THE RICH DO GOOD FOR AUTONOMY, AND THE POOR FOR RELATEDNESS

ZHU YIJIE

PhD

The Hong Kong Polytechnic University

2023

The Hong Kong Polytechnic University

Department of Applied Social Sciences

The Rich Do Good for Autonomy, and the Poor for Relatedness

Zhu Yijie

A thesis submitted in partial fulfilment of

the requirements for the degree of Doctor of Philosophy

February 2022

CERTIFICATE OF ORIGINALITY

I hereby declare that this thesis is my own work and that, to the best of my knowledge and belief, it reproduces no material previously published or written, nor material that has been accepted for the award of any other degree or diploma, except where due acknowledgement has been made in the text.

_____(Signed)

_____Zhu Yijie_____(Name of student)

Abstract

Socioeconomic status and helping behavior have been hot topics in the field of social psychology. Contradictory findings have been documented on the relationships between socioeconomic status (SES) and prosociality. Some researchers found that people with higher SES showed more prosociality, while others found the opposite effect. These findings on both sides were supported by different theories. It was pointed out that the reason for this inconsistency may be that higher-SES people engage in prosocial behavior for reasons different from lower-SES individuals (Piff, 2017). Based on self-determination theory (Deci & Ryan, 2000), I hypothesized that higher-SES people help others for autonomy and lower-SES people help others for relatedness. On one hand, autonomy motivation was hypothesized as the reason why higher-SES individuals help others and relatedness motivation was hypothesized to be the reason why lower-SES people help others. That is, when SES is high, autonomy motivation (instead of relatedness motivation) will predict prosociality positively (Hypothesis 1a); in contrast, when SES is low, relatedness motivation (instead of autonomy motivation) will positively predict prosociality (Hypothesis 1b). On the other hand, based on the two-process model of psychological needs (Sheldon, 2011), the behavior caused by certain motivation should satisfy the corresponding need. Therefore, I further hypothesize that helping others may satisfy more autonomy (than relatedness) needs of higher-SES people (Hypothesis 2a) and more relatedness (than autonomy) needs of people with lower SES (Hypothesis 2b).

Four studies were conducted to test the hypotheses. In Studies 1a ($N = 140$) and 1b ($N = 151$), the hypotheses related to autonomy and relatedness were tested respectively, based on cross-sectional data measuring autonomy and relatedness motivation, autonomy and relatedness need satisfaction, subjective and objective SES, and prosociality from student samples. Results indicated that for people with higher SES, specifically those with higher subjective SES (SSES), autonomy motivation positively predicted prosociality, which in turn predicted autonomy need satisfaction (Study 1a); for people with lower SES, specifically only objective SES (OSES), relatedness motivation positively predicted prosociality, which in turn predicted satisfaction of relatedness need (Study 1b). The findings generally supported my hypotheses. In Studies 2a ($N = 147$) and 2b ($N = 128$), I manipulated autonomy and relatedness motivation, respectively, to test the moderating effects of SSES and OSES on the effects of motivation on real donation. The results supported my hypotheses (1a and 1b) and showed the same patterns as in Study 1, i.e. autonomy promoted prosociality only for people with higher-SSES and relatedness only facilitated prosociality of those with lower-OSES. In Study 3 ($N = 170$), a recalling task was adopted to manipulate prosocial behavior situation and tested its effect on autonomy and relatedness need satisfaction. Hypotheses 2a and 2b were supported with the same pattern, showing that prosociality satisfied more autonomy need of higher-SSES people and more relatedness need of lower-OSES people. Study 1 was replicated with community samples in Study 4. Though the results were consistent with my hypotheses in general, only OSES was found significant in moderating the paths from both

autonomy and relatedness motivation to prosociality and those from prosociality to both autonomy and relatedness need satisfaction, revealing a pattern different from student samples. To sum up, the higher-SES people, in the context of my research, exhibited prosocial behavior for autonomy, while their counterparts with a lower SES did so for relatedness, and the SSES and OSES functioned differently in the above mechanisms. Taken together, the findings indicated different motivations for the "rich" and the "poor" to engage in helping behavior. Possible interpretations for the inconsistent findings are discussed.

Key words: Socioeconomic status, prosociality, autonomy, relatedness, two-process model

Acknowledgements

Firstly, I would like to express my greatest thankfulness for my chief supervisor, Prof. Sylvia Xiaohua Chen. She always holds a strict and dedicated attitude towards academic work and also a caring and sincere way to communicate with everyone, which impress me very much. She is also very patient when helping me on the revision of each manuscript and answering my every question, from which I benefit greatly and acquire amount of knowledge.

Secondly, I also want to thank my co-supervisor, Dr. Yu Lu. She gives me much support and inspiration on my campus life and thesis writing.

Thirdly, I want to thank all my labmates, Erin Lu, Jacky Ng, Wesley Wu, Algae AU, Hilary Ng, and Bryant Hui. Thanks for the support and help from them.

Last, I want to thank my girlfriend. These years are actually tough years for me, but they are not that tough since you are always by my side.

