Current time perspective, compared to past time perspective, significantly moderated the negative relationship of subjective SES in SMU on support for environmental organisations. Since the ancillary analysis done for non-environmental organisations did not produce a similar significant effect, it is probable that the finding was not simply a general prosocial tendency. Despite this, the hypotheses in this study were not well-supported. These results were not in line with our theorised expectations, whereby higher SES participants should have reported greater PEV, and this relationship should have been attenuated the most, slightly, and the least, in the future, current and past time perspective conditions, respectively. It was also not consistent with the results of other included PEV measures. Extensive analysis of the simple slopes were also non-significant and did not lend more insight into the nature of the significant interaction found. Given that the guided imagery task manipulation was only successful to distinguish between future and past thinking, but not between future and current or current and past, the construct validity of the manipulation was not fully evidenced and the manipulation may not have affected time perspective in the theorised manner. These points will be revisited in the general discussion.

Table 4

Study 2 simple regressions of SES on PEV, with covariates of each SES measure and age

	Y (Citizenship Intentions)					*Y* (Personal Intentions)					*Y* (Support for Organisations)					*Y* (Donation)				
Pathway	*β*	*b*	*SE*	*t*	*p*	*β*	*b*	*SE*	*t*	*p*	*β*	*b*	*SE*	*t*	*p*	*β*	*b*	*SE*	*t*	*p*
	X_1 (Income); X_2 (Parents' Education); X_3 (Subjective SES in Singapore); X_4 (Subjective SES in SMU)																			
Model summary	R^2 = .014, F(5, 450) = 1.305, p = .261					R^2 = .009, F(5, 449) = 0.806, p = .546					R^2 = .020, F(5, 450) = 1.807, p = .110					R^2 = .015, F(5, 450) = 1.404, p = .222				
Effect of X_1 on Y	.065	0.018	0.016	1.182	.238	-.004	0.011	-0.020	-0.372	.710	.030	0.042	0.076	0.551	.582	.100	0.110	0.060	1.821	.069
Effect of X_2 on Y	-.002	-0.001	0.025	-0.045	.964	-.021	0.018	-0.064	-1.145	.253	.058	0.127	0.121	1.045	.296	-.029	-0.049	0.096	-0.514	.608
Effect of X_3 on Y	-.040	-0.025	0.047	-0.540	.589	-.028	0.034	-0.060	-0.803	.423	-.047	-0.144	0.229	-0.630	.529	-.069	-0.167	0.181	-0.922	.357
Effect of X_4 on Y	.003	0.002	0.039	0.044	.965	.018	0.028	0.045	0.641	.522	-.008	-0.023	0.190	-0.119	.905	.093	0.201	0.150	1.337	.182

Table 5

Study 2 analyses of moderation-of-process model for subjective SES in SMU on each PEV measure, with covariate of age

	Y (Citizenship Intentions)					*Y* (Personal Intentions)					*Y* (Support for Organisations)					*Y* (Donation)				
Pathway	*β*	*b*	*SE*	*t*	*p*	*β*	*b*	*SE*	*t*	*p*	*β*	*b*	*SE*	*t*	*p*	*β*	*b*	*SE*	*t*	*p*
	X (Subjective SES in SMU); W_1 (Future Time Perspective); W_2 (Current Time Perspective); W_3 (Past Time Perspective)																			
Model summary	R^2 = .021, F(6, 449) = 1.603, p = .144					R^2 = .014, F(6, 448) = 1.024, p = .409					R^2 = .028, F(6, 449) = 2.124, p = .049*					R^2 = .022, F(6, 449) = 1.712, p = .116				
Effect of W_1 on Y	.007	0.013	0.345	0.039	.969	.288	0.397	0.252	1.577	.115	-.131	-1.209	1.680	-0.719	.472	-.158	-1.158	1.330	-0.871	.384
Effect of W_2 on Y	-.159	-0.300	0.362	-0.829	.408	-.062	-0.086	0.265	-0.323	.747	-.397	-3.673	1.766	-2.080	.038*	.242	1.770	1.398	1.266	.206
Effect of X on Y	-.062	-0.035	0.044	-0.796	.426	.010	0.004	0.032	0.127	.899	-.120	-0.331	0.213	-1.552	.121	.104	0.225	0.169	1.336	.182
Effect of X×W_1 on Y	.076	0.026	0.063	0.415	.679	-.222	-0.055	0.046	-1.204	.229	.150	0.250	0.305	0.817	.414	.073	0.096	0.242	0.398	.691
Effect of X×W_2 on Y	.250	0.084	0.065	1.288	.198	.056	0.014	0.048	0.289	.773	.441	0.725	0.318	2.280	.023*	-.296	-0.385	0.252	-1.529	.127
Effect of W_2 on Y	-.166	-0.314	0.363	-0.865	.388	-.351	-0.483	0.265	-1.822	.069	-.266	-2.465	1.768	-1.394	.164	.401	2.929	1.400	2.092	.037*
Effect of W_3 on Y	-.007	-0.013	0.345	-0.039	.969	-.287	-0.397	0.252	-1.577	.115	.130	1.209	1.680	0.719	.472	.158	1.158	1.330	0.871	.384
Effect of X on Y	-.016	-0.009	0.045	-0.196	.845	-.125	-0.051	0.033	-1.555	.121	-.029	-0.081	0.219	-0.370	.712	.148	0.322	0.173	1.854	.064
Effect of X×W_2 on Y	.173	0.058	0.066	0.879	.380	.281	0.069	0.048	1.426	.154	.289	0.476	0.322	1.476	.141	-.370	-0.481	0.255	-1.886	.060
Effect of X×W_3 on Y	-.078	-0.026	0.063	-0.415	.679	.226	0.055	0.046	1.204	.229	-.153	-0.250	0.305	-0.817	.414	-.075	-0.096	0.242	-0.398	.691
Effect of W_1 on Y	.166	0.314	0.363	0.865	.388	.351	0.483	0.265	1.822	.069	.266	2.465	1.768	1.394	.164	-.401	-2.929	1.400	-2.092	.037*
Effect of W_3 on Y	.158	0.300	0.362	0.829	.408	.062	0.086	0.265	0.323	.747	.395	3.673	1.766	2.080	.038*	-.241	-1.770	1.398	-1.266	.206
Effect of X on Y	.088	0.049	0.048	1.017	.310	.044	0.018	0.035	0.504	.614	.143	0.395	0.236	1.671	.095	-.074	-0.160	0.187	-0.854	.393
Effect of X×W_1 on Y	-.170	-0.058	0.066	-0.879	.380	-.278	-0.069	0.048	-1.426	.154	-.285	-0.476	0.322	-1.476	.141	.365	0.481	0.255	1.886	.060
Effect of X×W_3 on Y	-.251	-0.084	0.065	-1.288	.198	-.057	-0.014	0.048	-0.289	.773	-.443	-0.725	0.318	-2.280	.023*	.298	0.385	0.252	1.529	.127

$^{***}p < .001$, $^{**}p < .01$, $^{*}p < .05$

General Discussion

This paper explored the role of time perspective in explaining the connection between SES and PEV using correlational (Study 1) and experimental (Study 2) data. Based on literature, it was expected that higher SES would positively predict future time perspective, which would subsequently compel greater PEV in both attitudinal measures (citizenship and personal intentions; Study 1 and 2) and behavioural measures (commitment to support environmental organisations and making financial donations; Study 2). Findings from Study 1 supported the posited theory, where future time perspective was a significant mediator in the positive relationship between subjective SES and the two attitudinal measures. However, Study 2 did not show a converging picture with the first study, and its hypotheses were not well-supported. In spite of the significant moderating effect of current time perspective compared to past time perspective in the model with subjective SES in one's school community (SMU) and commitment to support environmental organisations, this pattern was not in line with theory. Moreover, the simple slopes were non-significant, suggesting that the slopes for subjective SES in SMU may differ significantly from each other for the different time perspectives, but were non-significantly different from zero.