Table of Contents

1 Introduction

1.1 Prosociality

Human beings are one of the special species that are notably cooperative and social (Cortina, 2017). It is relatively common that some kinds of animals help family members for the purpose of continuation of their genes, and are more likely to engage in helping behavior when the genetic relationship is close (Hamilton, 1963). However, it is unusual that some species help and care for non-family members, such as ants, wasps, and humans, and these species are mostly dominators on earth which have been living on earth for a very long time and have huge numbers currently (Cortina, 2017; Wilson, 2012). This seemingly coincidental link between the prosociality towards non-family members and the prosperity of species implies that this general prosocial act is one of the key adaptive mechanisms for creatures. Barclay and Van Vugt (2015) actually outlined several adaptive functions of prosocial behavior: direct benefits, mutualism, and reciprocity and so on. People achieved mutual benefits by cooperating and sharing resources with each other in primitive society, and this might be a reason why human ancestors still survived even when they faced limited resources, and then a reason why human beings still keep prosociality as a habit from evolutionary perspective.

Prosociality may exhibit in various forms in current human society. People may extend help for philanthropic causes by donating to financially-stressed individuals, sufferers of natural disasters (Zhu et al., 2021) or charities. They may also spend time helping others and taking part in volunteer activities (Zhu et al., 2021). Even showing

empathy, trust (Piff et al., 2010) or positive regard towards others can be seen as prosocial behavior. Generally speaking, prosociality in current society is embodied in the share or sacrifices of people's own material and mental resources.

Though helping others is assumed to be human beings' common behavioral tendency, individual differences exist. Differences in prosocial behavior may result from various factors. Existing literature classifies these factors into three categories (Cheng & Li, 2004): features of helpers, features of recipients, and the social situation. For example, males tend to help more than females in general, and people tend to help females more than males (Eagly & Crowley, 1986). People with higher moral identity may engage in more prosocial behavior (Gotowiec & van Mastrigt, 2019). In the classic research on diffusion of responsibility, people were less likely to help others when there were bystanders (Darley & Latane, 1968). Though individuals express their prosociality to others to the same degree, the motivation may be diverse. Some of them may be helpful because of empathy (Telle & Pfister, 2016), the concern about others' benefits (Piff & Robinson, 2017), and the social responsibility deriving from their moral standard (Gotowiec & van Mastrigt, 2019), while others may want to gain reciprocal benefits (De Dreu et al., 2014), respect or social prestige (Kraus & Callaghan, 2016) from their prosocial behavior. Thus, the cause of prosociality could be very complicated.

1.2 Socioeconomic Status and prosociality

1.2.1 Socioeconomic Status

Socioeconomic Status (SES) refers to people's social status and economic status in the society. Unlike the equalitarianism in ancient times, increasingly larger amounts

of resources are created in total, but resources vary with each individual gradually. People who possess more resources have higher SES than those who own less.

There are generally two different viewpoints to evaluate one's SES: subjective SES (SSES) and objective SES (OSES). Subjective SES refers to people's subjective perception of their status and rank of their socioeconomic condition in the society relative to others (Adler et al., 2000; Kraus et al., 2009; 2011; Singh-Manoux et al., 2003). It reflects people's holistic perception based on their own SES including income, education and occupation status and also the comparison to other people they know or meet in their life. Subjective SES is usually measured by the MacArthur Scale (Adler et al., 2000), which presents a ladder from the bottom (1) to the top (10). People are asked to rank themselves on the ladder imagining that "1" represents the people with lowest income, worst education and least respected occupation, and "10" represents the ones who own the most wealth, best education and most respectable occupation in the society. There are also other measures of subjective SES, such as the Perceived Resource Availability (Griskevicius et al., 2011). Two types of socioeconomic standing are assessed here: how people feel resource-deprived (1) in their childhood and (2) in the present and foreseeable future.

As for objective SES indices, income, education and occupation are most frequently used (Adler et al., 2000; Singh-Manoux et al., 2003). These indices represent the actual resources that people have gained and are able to gain from the society. In addition, though not commonly used in psychological research, consumption could also be a potential indicator of people's objective SES. Consumption expenditure could

directly reflect the resources people can mobilize to adapt to the environment and society. People with lower objective SES, who own fewer resources, would be lower in consumption. People with fewer resources need to be more ready for the threat from the environment and society (Rusdiana et al., 2020), so they may have to reserve more resources, which may also result in more frugal consumption patterns and lower consumption expenditure. Empirical research found that consumption level was positively associated with education level and income (Raharjia & Mandala, 2005), suggesting that consumption expenditure be a reliable index for objective SES. Actually, economists prefer consumption as the measurement of socioeconomic position, since it could be more stable and reliable than income, which may derive from multiple sources and vary seasonally in certain conditions (Howe et al., 2009). Some empirical research already adopted consumption as the measurement of objective SES (Ren et al., 2019; Stoddard et al., 2011). Therefore, consumption would be included as one of the indicators of objective SES in the current research.

Recent research on social class focuses on and addresses the subjective component of socioeconomic status on theoretical interpretation, measurement, research design and research topic selection (Yang et al., 2022). One reason is that researchers often find SSES has better prediction on kinds of dependent variables than OSES (e.g. Dietze & Knowles, 2016; Lee, 2018; Zhang et al., 2022). Another reason is that subjective perception can be manipulated temporarily to test causal relationships, while objective SES can only be used for test correlational relationship as it is difficult to change (Yang et al., 2022). SSES seems to be able to replace OSES in this research field.