A plausible reason for the inconsistent results seen in Study 2 could be the lack of strength in the manipulation, given that the guided imagery task was only able to discriminate between future thinking in the future and past conditions, but not between future and current, or current and past, and also not between current and past thinking across all conditions. This could have been attributable to the unique sample of Singaporean university students. Prior works on time perspective in adolescents, aged 13 to 17, have highlighted how they had difficulty and ambiguity when conceptualising the present, but not for the past and future (Mello et al., 2009). They tended to view the present as ephemeral, and somewhat of a blurred line related to the other temporal dimensions of the past and future. For instance, one

adolescent shared, "I think that if you look at [the present] very closely, there is no present, because it's either something that's happened beforehand or something that's going to happen." Another also stated that "for the past to influence the future, you'd have to go through the present". Thus, the failure of the manipulation checks between current thinking and the two other time perspectives could be alluded to this lack of clarity students may have had in the conceptualisation, and possibly internalisation, of what the present entails.

Research by Shmotkin (1991) also learned that emerging adults (a group more closely in line with the sample in Study 2) and adults, between the ages of 18 to 71, actually had a more prominent current time perspective than the future and past. While this may seem contradictory to the point on ambiguity, it is tenable that one's heightened salience in the present contributes to the difficulty in capturing its essence (Mello et al., 2009). In fact, Daly (1996) notes that time has been shaped upon human experiences in late modern society toward an accelerated version (with more activities compressed into a shorter timespan, and a constant sense of busyness) that has left the present fragmented and expanded. The resultant concept is an 'extended present' coined by Nowotny (1994), which disrupts the linear progression into the future, and even brings the future into the here and now, especially when changes happen so quickly that the future arrives ahead of time, or never seems to arrive. For example, Brannen and Nilsen (2002) found that the 18- to 20-year-olds in their focus group stressed the importance of enjoying their lives in the present, and envisaged adult responsibilities as a life phase 'far in the future' that would be assumed to resemble the current lives of their parents, following relatively safe traditions.

Likewise, these considerations suggest that the university students in Study 2 could have been engaging in this extended, long-present perspective, one that is not discrete from the other time perspectives, but rather largely connected to the past and future through incremental changes within what is considered to still be the present (Kim et al., 2019). This

can be evidenced by the responses gathered from the guided imagery manipulation task. Participants in the future condition tended to use current cues to describe their typical day in the future, such as “in five years… as I usually do” and “do the same morning routine as I do now”. In the current condition, events mentioned were very similar in nature to those in the past condition, namely getting ready for school, missing the bus to school and listening to music during commutes. Some also contained features linked to the future (e.g., acceptance for a future job, worry about securing an internship) and past (e.g., a dog that had been with her since secondary school had passed). For the past condition, a handful of participants included events that happened within, rather than before, the past 5 years, which would be current experiences in university, or their prior schooling. It appears that the sample in Study 2 could have had a mindset that was still anchored in and reflective of their student experience, and thereby encompassed overlaps in the conventionally discrete states of past, current and future. Naturally, the manipulation would not have been able to elicit the time perspectives or to reflect the hypotheses that were expected.

Theoretical and Pragmatic Implications

Taken together, the two studies integrate familiar, but scantly researched, content on the associations between SES and PEV, as well as a relatively novel dimension of time perspective. They contribute to existing literature by delving into lesser-known psychological antecedents of PEV, beyond typical environmental concerns and values (e.g., Balundė et al., 2019). Furthermore, compared to Grandin et al. (2022)’s temporal discounting measure, the operationalisation of time perspective in this study catered to a more general idea of the construct that was more aligned with the other variables of interest and overall research aims. Correlational studies are also common in research to do with SES and PEV, especially with regard to time perspective. Hitherto, no other study has experimentally tested such a model. Grandin et al. (2022) made an attempt to manipulate SES; however, time perspective is

arguably a more crucial and conceptually valid manipulation that can offer a clearer causal explanation of the link between SES and PEV. Doing so helps to bring more applied value from a policy standpoint, hinting at the causative utility of using time perspective to change people's environmental attitudes and behaviours. More specifically, future-oriented framing of pro-environmental messages may be more convincing to those with higher SES, while proximal consequences could be more effective for lower SES groups, as highlighted by Grandin et al. (2022) as well. However, separate studies will need to test such interventions out and more will need to be done to tease out the varying time perspectives that are more relevant for particular SES groups.

Even though there was inconsistent support across the two studies for the overall research hypothesis, the theory is not necessarily erred. The robust findings in Study 1 provided the impetus to ascertain and understand the proposed mechanisms more in-depth via Study 2. Admittedly, the guided imagery task was not fully able to tease out the specific time perspectives planned for each condition in the particular sample for Study 2, but a weak manipulation may not be the only factor hindering the expected outcomes. Insofar that the students' time perspectives were not clearly separated across each dimension, with current time perspective plausibly entailing elements of their projected future, it could partially clarify the overall null observations and the one significant moderation seen for current time perspective compared to the past. Yet, this may also point toward the theorised phenomenon being culturally specific. Supplementary analyses of Study 2 using participants' responses on the three TFS subscales were not able to successfully replicate the significant correlational, parallel mediation model discovered in Study 1 (refer to Table S2). Of note, Study 1 was administered with an American sample, while Study 2 was conducted with a Singaporean sample. These two cultures may hold unique perceptions of time that differentially affected their PEV attitudes and behaviours. For example, Eastern cultures are typically known to

emphasise collectivism (e.g., Jiang et al., 2016), which could implicate more complex views of time since the individual's thoughts about the different time periods may not only include the personal perspective but those of the society and important people around them (e.g., family members and friends) (Zhang et al., 2015). Confucianism is also another feature of such cultures, where "happiness lies in contentment" is commonly advocated (Lyu et al., 2019). In this sense, past and current contentment could be utilised as foundations for raising the frequency and expectations of future thinking (Fingerman & Perlmutter, 1995), underscoring the possibility that the three time perspectives are more closely intertwined.

Limitations and Future Research Directions

Empirical evidence from this research served to provide a more solid groundwork for the hypothesised model that is at its infant stage. Still, the weak interaction effect found in only one of the models tested in Study 2, and the non-significant moderation results for the remaining models analysed, show that caution is needed when speculating on what these results mean alongside the results for Study 1. One of the major drawbacks for this research was the strength of the time perspective manipulation in Study 2. This manipulation was based on the successful execution in Arnocky et al. (2014) and Cheng et al. (2012), whose samples had also been on undergraduates, but from Canada and Taiwan respectively. These studies only induced a prospect-prime (future time perspective) or a neutral-prime (current time perspective) in participants, without a retrospective-prime (past time perspective). Regardless, Study 2 was not able to show any time perspective distinctions between at least the future and current conditions, indicating that the manipulation would presumably not have worked even if the focus had been just on these two conditions. Again, this could hint at unique tendencies specific to the sample that may likely have varying effects on one's thoughts on the three temporal dimensions. It is possible that stronger cues may be necessary

for students, or even individuals from different cultures, who may be holding a time perspective that is more dynamic and overlapping.

Addis et al. (2007), whose research helped to inform the visualisation time frame for the manipulation, had conducted a similar task requiring participants to recall past events or envisage future ones based on more stringent requirements. First, the events had to be episodic, meaning it was required for recalled events to be "temporally and contextually specific, occurring over minutes or hours, but not more than 1 day", such as imagining the birth of one's future child instead of simply imagining one's future child, or remembering a visit to the Eiffel Tower on one specific day instead of remembering an entire month on holiday in France. Such specificity could improve the details provided during elaboration and orientate participants more closely to the particular mindset. Second, future events also had to be new (something not previously experienced) and feasible to participants. This could be more useful to extricate the future time perspective from both the past and current time perspectives. Third, participants were instructed to "experience events from a field perspective (i.e., seeing the event from the perspective of being there) rather than from an observer perspective (i.e., observing the self from an external vantage point)". The first-person recollection or envisioning may evoke stronger senses to be more 'present' in the particular time period. Hence, it could be advantageous for future studies manipulating time perspective via guided imagery tasks to incorporate these.

Further to this rigour, Addis et al. (2007) also tapped onto the word cueing method developed by Galton (1879) and modified by Crovitz and Schiffman (1974). This technique has been used to facilitate potentially more vivid retrieval and reporting of important personal memories from participants in response to neutral, commonplace word cues used in daily life. Since participants may naturally activate content that is more exclusive to their SES membership when undergoing the guided imagery task, integrating such word cues into the

manipulation may serve as a more controlled and guided inception point for participants to better scope their thoughts and be more centred in the time perspective they are assigned. Other relevant modifications could also include extending the target visualisation time frame in the past and future primes. Although the choice for 5 years had already been increased slightly from the suggested length of 3.6 years (Addis et al., 2007), the manipulation may conceivably be more effective if the chosen number of years coincided at major life transitions or episodes that entail more distinctive social experiences. For example, a choice of 15 years would be more likely to stimulate the average 21-year-old in Study 2 to recall his or her early childhood days for the past condition (which may still include schooling, but of a different everyday circumstance, such as having naptime or recess), or envisage his or her family planning and parenthood events for the future condition. Considering this social episodic approach to time (O'Rand & Ellis, 1974) could help participants place themselves in more clearly differentiated temporal perspectives according to their assigned condition. Beyond these, it would be beneficial for this area of research to develop more creative ways of testing time perspective as well.

While efforts were made to ensure sound methodology was employed for the studies, the complexity of the constructs involved also limit the extent of investigations that were able to be done within this paper alone. For one, both Study 1 and 2 used different age ranges (middle-aged adults and emerging adults respectively) to test the hypothesis. This was to allow more substantiation for the generalisability of the model. That said, effects of low SES on future perspective have been noted to possibly reduce in later life (Sugisawa et al., 2020), and as such, elderly and young adolescents should also be explored to boost the validity of our findings. Age could also be considered as a moderator in the hypothesised model. In addition, one's time attitude and its accompanying emotional valence may have influences on time perspective, as seen in typical time research that uses ZTPI as the measure. Valency was

accounted for when attempting to elicit the three types of time perspectives via adapting the guided imagery task in Study 2 to ask participants to think of at least one positive and one negative event in the specified duration. However, it was not the main interest of this research to assess the strength or frequency of either of these thoughts, and future research can explore the differing effects arising from this.

It was not within this paper's scope to flesh out the effects from mixed combinations (e.g., high current and future time perspective, compared to someone with high future and low current time perspective). Nevertheless, it is acknowledged that individuals can simultaneously hold varying levels of the different time frames (evidenced in Study 1 as well, where subjective SES was positively linked to both future and current time perspective), and this can be considered for follow-up studies. In a similar vein, future investigations can consider bringing in the alternative concept of balanced time perspective. This idea has been gaining prominence and interest due to the notion of an optimal balanced time perspective that can flexibly engage the three time perspectives in response to one's disposition (values and preferences), as well as contextual and situational demands (Boniwell & Zimbardo, 2015). It would be worthwhile to understand this in more detail as it is plausible that such a concept may be more prominent in collectivistic cultures that are more context-sensitive, and has the potential to account for the cultural differences found in this research.

Besides focusing on time perspective, it will be meaningful to dig deeper into other closely-related psychological levers that can boost PEV as well. For one, subjective SES (e.g., Kraus et al., 2009; Wong & Yang, 2022) and future time perspective (e.g., Cheng et al., 2012; Meng et al., 2021) have both been positively linked to a sense of control, which refers to the belief in one's ability to intentionally deliver the desired outcomes and avoid the undesired ones (Skinner, 1996). This variable's effect on SES and PEV has also been studied by Eom et al. (2018). Extending the current model to investigate the chain mediating role that time

perspective and sense of control has in the relationship between SES and PEV could give policymakers and individuals a more complete and concrete picture of the psychological processes involved, and reaffirm the capacity of an individual to take on existing environmental challenges. General self-efficacy (the belief of being capable to produce a controlled response; Bandura, 1977) could be similarly explored due to its positive associations with subjective SES (e.g., Quiroga et al., 2018) and time perspective (e.g., Dreves & Blackhart, 2019; Taylor & Wilson, 2019) as well. Another concept that can be considered is one's sense of social responsibility, given that it depicts a tendency toward actions that align with social values and expectations for improving social life, beyond the individual's own benefits (Bowen, 2013), such as joining non-governmental organisations, donating or adopting an eco-friendly lifestyle (Dias, 2012; Scales et al., 2000). It is conceivable that placing oneself in a future-thinking perspective encapsulates a willingness to make choices geared toward more beneficial future prospects, which is a basic ingredient of social responsibility (Mischel, 1961). If so, this may be a more proximal psychological variable mediating time perspective and PEV that can better motivate and enact pro-environmental action. Comparably, incorporating psychological distance, in particular the temporal dimension, could be valuable to distinguish how particular time perspectives influence the concreteness of climate change perceptions and one's PEV response to it (for a review, see Maiella et al., 2020). It is also possible that this dimension interacts with the other three (spatial, hypothetical and social) to influence PEV. For example, Singapore and America experience climate change and natural disasters differently, which plausibly led to Study 2 participants perceiving environmental problems as more spatially and hypothetically distant than those in Study 1, and being less inclined toward PEV despite having a future time perspective. Future studies can more intricately test the nature of these relationships.