Though this orientation has promoted the development, expanded research methods and issues in SES field, ignorance of OSES may limit the generalization of conclusion. Some researchers suggest that though SSES could be formed based on OSES to some degree, the reflection of SSES on OSES could be less accurate (Yang et al., 2022). Firstly, different people form their SSES based on different criterions such as economic and cultural factors, social and personal factors, which may lead to different levels of perception. Secondly, SSES is not only determined by OSES but also other indicators such as social comparison. The reference group may affect the subjective perception of SES. A number of studies found that the correlation between SSES and OSES was not high (e.g. Tan et al., 2020). Many people with low OSES may overrate their SSES and higher-OSES people also tend to be identified with lower SSES especially economic inequity is high (Li, 2021). Even SSES and OSES may predict certain variables in different directions (Buchel et al., 2021; Li et al., 2020), which implies that the two constructs represent different psychological mechanisms and cannot be replaced by each other. Therefore, the current research adopts both SSES and OSES as main variables to examine their possible different effects.

1.2.2 The relationship between SES and prosociality

Whether higher-SES people do more good or lower-SES people behave more prosocially has been a hot and interesting issue, since the equalitarianism in ancient times has been considered obsolete due to the emergence of social classes and SES has become an important feature amongst the helpers. However, contradictory findings and views have been documented based on empirical studies in recent years. Some findings

supported the negative relationship between SES and prosociality showing that the richer, the less benevolent (e.g. Piff et al., 2010), while other studies found the positive relationship between the two constructs, indicating that rich people were more likely to engage in prosocial behavior (e.g. Korndorfer et al., 2015).

1.2.2.1 "The rich are not benevolent" (为富不仁)

Higher-class people have a greater sense of control and freedom of choice (Kraus et al., 2009), a higher sense of power (Lammers et al., 2015), and greater attention to personal achievement (Stephens et al., 2011), which would lead to self-oriented focus (Kraus et al., 2012a) and less attentiveness to others (Lammers et al., 2015). Therefore, they might focus mainly on their own interest and achievement instead of others' well-being, which may lead to a low level of prosociality.

By contrast, lower-SES people face more threat from the environment, have a lower sense of control and then adopt a more external, other-oriented focus (Kraus et al., 2012b). They spend more time paying attention to other people than their higher-class counterparts (Dietze & Knowles, 2016), are more engaged in interactions with strangers, and show more active listening towards strangers (Kraus & Keltner, 2009). In one study, lower-SES individuals reported more interdependent self-construal and social emotions, such as friendliness and guilt (Na et al., 2010). In another study, lower-class participants self-reported lower levels of entitlement and narcissism, which meant decreased feeling of self-importance (Piff, 2014). Not only the observable aspects including self-report measurement and behavior, but also the neural and electrophysiological indexes revealed that lower-class individuals displayed more

empathy and compassion, which are important triggers to prosocial behavior (Keltner et al., 2014), on others' emotional suffering (Stellar et al., 2012; Varnum et al., 2015; Zaki et al., 2009).

Piff et al. (2010) examined the relationship between SES and prosocial behavior directly. Results from the four studies reported higher levels of generosity in economic games, higher incidences of making donations, engagement in prosocial trusting behavior, and firmer commitment to egalitarian values and compassion among cohorts of lower SES relative to their peers at the higher-end. Prosocial behavior can be an adaptive strategy for lower-SES people, who have to rely more on others to reduce uncertainty of the environment and increase their sense of control. Moreover, evidence shows that this tendency can be observed in very early age. Several studies found that children from low-income families tended to donate more objects, which they wanted to own by themselves, to friends, anonymous peers or sick children (Chen et al., 2013; Miller et al., 2015). Related to prosocial behavior, unethical behavior was also found to be positively predicted by SES (Piff et al., 2012). To sum up, numerous evidence has supported that "The rich are not benevolent".

1.2.2.2 "With great power comes great responsibility" (能力越大，责任越大)

However, the viewpoint above seems not that reasonable from another perspective. Prosocial behavior is a costly action (Piff et al., 2010). People need to sacrifice their time, money or energy when helping others, which may be easier for higher-SES individuals, since they own more resources and have higher self-efficacy. In contrast, it is difficult for lower-class people who cannot even safeguard their own interests.

Relevant evidence was found from the perspective of sense of control. Higher sense of control was related to higher compassion and prosociality (Piff et al., 2010), and loss of control may reduce the altruistic tendency (Sherrod & Down, 1974), and even enhance anti-social behavior such as aggression (Donnerstein & Wilson, 1976; Warburton et al., 2006).

Korndorfer et al. (2015) conducted a large-scale study on how SES influenced people's prosocial behavior. The data were collected from Germany, USA, and also the International Social Survey Program (ISSP, containing data from 31 countries). Sample sizes of the eight studies ranged from 1,421 to 37,136. The results revealed that higher-SES individuals had higher intention to donate, donate a higher percentage from their income, were more willing to volunteer and help, and more trusting and trustworthy towards strangers. With greater power, the rich seem to do more good based on these conclusions.

1.2.3 The problem to be tackled

Research and theory above show contradictory relationships between SES and prosociality. Researchers have assumed several possibilities about the boundary condition (Piff & Robinson, 2017). One factor which may result in the different relationships between SES and prosociality is social inequality (Côté et al., 2015). Côté and colleagues (2015) found that in areas with high level of social inequality, or when informed of the information that they were in unequal state, higher-SES people tended to show less generosity than lower-SES individuals. The feeling of "better off than others" may be transferred to feeling of "better than others" in highly unequal

environments, which may lead to less prosociality (Piff & Robinson, 2017).