Conclusion

Displaying pro-environmentalism is increasingly important to create a more sustainable ecosystem for us to thrive in. However, this is a complex process that can involve sociocultural factors influencing the way we think and act. The present research demonstrates this concept, showing how one's SES and the associated time perspective accrued has the potential to influence one's level of willingness to be pro-environmental. More studies will need to be done to affirm the causality of such a model and understand its applicability to various cultural communities. Importantly, the findings do not aim to stigmatise certain groups to a particular behaviour; rather, they strive to highlight the underlying thought processes in individuals from various backgrounds, which can then be leveraged upon to more effectively deal with urgent environmental issues.

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Appendix

Table A1

Study 1 analyses of hypothesised mediation model, without covariates

	Y (Citizenship Intentions)					*Y* (Personal Intentions)				
Pathway	*β*	*b*	*SE*	*t*	*p*	*β*	*b*	*SE*	*t*	*p*
X (Income); M_1 (TFS-F); M_2 (TFS-C); M_3 (TFS-P)										
Model summary	R^2 = .153, $F(4, 295)$ = 13.340, $p < .001^{***}$					R^2 = .182, $F(4, 295)$ = 16.356, $p < .001^{***}$				
Effect of X on M_1	.166	0.145	0.050	2.901	$.004^{**}$	.166	0.145	0.050	2.901	$.004^{**}$
Effect of X on M_2	.156	0.116	0.043	2.724	$.007^{**}$	.156	0.116	0.043	2.724	$.007^{**}$
Effect of X on M_3	.045	0.041	0.052	0.778	.437	.045	0.041	0.052	0.778	.437
Direct effect of M_1 on Y	.254	0.243	0.057	4.252	$< .001^{***}$	.203	0.147	0.043	3.450	$< .001^{***}$
Direct effect of M_2 on Y	.092	0.103	0.064	1.610	.109	.237	0.202	0.048	4.228	$< .001^{***}$
Direct effect of M_3 on Y	.179	0.166	0.052	3.174	$.002^{**}$	.147	0.103	0.039	2.650	$.009^{**}$
Total effect of X on Y	.068	0.057	0.048	1.180	.239	.101	0.064	0.037	1.759	.080
Direct effect of X on Y	.004	0.003	0.046	0.067	.947	.024	0.015	0.034	0.449	.654
Indirect effect of X on Y via M_1	*β* = .042, *b* = 0.035 (*SE* = 0.015), 95% CI = [.008, .068], $p = .019^{*}$					*β* = .034, *b* = 0.021 (*SE* = 0.010), 95% CI = [.005, .045], $p = .030^{*}$				
Indirect effect of X on Y via M_2	*β* = .014, *b* = 0.012 (*SE* = 0.009), 95% CI = [-.003, .003], *p* = .186					*β* = .037, *b* = 0.024 (*SE* = 0.010), 95% CI = [.006, .047], $p = .025^{*}$				
Indirect effect of X on Y via M_3	*β* = .008, *b* = 0.007 (*SE* = 0.009), 95% CI = [-.012, .028], *p* = .470					*β* = .007, *b* = 0.004 (*SE* = 0.006), 95% CI = [-.008, .020], *p* = .483				
X (Education); M_1 (TFS-F); M_2 (TFS-C); M_3 (TFS-P)										
Model summary	R^2 = .171, $F(4, 295)$ = 15.248, $p < .001^{***}$					R^2 = .210, $F(4, 295)$ = 19.638, $p < .001^{***}$				
Effect of X on M_1	.003	0.004	0.059	0.059	.953	.003	0.004	0.059	0.059	.953
Effect of X on M_2	.053	0.046	0.050	0.919	.359	.053	0.046	0.050	0.919	.359
Effect of X on M_3	-.010	-0.011	0.061	-0.177	.860	-.010	-0.011	0.061	-0.177	.860
Direct effect of M_1 on Y	.256	0.245	0.056	4.365	$< .001^{***}$	.208	0.151	0.042	3.628	$< .001^{***}$
Direct effect of M_2 on Y	.084	0.095	0.063	1.501	.134	.230	0.196	0.047	4.191	$< .001^{***}$
Direct effect of M_3 on Y	.181	0.167	0.052	3.240	$.001^{**}$	.149	0.105	0.038	2.735	$.007^{**}$
Total effect of X on Y	.139	0.135	0.056	2.414	$.016^{*}$	.183	0.135	0.042	3.212	$.002^{**}$
Direct effect of X on Y	.135	0.131	0.052	2.543	$.012^{*}$	.172	0.127	0.038	3.310	$.001^{**}$
Indirect effect of X on Y via M_1	*β* = .001, *b* = 0.001 (*SE* = 0.015), 95% CI = [-.027, .031], *p* = .954					*β* = .001, *b* = 0.001 (*SE* = 0.009), 95% CI = [-.016, .021], *p* = .955				
Indirect effect of X on Y via M_2	*β* = .005, *b* = 0.004 (*SE* = 0.006), 95% CI = [-.006, .020], *p* = .496					*β* = .012, *b* = 0.009 (*SE* = 0.010), 95% CI = [-.010, .030], *p* = .382				
Indirect effect of X on Y via M_3	*β* = -.002, *b* = -0.002 (*SE* = 0.011), 95% CI = [-.036, .020], *p* = .866					*β* = -.002, *b* = -0.001 (*SE* = 0.007), 95% CI = [-.016, .015], *p* = .869				

X (Subjective SES); M_1 (TFS-F); M_2 (TFS-C); M_3 (TFS-P)										
Model summary	R^2 = .161, F(4, 296) = 14.232, p < .001***					R^2 = .187, F(4, 296) = 17.037, p < .001***				
Effect of X on M_1	.225	0.165	0.041	3.985	< .001***	.225	0.165	0.041	3.985	< .001***
Effect of X on M_2	.248	0.154	0.035	4.419	< .001***	.248	0.154	0.035	4.419	< .001***
Effect of X on M_3	.073	0.055	0.044	1.272	.204	.073	0.055	0.044	1.272	.204
Direct effect of M_1 on Y	.246	0.235	0.057	4.130	< .001***	.197	0.143	0.042	3.358	< .001***
Direct effect of M_2 on Y	.072	0.081	0.065	1.251	.212	.222	0.189	0.048	3.934	< .001***
Direct effect of M_3 on Y	.176	0.163	0.052	3.140	.002**	.145	0.102	0.039	2.627	.009**
Total effect of X on Y	.176	0.123	0.040	3.082	.002**	.191	0.101	0.030	3.364	.001**
Direct effect of X on Y	.090	0.063	0.039	1.610	.109	.081	0.043	0.029	1.480	.140
Indirect effect of X on Y via M_1	β = .055, b = 0.039 (SE = 0.014), 95% CI = [.015, .068], p = .005**					β = .044, b = 0.024 (SE = 0.009), 95% CI = [.007, .051], p = .012*				
Indirect effect of X on Y via M_2	β = .018, b = 0.012 (SE = 0.011), 95% CI = [-.008, .034], p = .240					β = .055, b = 0.029 (SE = 0.010), 95% CI = [.011, .051], p = .004**				
Indirect effect of X on Y via M_3	β = .013, b = 0.009 (SE = 0.008), 95% CI = [-.008, .028], p = .258					β = .011, b = 0.006 (SE = 0.005), 95% CI = [-.005, .019], p = .279				

***p < .001, **p < .01, *p < .05

Table A2

Study 2 simple regressions of SES on PEV, without covariates

	Y (Citizenship Intentions)					*Y* (Personal Intentions)					*Y* (Support for Organisations)					*Y* (Donation)				
Pathway	β	*b*	*SE*	*t*	*p*	β	*b*	*SE*	*t*	*p*	β	*b*	*SE*	*t*	*p*	β	*b*	*SE*	*t*	*p*
X_1 (Income); X_2 (Parents' Education); X_3 (Subjective SES in Singapore); X_4 (Subjective SES in SMU)																				
Model summary	R^2 = .003, F(1, 454) = 1.281, p = .258					R^2 = .003, F(1, 453) = 1.349, p = .246					R^2 = .001, F(1, 454) = 0.544, p = .461					R^2 = .007, F(1, 454) = 3.420, p = .065				
Effect of X_1 on Y	.053	0.015	0.013	1.132	.258	-.054	-0.011	0.010	-1.162	.246	.035	0.048	0.065	0.738	.461	.086	0.095	0.051	1.849	.065
Model summary	R^2 = .001, F(1, 454) = 0.601, p = .439					R^2 = .005, F(1, 453) = 2.235, p = .136					R^2 = .006, F(1, 454) = 2.822, p = .094					R^2 = .000, F(1, 454) = 0.002, p = .962				
Effect of X_2 on Y	.036	0.016	0.021	0.775	.439	-.070	-0.023	0.015	-1.495	.136	.079	0.171	0.102	1.680	.094	-.002	-0.004	0.081	-0.048	.962
Model summary	R^2 = .000, F(1, 454) = 0.000, p = .993					R^2 = .004, F(1, 453) = 1.762, p = .185					R^2 = .000, F(1, 454) = 0.008, p = .928					R^2 = .001, F(1, 454) = 0.440, p = .508				
Effect of X_3 on Y	.000	0.000	0.029	0.009	.993	-.062	-0.028	0.021	-1.327	.185	-.013	-0.013	0.144	-0.090	.928	.031	0.075	0.114	0.663	.508
Model summary	R^2 = .000, F(1, 454) = 0.008, p = .929					R^2 = .001, F(1, 453) = 0.399, p = .528					R^2 = .000, F(1, 454) = 0.070, p = .792					R^2 = .005, F(1, 454) = 2.213, p = .138				
Effect of X_4 on Y	-.002	-0.002	0.026	-0.090	.929	-.030	-0.012	0.019	-0.631	.528	-.012	-0.034	0.129	-0.264	.792	.070	0.151	0.102	1.488	.138

Table A3

Study 2 analyses of remaining moderation-of-process models, with covariate of age

	Y (Citizenship Intentions)					*Y* (Personal Intentions)					*Y* (Support for Organisations)					*Y* (Donation)				
Pathway	*β*	*b*	*SE*	*t*	*p*	*β*	*b*	*SE*	*t*	*p*	*β*	*b*	*SE*	*t*	*p*	*β*	*b*	*SE*	*t*	*p*
X (Income); W_1 (Future Time Perspective); W_2 (Current Time Perspective); W_3 (Past Time Perspective)																				
Model summary	R^2 = .023, F(6, 449) = 1.800, p = .097					R^2 = .016, F(6, 448) = 1.213, p = .298					R^2 = .024, F(6, 449) = 1.819, p = .094					R^2 = .020, F(6, 449) = 1.524, p = .168				
Effect of W_1 on Y	-.037	-0.071	0.239	-0.295	.768	.194	0.267	0.175	1.525	.128	-.176	-1.634	1.170	-1.397	.163	.036	0.266	0.926	0.287	.774
Effect of W_2 on Y	-.073	-0.138	0.251	-0.549	.583	-.072	-0.100	0.183	-0.544	.587	-.150	-1.393	1.227	-1.135	.257	.049	0.359	0.971	0.369	.712
Effect of X on Y	-.039	-0.011	0.023	-0.481	.630	-.031	-0.006	0.017	-0.378	.705	-.093	-0.130	0.114	-1.142	.254	.159	0.175	0.090	1.952	.052
Effect of X×W_1 on Y	.137	0.033	0.032	1.040	.299	-.134	-0.024	0.023	-1.013	.312	.219	0.260	0.156	1.669	.096	-.146	-0.137	0.123	-1.112	.267
Effect of X×W_2 on Y	.170	0.042	0.034	1.256	.210	.071	0.013	0.025	0.520	.603	.191	0.232	0.164	1.410	.159	-.094	-0.090	0.130	-0.689	.491
Effect of W_2 on Y	-.036	-0.067	0.242	-0.279	.780	-.266	-0.366	0.177	-2.075	.039*	.026	0.241	1.182	0.204	.838	.013	0.093	0.935	0.099	.921
Effect of W_3 on Y	.037	0.071	0.239	0.295	.768	-.192	-0.267	0.175	-1.525	.128	.176	1.634	1.170	1.397	.163	-.036	-0.266	0.926	-0.287	.774
Effect of X on Y	.077	0.022	0.022	1.005	.315	-.145	-0.030	0.016	-1.882	.060	.093	0.130	0.106	1.220	.223	.035	0.039	0.084	0.458	.647
Effect of X×W_2 on Y	.037	0.009	0.033	0.281	.779	.201	0.036	0.024	1.523	.129	-.023	-0.028	0.160	-0.173	.863	.049	0.047	0.126	0.373	.709
Effect of X×W_3 on Y	-.137	-0.033	0.032	-1.040	.299	.134	0.024	0.023	1.013	.312	-.220	-0.260	0.156	-1.669	.096	.147	0.137	0.123	1.112	.267
Effect of W_1 on Y	.036	0.067	0.242	0.279	.780	.266	0.366	0.177	2.075	.039*	-.026	-0.241	1.182	-0.204	.838	-.013	-0.093	0.935	-0.099	.921
Effect of W_3 on Y	.072	0.138	0.251	0.549	.583	.072	0.100	0.183	0.544	.587	.150	1.393	1.227	1.135	.257	-.049	-0.359	0.971	-0.369	.712
Effect of X on Y	.109	0.031	0.024	1.275	.203	.031	0.006	0.018	0.358	.721	.073	0.102	0.119	0.859	.391	.078	0.086	0.094	0.909	.364
Effect of X×W_1 on Y	-.038	-0.009	0.033	-0.281	.779	-.206	-0.036	0.024	-1.523	.129	.023	0.028	0.160	0.173	.863	-.050	-0.047	0.126	-0.373	.709
Effect of X×W_3 on Y	-.175	-0.042	0.034	-1.256	.210	-.073	-0.013	0.025	-0.520	.603	-.197	-0.232	0.164	-1.410	.159	.096	0.090	0.130	0.689	.491
X (Parents' Education); W_1 (Future Time Perspective); W_2 (Current Time Perspective); W_3 (Past Time Perspective)																				
Model summary	R^2 = .018, F(6, 449) = 1.345, p = .236					R^2 = .014, F(6, 448) = 1.086, p = .370					R^2 = .022, F(6, 449) = 1.715, p = .116					R^2 = .013, F(6, 449) = 0.950, p = .459				
Effect of W_1 on Y	.121	0.229	0.299	0.768	.443	.066	0.091	0.218	0.417	.677	-.127	-1.174	1.457	-0.806	.421	-.131	-0.958	1.156	-0.829	.408
Effect of W_2 on Y	.125	0.237	0.299	0.793	.428	.055	0.075	0.218	0.345	.730	-.179	-1.658	1.458	-1.137	.256	-.202	-1.479	1.157	-1.278	.202
Effect of X on Y	.036	0.016	0.038	0.424	.672	-.064	-0.021	0.027	-0.753	.452	-.045	-0.098	0.183	-0.536	.592	-.046	-0.079	0.145	-0.546	.585
Effect of X×W_1 on Y	-.042	-0.014	0.052	-0.263	.793	.011	0.003	0.038	0.067	.946	.152	0.242	0.252	0.959	.338	.037	0.047	0.200	0.234	.815
Effect of X×W_2 on Y	-.050	-0.016	0.051	-0.311	.756	-.076	-0.018	0.037	-0.476	.635	.218	0.343	0.250	1.374	.170	.178	0.221	0.198	1.114	.266
Effect of W_2 on Y	.004	0.008	0.290	0.027	.979	-.011	-0.016	0.212	-0.073	.942	-.052	-0.485	1.417	-0.342	.732	-.071	-0.520	1.124	-0.463	.644
Effect of W_3 on Y	-.121	-0.229	0.299	-0.768	.443	-.065	-0.091	0.218	-0.417	.677	.126	1.174	1.457	0.806	.421	.130	0.958	1.156	0.829	.408
Effect of X on Y	.005	0.002	0.037	0.062	.951	-.056	-0.018	0.027	-0.663	.507	.066	0.143	0.182	0.787	.432	-.019	-0.033	0.145	-0.225	.822
Effect of X×W_2 on Y	-.007	-0.002	0.051	-0.046	.963	-.087	-0.020	0.037	-0.545	.586	.065	0.102	0.249	0.408	.683	.140	0.174	0.198	0.879	.380
Effect of X×W_3 on Y	.043	0.014	0.052	0.263	.793	-.011	-0.003	0.038	-0.067	.946	-.158	-0.242	0.252	-0.959	.338	-.039	-0.047	0.200	-0.234	.815