The second possible factor is identity. Existing literature has shown that lower-class individuals tend to engage in prosocial behavior towards ingroup members or those who are most likely to reciprocate (De Dreu et al., 2014). The third possible boundary condition is the motivation to help. The reason why higher-SES and lower-SES individuals help others might be different. Maybe the common motivation is the concern for others' benefit; however, high-class and lower-class persons may gain different benefits for themselves from their generous behavior, such as social status, honor, self-enhancement, harmonious interpersonal relationship, or potential repayment (Piff &Robinson, 2017). Driven by different motivations, the comparison of higher-SES and lower-SES people on prosociality may indicate different results. In one study, the public (vs. private) context in which the participants decided how they expressed their prosociality was recognized as a moderating variable (Kraus & Callaghan, 2016). Higher-class individuals donated more in public (non-anonymous) condition than lower-class individuals, while this effect was reversed when participants donated anonymously. In other research, richer participants were more engaged in charitable activities which advocated personal goals (e.g., what each person can do individually to reduce poverty), whereas less wealthy participants were more prosocial facing with shared goals (e.g., what all of us can do together to reduce poverty) (Whillans et al., 2017). Therefore, the motivation of their prosociality might be different.

Though different possibilities were proposed, there is limited research which attempted to explain why and when the "rich" and the "poor" behave more prosocially

(Côté et al., 2015; De Dreu et al., 2014; Kraus & Callaghan, 2016; Piff & Robinson, 2017). The present project seeks to examine the possible integrated interpretation for the mixed findings from the perspective of motivation, i.e., by identifying the different motivations for people with higher and lower SES to engage in prosocial behavior.

1.3 Theories of motivation

1.3.1 Motive Disposition Theory and Self-determination Theory

Motivation refers to the reason why people engage in certain behavior. There have been two different but influential theories on motivation in the field of psychology: Motive Disposition Theory (MDT; McClelland, 2014) and Self-determination theory (SDT; Deci & Ryan, 1985). The two theories have some core assumptions in common (Schüler et al., 2019): (1) they both acknowledge the importance of human needs for motivation; (2) they both recognize the effects of need satisfaction on health; (3) they both assume that there are a limited number of innate and crucial needs for human beings; (4) there is overlap of the basic needs for these two theories. MDT hypothesizes that the basic needs of human beings are power, achievement and affiliation, while SDT proposes autonomy, competence and relatedness as the three basic needs. Conceptually, achievement and competence are homogeneous referring to the motivation or need to do well according to a standard of excellence (McClelland et al,, 1953), strive for success and aim at avoiding failure (Schüler et al., 2018). Likewise, affiliation and relatedness refer to the similar theme that people have the motivation or need to make friends, spending harmonious time and building friendly interpersonal relationship with others (Weinberger et al., 2010). However, there is difference between the concepts of

power and autonomy. Power in MDT refers to the motivation to influence others and feel superior to others (Schmalt & Heckhausen, 2008), while autonomy in SDT may be defined as the "power over oneself" (Schüler et al., 2019), with which people want to be the origin of their own behavior and express their own will through it (Deci & Ryan, 1985).

The most important difference between the two theories is on the view of individual differences in motivation. MDT suggests that people be different in the strength of three basic motivations, since motivations are formed through different learning and life experience in the environment and society. However, SDT assumes that the three basic needs be represented within the genome of everyone (Schüler et al., 2019) and there be no difference among human being in the strength of the needs or motivations. Additionally, MDT proposes a matching hypothesis. Only when people hold high level of a certain need or motive, and the environment provides the condition for them or they themselves have the ability to fulfill their corresponding need at the same time, could they engage in certain behavior. In comparison, SDT suggests a universality hypothesis that the need or motivation strength for everyone is the same, and the effect of motivation on behavior and that of behavior on the satisfaction of basic needs and well-being are homogenous for all human beings across different situations.

1.3.2 The Two-process Model

Though the two theories seem to be opposite on some of the basic assumptions, researchers have attempted to integrate them instead of recognizing that they take completely different theoretical perspectives. The two-process model (TPM) of

psychological needs (Prentice et al., 2014; Sheldon, 2011; Sheldon & Schüler, 2015) was then proposed, which assumes a global view on the motivational sequences (Schüler et al., 2019).