Effect of W_1 on Y	-.004	-0.008	0.290	-0.027	.979	.011	0.016	0.212	0.073	.942	.052	0.485	1.417	0.342	.732	.071	0.520	1.124	0.463	.644
Effect of W_3 on Y	-.125	-0.237	0.299	-0.793	.428	-.054	-0.075	0.218	-0.345	.730	.178	1.658	1.458	1.137	.256	.201	1.479	1.157	1.278	.202
Effect of X on Y	.000	0.000	0.036	-0.001	.999	-.118	-0.038	0.026	-1.476	.141	.113	0.245	0.174	1.409	.160	.082	0.142	0.138	1.024	.306
Effect of X×W_1 on Y	.007	0.002	0.051	0.046	.963	.086	0.020	0.037	0.545	.586	-.064	-0.102	0.249	-0.408	.683	-.138	-0.174	0.198	-0.879	.380
Effect of X×W_3 on Y	.051	0.016	0.051	0.311	.756	.078	0.018	0.037	0.476	.635	-.224	-0.343	0.250	-1.374	.170	-.183	-0.221	0.198	-1.114	.266
X (Subjective SES in Singapore); W_1 (Future Time Perspective); W_2 (Current Time Perspective); W_3 (Past Time Perspective)																				
Model summary	R^2 = .022, F(6, 449) = 1.642, p = .131					R^2 = .014, F(6, 448) = 1.035, p = .402					R^2 = .024, F(6, 449) = 1.818, p = .094					R^2 = .014, F(6, 449) = 1.033, p = .403				
Effect of W_1 on Y	-.217	-0.410	0.423	-0.971	.332	.129	0.178	0.309	0.577	.564	-.223	-2.063	2.066	-0.998	.319	.123	0.896	1.640	0.546	.585
Effect of W_2 on Y	-.115	-0.217	0.425	-0.511	.610	-.182	-0.251	0.310	-0.809	.419	-.377	-3.492	2.076	-1.682	.093	.189	1.381	1.648	0.838	.402
Effect of X on Y	-.085	-0.053	0.047	-1.121	.263	-.082	-0.037	0.035	-1.074	.283	-.116	-0.357	0.232	-1.540	.124	.104	0.252	0.184	1.369	.172
Effect of X×W_1 on Y	.307	0.098	0.071	1.370	.171	-.054	-0.013	0.052	-0.241	.810	.242	0.377	0.349	1.083	.280	-.222	-0.273	0.277	-0.986	.325
Effect of X×W_2 on Y	.201	0.063	0.071	0.886	.376	.180	0.041	0.052	0.792	.429	.414	0.632	0.346	1.828	.068	-.236	-0.285	0.274	-1.039	.299
Effect of W_2 on Y	.102	0.193	0.445	0.435	.664	-.312	-0.429	0.325	-1.320	.188	-.154	-1.429	2.175	-0.657	.512	.066	0.484	1.726	0.281	.779
Effect of W_3 on Y	.216	0.410	0.423	0.971	.332	-.129	-0.178	0.309	-0.577	.564	.222	2.063	2.066	0.998	.319	-.122	-0.896	1.640	-0.546	.585
Effect of X on Y	.071	0.045	0.054	0.831	.407	-.109	-0.050	0.039	-1.270	.205	.007	0.021	0.262	0.078	.938	-.009	-0.021	0.208	-0.101	.920
Effect of X×W_2 on Y	-.112	-0.035	0.075	-0.467	.641	.236	0.054	0.055	0.975	.330	.167	0.254	0.367	0.693	.489	-.010	-0.012	0.291	-0.042	.966
Effect of X×W_3 on Y	-.314	-0.098	0.071	-1.370	.171	.055	0.013	0.052	0.241	.810	-.248	-0.377	0.349	-1.083	.280	.227	0.273	0.277	0.986	.325
Effect of W_1 on Y	-.102	-0.193	0.445	-0.435	.664	.312	0.429	0.325	1.320	.188	.154	1.429	2.175	0.657	.512	-.066	-0.484	1.726	-0.281	.779
Effect of W_3 on Y	.114	0.217	0.425	0.511	.610	.181	0.251	0.310	0.809	.419	.375	3.492	2.076	1.682	.093	-.188	-1.381	1.648	-0.838	.402
Effect of X on Y	.015	0.010	0.052	0.182	.856	.008	0.004	0.038	0.097	.923	.090	0.275	0.256	1.075	.283	-.014	-0.033	0.203	-0.164	.870
Effect of X×W_1 on Y	.110	0.035	0.075	0.467	.641	-.231	-0.054	0.055	-0.975	.330	-.163	-0.254	0.367	-0.693	.489	.010	0.012	0.291	0.042	.966
Effect of X×W_3 on Y	-.201	-0.063	0.071	-0.886	.376	-.180	-0.041	0.052	-0.792	.429	-.414	-0.632	0.346	-1.828	.068	.237	0.285	0.274	1.039	.299

*p < .05

Supplemental Materials

Table S1

Study 2 analysis of moderation-of-process model for subjective SES in SMU on non-environmental organisations, with covariate of age

	Y (Support for Non-Environmental Organisations)				
Pathway	*β*	*b*	*SE*	*t*	*p*
X (Subjective SES in SMU); W_1 (Future Time Perspective); W_2 (Current Time Perspective); W_3 (Past Time Perspective)					
Model summary	R^2 = .033, $F(6, 449)$ = 2.564, p = .019*				
Effect of W_1 on Y	-.105	-0.599	1.033	-0.580	.562
Effect of W_2 on Y	-.220	-1.255	1.086	-1.156	.248
Effect of X on Y	-.018	-0.030	0.131	-0.230	.818
Effect of X×W_1 on Y	.077	0.079	0.188	0.421	.674
Effect of X×W_2 on Y	.219	0.222	0.196	1.135	.257
Effect of W_2 on Y	-.115	-0.657	1.087	-0.604	.546
Effect of W_3 on Y	.104	0.599	1.033	0.580	.562
Effect of X on Y	.029	0.049	0.135	0.363	.716
Effect of X×W_2 on Y	.141	0.143	0.198	0.721	.471
Effect of X×W_3 on Y	-.078	-0.079	0.188	-0.421	.674
Effect of W_1 on Y	.115	0.657	1.087	0.604	.546
Effect of W_3 on Y	.219	1.255	1.086	1.156	.248
Effect of X on Y	.113	0.192	0.145	1.321	.187
Effect of X×W_1 on Y	-.139	-0.143	0.198	-0.721	.471
Effect of X×W_3 on Y	-.220	-0.222	0.196	-1.135	.257

*p < .05

Table S2

Study 2 analyses of hypothesised mediation model, with covariates of other SES measures and age

	Y (Citizenship Intentions)					*Y* (Personal Intentions)					*Y* (Support for Organisations)					*Y* (Donation)				
Pathway	*β*	*b*	*SE*	*t*	*p*	*β*	*b*	*SE*	*t*	*p*	*β*	*b*	*SE*	*t*	*p*	*β*	*b*	*SE*	*t*	*p*
M$_1$ (TFS-F); *M*$_2$ (TFS-C); *M*$_3$ (TFS-P)																				
Model summary	R^2 = .024, F(8, 447) = 1.375, p = .205					R^2 = .018, F(8, 446) = 1.009, p = .429					R^2 = .025, F(8, 447) = 1.429, p = .182					R^2 = .025, F(8, 447) = 1.429, p = .182				
Direct effect of M_1 on Y	.077	0.062	0.044	1.411	.159	.049	0.028	0.032	0.882	.378	.063	0.244	0.213	1.146	.252	-.033	-0.103	0.169	-0.608	.543
Direct effect of M_2 on Y	.018	0.016	0.047	0.343	.731	.043	0.028	0.034	0.830	.407	.008	0.036	0.230	0.158	.875	.049	0.174	0.182	0.955	.340
Direct effect of M_3 on Y	.027	0.020	0.038	0.531	.596	.036	0.020	0.028	0.702	.483	.014	0.053	0.187	0.281	.779	.055	0.162	0.148	1.090	.276
X (Income)																				
Effect of X on M_1	.045	0.016	0.020	0.822	.412	.046	0.016	0.020	0.837	.403	.045	0.016	0.020	0.822	.412	.045	0.016	0.020	0.822	.412
Effect of X on M_2	.031	0.010	0.017	0.555	.579	.031	0.010	0.017	0.560	.576	.031	0.010	0.017	0.555	.579	.031	0.010	0.017	0.555	.579
Effect of X on M_3	.051	0.019	0.021	0.929	.353	.052	0.020	0.021	0.942	.347	.051	0.019	0.021	0.929	.353	.051	0.019	0.021	0.929	.353
Total effect of X on Y	.065	0.019	0.016	1.182	.238	-.021	-0.004	0.011	-0.372	.710	.030	0.042	0.076	0.551	.582	.100	0.110	0.060	1.821	.069
Direct effect of X on Y	.059	0.017	0.016	1.084	.279	-.026	-0.005	0.011	-0.470	.638	.026	0.037	0.076	0.481	.631	.097	0.107	0.060	1.766	.078
Indirect effect of X on Y via M_1	*β* = .004, *b* = 0.001 (*SE* = 0.002), 95% CI = [-.002, .005], *p* = .545					*β* = .002, *b* = 0.001 (*SE* = 0.001), 95% CI = [-.001, .003], *p* = .639					*β* = .003, *b* = 0.004 (*SE* = 0.007), 95% CI = [-.007, .022], *p* = .586					*β* = -.002, *b* = -0.002 (*SE* = 0.005), 95% CI = [-.013, .007], *p* = .727				
Indirect effect of X on Y via M_2	*β* = .001, *b* = 0.000 (*SE* = 0.001), 95% CI = [-.002, .002], *p* = .873					*β* = .001, *b* = 0.000 (*SE* = 0.001), 95% CI = [-.001, .002], *p* = .743					*β* = .000, *b* = 0.000 (*SE* = 0.004), 95% CI = [-.010, .009], *p* = .940					*β* = .002, *b* = 0.002 (*SE* = 0.005), 95% CI = [-.007, .014], *p* = .722				
Indirect effect of X on Y via M_3	*β* = .001, *b* = 0.000 (*SE* = 0.001), 95% CI = [-.002, .003], *p* = .737					*β* = .002, *b* = 0.000 (*SE* = 0.001), 95% CI = [-.001, .003], *p* = .668					*β* = .001, *b* = 0.001 (*SE* = 0.005), 95% CI = [-.010, .013], *p* = .851					*β* = .003, *b* = 0.003 (*SE* = 0.005), 95% CI = [-.006, .016], *p* = .562				
X (Parents' Education)																				
Effect of X on M_1	-.046	-0.026	0.031	-0.822	.411	-.050	-0.028	0.031	-0.892	.373	-.046	-0.026	0.031	-0.822	.411	-.046	-0.026	0.031	-0.822	.411
Effect of X on M_2	-.073	-0.035	0.027	-1.296	.196	-.074	-0.036	0.027	-1.320	.188	-.073	-0.035	0.027	-1.296	.196	-.073	-0.035	0.027	-1.296	.196
Effect of X on M_3	.011	0.006	0.033	0.194	.846	.007	0.004	0.033	0.133	.894	.011	0.006	0.033	0.194	.846	.011	0.006	0.033	0.194	.846
Total effect of X on Y	-.003	-0.001	0.025	-0.045	.964	-.064	-0.021	0.018	-1.145	.253	.058	0.127	0.121	1.045	.296	-.029	-0.049	0.096	-0.514	.608
Direct effect of X on Y	.002	0.001	0.025	0.037	.971	-.059	-0.019	0.018	-1.049	.295	.062	0.134	0.122	1.102	.271	-.027	-0.047	0.096	-0.486	.627
Indirect effect of X on Y via M_1	*β* = -.004, *b* = -0.002 (*SE* = 0.003), 95% CI = [-.008, .003], *p* = .545					*β* = -.002, *b* = -0.001 (*SE* = 0.002), 95% CI = [-.005, .002], *p* = .624					*β* = -.003, *b* = -0.006 (*SE* = 0.011), 95% CI = [-.032, .012], *p* = .586					*β* = .002, *b* = 0.003 (*SE* = 0.007), 95% CI = [-.012, .019], *p* = .727				
Indirect effect of X on Y via M_2	*β* = -.001, *b* = -0.001 (*SE* = 0.002), 95% CI = [-.005, .004], *p* = .790					*β* = -.003, *b* = -.001 (*SE* = .002), 95% CI = [-.005, .002], *p* = .554					*β* = -.001, *b* = -0.001 (*SE* = 0.010), 95% CI = [-.027, .018], *p* = .901					*β* = -.004, *b* = -0.006 (*SE* = 0.010), 95% CI = [-.031, .008], *p* = .514				
Indirect effect of X on Y via M_3	*β* = .000, *b* = 0.000 (*SE* = 0.001), 95% CI = [-.003, .004], *p* = .929					*β* = .000, *b* = .000 (*SE* = .001), 95% CI = [-.002, .003], *p* = .940					*β* = .000, *b* = 0.000 (*SE* = 0.006), 95% CI = [-.012, .015], *p* = .959					*β* = .001, *b* = 0.001 (*SE* = 0.007), 95% CI = [-.013, .019], *p* = .887				