The TPM subdivided the whole motivation process into four steps: (1) motivations lead to behavior; (2) behavior satisfies corresponding needs; (3) satisfaction of needs cultivates positive personality and well-being; (4) positive enhancement of positive personality and well-being on motivation. Then TPM suggests that the core contradiction between the two theories be the different views on needs and different focuses on the steps of motivation process. MDT regards "needs as motives" and focus on how needs or motivations link to behavior, i.e. step (1) and (2), while SDT regards "needs as requirements" and focus on the necessity of need satisfaction for positive personality and well-being and then the experiential learning for motivation, i.e. step (3) and (4). That is, MDT and SDT should be applied in separate process in the whole motivation mechanism. The needs-as-motives perspective, or the matching hypothesis, held by MDT, should be adopted to reflect how motivations lead to behavior and then satisfy the corresponding need. The needs-as-requirements perspective in SDT, or the universality hypothesis, may explain how need satisfaction leads to well-being and then the enhancement of motivation through experiential learning (see Figure 1).
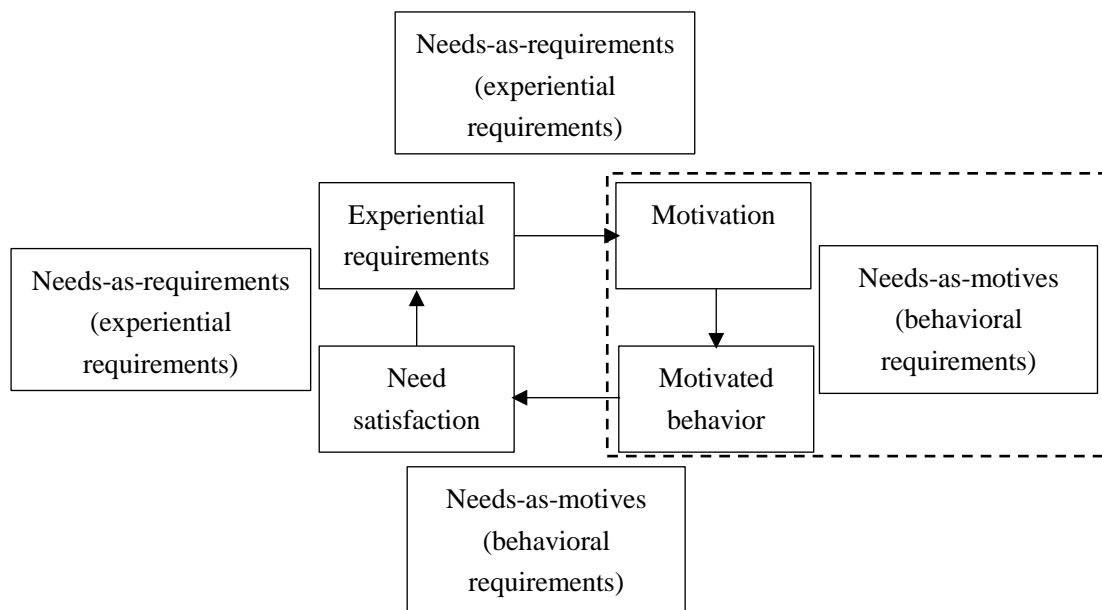
Figure 1 Two-process model (adapted from Sheldon (2011) and Schüler et al. (2019))

Therefore, based on the TPM, the individual difference should occur when motivations lead to behavior, such as prosocial behavior concerned in current research, and then satisfy the corresponding needs, and the universality should take place when the need satisfaction predicts people's self-assessment of their well-being and then strengthens the corresponding motivation. Since the relationship among motivation, SES and prosocial behavior is my core research question, I will reason the effect of motivation on prosocial behavior and the role of SES (as individual differences) in this mechanism in the framework of TPM, based on matching hypothesis.

1.4 SES, basic needs and prosociality: the matching hypotheses

In this section, I will list and analyze the evidence implying that the motivation for higher-SES people and lower-SES ones to engage in prosocial behavior be different. Specifically, I will adopt the basic needs from SDT: autonomy, relatedness and competence to reason their different motivations.

The motivation of lower-SES people to engage in prosocial behavior is supposed similar to that of human ancestors --- building connections with others to better adapt to the environment. However, it seems that higher-SES individuals do not need to worry about adaption, since they possess enough resources to deal with uncertainty from the social environment, and they are even able to change the environment to achieve benefits. That is, adaption may not be the primary goal for higher-class people to be altruistic. Several studies also suggest that higher-SES people's prosocial behavior is driven by motivation which may be different from lower-SES people. Kraus and Callaghan (2016) found that in public places, upper class individuals would be more prosocial than in private situations. That is, public situations could make higher-SES individuals, but not those with lower-SES, to be more prosocial, which suggested that higher-SES and lower-SES individuals behave prosocially for different reasons. In another study, lower-class individuals tended to show more prosociality towards close others and ingroup members compared with higher-class individuals (De Dreu et al., 2014), which also indicated that the motivation of lower-class individuals' altruistic behavior is not the one that triggers higher-SES ones' prosociality.

Thus, what should be the main motivation for higher-SES and lower-SES individuals to engage in prosocial behavior, respectively? As mentioned before, higher-class people own more resources and higher personal control. They often take actions in the form of influencing other individuals or environmental factors to fit their own needs and goals, which is characterized as "primary control" (Rothbaum et al., 1982). Their behavior is in the independent model of agency and focuses on the goal of

maintaining "autonomy" (Trommsdorff, 2009). In contrast, lower-SES individuals are oriented to adjust their own goals and behavior to the goals and expectations of others, fit in socially and maintain interpersonal harmony, which is in accordance with "secondary control" (Rothbaum et al., 1982). Their actions are in the interdependent model of agency and serve the motivation for "relatedness" (Trommsdorff, 2009).

According to SDT (Ryan & Deci, 2000), autonomy and relatedness are assumed to be basic needs and motivations which are universal for human. Everyone has the needs for autonomy, competence and relatedness, and related motivation. Furthermore, all of the three motivations can foster people's prosocial behavior, and prosocial behavior can fulfill all the three basic psychological needs (Caprara & Steca, 2005; Piliavin & Siegl, 2007; Weinstein & Ryan, 2010). However, the importance of motivations should be different for higher-SES people's and lower-SES people's prosocial behavior. Based on the above conceptualizations and corresponding hypotheses, I hypothesize that autonomy motivation, instead of relatedness motivation, would be the main reason for prosociality among higher-SES people, and that relatedness motivation, instead of autonomy motivation, would be the main reason for prosociality among lower-SES people.

In addition, based on TPM, the behavior caused by certain motivation should lead to the satisfaction of the corresponding need. For example, when a student wants to achieve more scores in tests (need), he/she may spend more time on studying (behavior), and then he/she really get high scores (need satisfaction). Based on the match hypothesis, individual differences also matter during this process. Therefore, I also

hypothesize that for higher-SES people, prosociality should satisfy mainly autonomy need instead of relatedness need, and for lower-SES people, mainly relatedness need instead of autonomy need.

As for competence, it refers to the sense of achievement brought by success in completing tasks (Ryan & Deci, 2000). Though there should be individuals who help others for a sense of self-efficacy, this effect is not likely related to SES. People with higher SES may want to show their ability by helping others to achieve self-enhancement, and lower-SES ones may also want to prove their value through prosocial behavior to gain connection with others. Therefore, I do not hypothesize the linkage between competence and high or low SES.

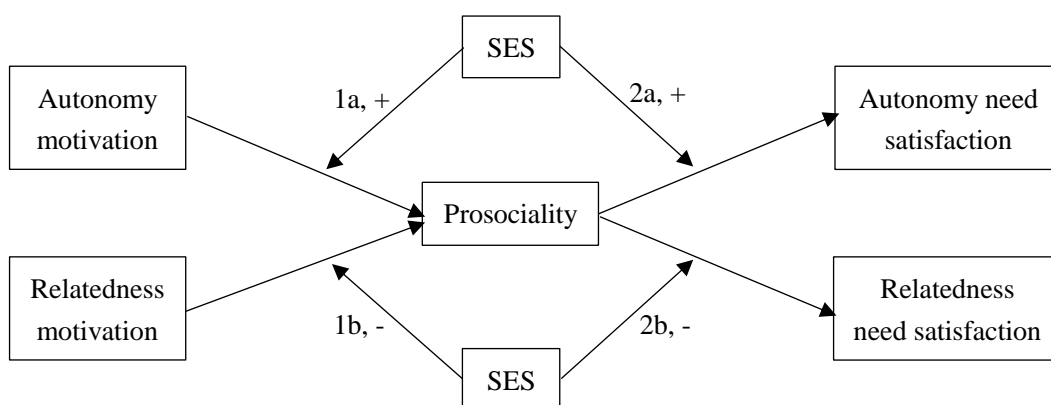All the hypotheses are summarized in Figure 2.

Figure 2 The hypothesized model in the current research

Hypothesis 1a: For people with higher SES, autonomy is the main reason for them to engage in prosocial behavior. When SES is higher, the positive effect of autonomy motivation on prosociality would be stronger than when SES is lower.

Hypothesis 1b: For people with lower SES, relatedness is the main factor

motivating their prosociality. When SES is lower, the positive effect of relatedness motivation on prosociality would be stronger than when SES is higher.

Hypothesis 2a: For people with higher SES, their prosociality is more likely to satisfy their autonomy need. When SES is higher, the positive effect of prosociality on autonomy satisfaction would be stronger than when SES is lower.

Hypothesis 2b: For people with lower SES, their prosociality is more likely to satisfy their relatedness need. When SES is lower, the positive effect of prosociality on autonomy satisfaction would be stronger than when SES is higher.

That is, the higher-SES people do good for autonomy, and the lower-SES ones for relatedness.

2 Method

I conducted four studies, including seven sub-studies to test the hypotheses. In Studies 1a and 1b, I examined all the hypotheses based on cross-sectional data collected from mainly student samples. In these two sub-studies, I adopted questionnaires to measure autonomy motivation (Study 1a), relatedness motivation (Study 1b), SES, prosociality, autonomy need satisfaction (Study 1a) and relatedness need satisfaction (Study 1b). PROCESS in SPSS was employed to test all the hypothesized moderation models for autonomy and relatedness, respectively.

In Studies 2a and 2b, I manipulated autonomy and relatedness motivation, respectively, using writing tasks to test the effects of motivation on prosociality (Hypotheses 1a and 1b). SES was measured and actual prosocial behavior was recorded. For both studies, PROCESS was used to test the hypothesized moderating role of SES in the relation between motivations on prosocial behavior.

In Study 3, a recalling task was adopted to manipulate prosociality to examine the effect of prosocial behavior on autonomy and relatedness satisfaction (Hypotheses 2a and 2b). SES and need satisfaction were measured via questionnaires. Similarly, PROCESS was the instrument to analyze the data and test the hypotheses.

In Studies 4a and 4b, I replicated Study 1 in community samples and examined the hypotheses and external validity of the results.

2.1 Study 1

2.1.1 Study 1a---Linking autonomy and higher SES

In the current study, the hypotheses 1a and 2a, which were related to autonomy, i.e., the interaction effect of autonomy motivation and SES on prosociality, and that of prosociality and SES on autonomy need satisfaction, were examined based on cross-sectional data.

Participants and procedure

Participants were recruited through the online Bulletin Board System (BBS) of a university in Beijing. The questionnaire link, which was created via Qualtrics, was attached in the recruitment post. To calculate the least sample size needed, I firstly collected data from 80 participants and conducted preliminary analysis. The effect sizes for the interaction effects mentioned above, which supported my hypotheses, ranged from .05 to .07. G-power 3.1 was adopted to calculate the necessary sample size based on each of these effect sizes, α (.05), power $(1 - \beta)$ (.80), number of tested predictors (1), total number of predictors (5, including gender, age, a predictive variable, an SES index, and the interaction term to be tested) under the t tests family-Linear multiple regression: Fix models, single regression coefficient. The final least sample size was 159.

A total of 167 participants took part in the study by clicking the online link and answering the questions, with the responses recorded by Qualtrics. Of these, 156 participants completed the whole questionnaire and were paid 15 RMB. After data screening based on lie-detection check items, the valid sample size was 140. One

hundred and one of them were female (72.1%) and the mean age of all participants was 21.30 (*SD* = 2.69). All of the participants were Chinese and all questionnaires were translated from English to Chinese, which was adopted in current research, and back-translated to English to ensure the consistency of meaning.