X (Subjective SES in Singapore)																				
Effect of X on M_1	-.092	-0.072	0.059	-1.223	.222	-.093	-0.073	0.059	-1.241	.215	-.092	-0.072	0.059	-1.223	.222	-.092	-0.072	0.059	-1.223	.222
Effect of X on M_2	-.015	-0.011	0.052	-0.205	.838	-.016	-0.011	0.052	-0.211	.833	-.015	-0.011	0.052	-0.205	.838	-.015	-0.011	0.052	-0.205	.838
Effect of X on M_3	.008	0.006	0.062	0.102	.919	.007	0.006	0.062	0.089	.930	.008	0.006	0.062	0.102	.919	.008	0.006	0.062	0.102	.919
Total effect of X on Y	-.040	-0.025	0.047	-0.540	.590	-.060	-0.028	0.034	-0.803	.423	-.047	-0.144	0.229	-0.630	.529	-.069	-0.167	0.181	-0.922	.357
Direct effect of X on Y	-.033	-0.021	0.047	-0.444	.657	-.055	-0.025	0.034	-0.736	.462	-.041	-0.127	0.230	-0.551	.582	-.072	-0.174	0.182	-0.955	.340
Indirect effect of X on Y via M_1	*β* = -.007, *b* = -0.004 (*SE* = 0.005), 95% CI = [-.017, .004], *p* = .415					*β* = -.005, *b* = -0.002 (*SE* = 0.003), 95% CI = [-.010, .003], *p* = .548					*β* = -.006, *b* = -0.018 (*SE* = 0.023), 95% CI = [-.074, .019], *p* = .473					*β* = .003, *b* = 0.007 (*SE* = 0.017), 95% CI = [-.022, .049], *p* = .660				
Indirect effect of X on Y via M_2	*β* = -.000, *b* = -0.000 (*SE* = 0.003), 95% CI = [-.006, .006], *p* = .948					*β* = -.001, *b* = -0.000 (*SE* = 0.002), 95% CI = [-.005, .005], *p* = .894					*β* = -.000, *b* = -0.000 (*SE* = 0.013), 95% CI = [-.026, .029], *p* = .975					*β* = -.001, *b* = -0.002 (*SE* = 0.014), 95% CI = [-.033, .027], *p* = .889				
Indirect effect of X on Y via M_3	*β* = .000, *b* = 0.000 (*SE* = 0.003), 95% CI = [-.006, .006], *p* = .962					*β* = .000, *b* = 0.000 (*SE* = 0.002), 95% CI = [-.004, .005], *p* = .960					*β* = .000, *b* = 0.000 (*SE* = 0.012), 95% CI = [-.027, .025], *p* = .978					*β* = .000, *b* = 0.001 (*SE* = 0.014), 95% CI = [-.027, .032], *p* = .940				
X (Subjective SES in SMU)																				
Effect of X on M_1	.082	0.058	0.049	1.189	.235	.085	0.060	0.049	1.228	.220	.082	0.058	0.049	1.189	.235	.082	0.058	0.049	1.189	.235
Effect of X on M_2	.041	0.025	0.043	0.582	.561	.042	0.026	0.043	0.595	.552	.041	0.025	0.043	0.582	.561	.041	0.025	0.043	0.582	.561
Effect of X on M_3	-.103	-0.077	0.052	-1.487	.138	-.101	-0.075	0.052	-1.456	.146	-.103	-0.077	0.052	-1.487	.138	-.103	-0.077	0.052	-1.487	.138
Total effect of X on Y	.003	0.002	0.039	0.044	.965	.045	0.018	0.028	0.641	.522	-.008	-0.023	0.190	-0.119	.905	.093	0.201	0.150	1.337	.182
Direct effect of X on Y	-.001	-0.001	0.039	-0.018	.986	.042	0.017	0.029	0.605	.545	-.012	-0.034	0.191	-0.176	.860	.099	0.215	0.152	1.421	.156
Indirect effect of X on Y via M_1	*β* = .006, *b* = 0.004 (*SE* = 0.005), 95% CI = [-.004, .014], *p* = .424					*β* = .004, *b* = 0.002 (*SE* = 0.003), 95% CI = [-.003, .008], *p* = .550					*β* = .005, *b* = 0.014 (*SE* = 0.020), 95% CI = [-.018, .062], *p* = .480					*β* = -.003, *b* = -0.006 (*SE* = 0.014), 95% CI = [-.040, .019], *p* = .665				
Indirect effect of X on Y via M_2	*β* = .001, *b* = 0.000 (*SE* = 0.002), 95% CI = [-.005, .006], *p* = .869					*β* = .002, *b* = 0.001 (*SE* = 0.002), 95% CI = [-.003, .005], *p* = .730					*β* = .000, *b* = 0.001 (*SE* = 0.011), 95% CI = [-.023, .025], *p* = .937					*β* = .002, *b* = 0.004 (*SE* = 0.012), 95% CI = [-.017, .033], *p* = .711				
Indirect effect of X on Y via M_3	*β* = -.003, *b* = -0.002 (*SE* = 0.004), 95% CI = [-.010, .005], *p* = .673					*β* = -.004, *b* = -0.002 (*SE* = 0.003), 95% CI = [-.008, .003], *p* = .591					*β* = -.002, *b* = -0.004 (*SE* = 0.018), 95% CI = [-.043, .035], *p* = .818					*β* = -.006, *b* = -0.012 (*SE* = 0.017), 95% CI = [-.054, .014], *p* = .440				