Measures

Autonomy motivation. The Autonomy Desire Scale was adopted to measure autonomy motivation (Van Assche et al., 2018). The scale consists of four items. Participants were asked to rate on a 7-point scale ranging from 1 = *completely disagree* to 7 = *completely agree* to indicate how they desire to be autonomous in their life (e.g. "I desire to do what I think is really interesting."). The Cronbach's α was .79. The descriptive statistics are summarized in Table 1.

Table 1 Descriptive statistics in Study 1a

	M±SD	1	2	3	4	5	6	7	8	9
Gender	72.1% female									
Age	21.30±2.69	-.27**								
Desire for autonomy	6.06±.66	.19*	-.12							
Subjective SES	5.35±1.19	-.05	-.02	.32**						
SES in childhood	3.50±1.32	.09	-.13	.25**	.34**					
Current SES	3.97±1.26	.15	-.09	.16	.37**	.61**				
Family income	3.88±1.94	.11	.02	.11	.25**	.49**	.35**			
Personal consumption	2.56±1.06	.01	.03	.08	.12	.28**	.08	.32**		
Prosociality	5.21±.66	.06	-.04	.23**	.20*	.26**	.16	.08	.26**	
Autonomy need satisfaction	3.84±1.00	-.00	-.02	.19*	.19*	.13	.11	-.06	.20*	.29**

Notes. *p < .05; **p <. 01

Subjective socioeconomic status (SSES). Different scales were used to measure people's SSES. The MacArthur Scale of Subjective SES (Adler et al., 2000) was used.

As mentioned, participants will rate themselves on a 10-point item in which "1" represents the people who are the worst off on the bottom, and "10" represents the ones who are the best off on the top in the society. In addition, I also included the Perceived Resource Availability Scale (Griskevicius et al., 2011), in which three items measured subjective SES in childhood on a 7-point scale (1 = *completely disagree*, 7 = *completely agree*) (Cronbach's α = .88, e.g. "My family usually had enough money for things when I was growing up.") and the other three items measured current subjective SES on a 7-point scale (Cronbach's α = .76, e.g., "I have enough money to buy things I want."). After the scores were averaged (for SES in childhood and current SES) and standardized, the three measures of SSES achieved good internal consistency with Cronbach's α = .72 and were averaged as a composite SSES.

Objective socioeconomic status (OSES). "Family income per month per person" (one item with ten points) (Franzini & Fernandez-Esquer, 2006) and "personal consumption per month" (one item with ten points) were adopted to measure objective SES, in which higher scores represented higher OSES[1]. The internal consistency was .53.

Prosociality. The Prosocialness Scale for Adults (Caprara, Steca, Zelli, & Capanna, 2005) was adopted to measure self-report prosociality. Participants responded to 16 items on a 7-point scale (1 = *completely disagree*, 7 = *completely agree*). A sample item is, "I try to be close to and take care of those who are in need." (Cronbach's α = .88).

Autonomy need satisfaction. Items related to autonomy need were selected from

---

[1] Education level was not included as an indicator of objective SES in Studies 1, 2 and 3, because the participants in these three studies were university students, who were not diverse enough on this variable.

the Basic Psychological Need Satisfaction and Frustration Scale (Chen et al., 2014).

Four items on a 7-point scale (1 = *completely disagree*, 7 = *completely agree*)

(Cronbach's α = .81, e.g., "I feel a sense of choice and freedom in the things I

undertake.") measured autonomy need satisfaction and the other four measured

autonomy frustration on a 7-point scale (1 = *completely disagree*, 7 = *completely agree*)

(Cronbach's α = .76, e.g., "I feel forced to do many things I wouldn't choose to do.").

The mean score of satisfaction and reversed mean score of frustration were averaged as

the final score of autonomy satisfaction.

　　Demographic variables. Participants were asked to report personal information

including age and gender.

Results

　　Descriptive statistics. Gender (1 = male, 2= female) was significantly associated

with autonomy motivation. The female participants reported higher autonomy

motivation than their male counterparts. There was no significant correlation found for

age.

　　As for the main variables, subjective SES and SES in childhood were significantly

positively correlated with autonomy motivation. The above three variables were

positively correlated to prosociality, indicating that people who reported higher

subjective SES, higher SES in childhood, and higher autonomy motivation tended to

be more prosocial. In addition, people with higher autonomy motivation, subjective

SES and prosociality were more likely to gain autonomy satisfaction in daily life. All

the other correlations were not significant.

From autonomy motivation to prosociality. First I tested the moderating role of SES on the effect of autonomy motivation on prosociality using PROCESS in SPSS 22 controlling for gender and age. The results are summarized in Table 2. The subjective SES indices could moderate the relationship between autonomy motivation and prosociality ($ps < .04$), which supported my Hypothesis 1a. For people with higher instead of lower SSES (the 95% Bootstrap Confidence Intervals (BCIs) included 0), their autonomy motivation could positively predict their prosociality in life (the 95% BCIs did not include 0). Nevertheless, the moderating effects were not significant for objective SES indices (family income, personal consumption) ($ps > .59$). That is, the positive effect of autonomy motivation on prosociality could be established only for higher instead of lower subjective SES, while this differentiation of higher and lower levels was not found for objective SES, i.e. the prediction of autonomy motivation on prosociality was consistent across people with different level of objective SES.

Table 2 Moderation effect in Study 1a

Predictor	outcome	moderator	p	R^2	95% BCI	
					higher SES	lower SES
Autonomy motivation	prosociality	subjective SES	.014	.04	[.15,.65]	[-.24,.22]
Autonomy motivation	prosociality	SES in childhood	.028	.03	[.13,.65]	[-.21,.23]
Autonomy motivation	prosociality	current SES	.039	.03	[.14,.61]	[-.20,.27]
Autonomy motivation	prosociality	family income	.591	.00	[-.12,.44]	[.02,.52]
Autonomy motivation	prosociality	personal consumption	.604	.00	[.02,.49]	[-.06,.40]
Prosociality	autonomy need satisfaction	subjective SES	.039	.03	[.30,.98]	[-.23,.48]
Prosociality	autonomy need satisfaction	SES in childhood	.044	.03	[.28,.91]	[-.18,.51]
Prosociality	autonomy need satisfaction	current SES	.025	.03	[.31,.91]	[-.18,.49]
Prosociality	autonomy need satisfaction	family income	.101	.02	[.28,.97]	[-.09,.57]
Prosociality	autonomy need satisfaction	personal consumption	.248	.01	[.19,.90]	[-.06,.60]

From prosociality to autonomy need satisfaction. The same analysis was conducted to test the moderating effect of SES on the relation between prosociality and autonomy need satisfaction. The results are summarized in Table 2, and the subjective SES indices had significant interaction effects with prosociality in predicting autonomy need satisfaction ($ps < .05$). Supporting my Hypothesis 2a, for people with higher SSES, higher prosociality was more related to autonomy satisfaction than for those with lower SSES. As for objective SES indices ($ps > .10$), the moderation effects were not significant. Prosociality could positively predict autonomy need satisfaction for people with higher instead of lower subjective SES, while this prediction would not change with different level of objective SES.

The moderated mediation model based on TPM. To present a comprehensive model, I ran the moderated mediation model with autonomy motivation as a predictor, prosociality as a mediator, autonomy need satisfaction as an outcome variable and SSES as a moderator (see Figure 3).
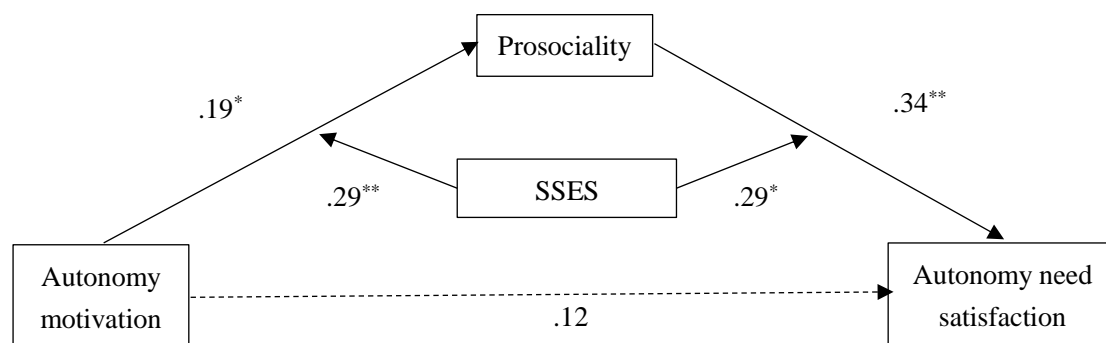
Figure 3 The moderated mediation model for autonomy with prosociality as the mediator

For people with higher SSES, their autonomy motivation could positively predict their prosociality, and then positively predicted their autonomy need satisfaction, (95% BCI = [.10,.47]), while for people with lower SSES, this mediation model was not

significant (95% BCI = [-.09,.02]).

Post-hoc power analysis

Given that the valid sample size was less than the calculated, I ran power analysis based on the actual effect sizes gained in current research. Specifically, I only included the two interaction effects in the final comprehensive model for SSES, because it was the key model that supported my hypotheses. The effect sizes were .05 and .04, respectively, based on which the power of the two interaction effects was .86 and .78, which were acceptable.

Discussion

In the current study, I tested my hypothesis that autonomy is significantly linked to higher-SES people's prosociality based on cross-sectional data. The results revealed different functions of subjective SES and objective SES and indicated that only subjective SES instead of objective SES indices supported my Hypotheses 1a and 2a. That is, the relationship between autonomy and prosociality depended mainly on whether individuals perceived themselves as having higher SES instead of whether they had higher level of family income and consumption. This is reasonable because autonomy refers to engaging in behavior that fits people's subjective will. Only when people think they have the ability to behave as they want (e.g., they perceive themselves as owning more resources) can autonomy motivation influence their behavior, and can this behavior satisfy their autonomy need.

Given the finding that subjective and objective SES play different roles in the

relationship between autonomy motivation and prosociality, subjective and objective SES involve different psychological mechanisms. The differentiation of these two constructs continued to be examined in subsequent studies.

2.1.2 Study 1b---Linking relatedness and lower SES

The hypotheses related to the relatedness were tested in the current study. SES indices were examined as the moderators for the link between relatedness motivation and prosociality and that between prosociality and relatedness satisfaction.

Participants and procedure

Participants were collected through the online BBS of a university in Beijing and a WeChat group of participants. The Qualtrics questionnaire link was attached in the recruitment post and sent to the WeChat group. Preliminary analysis of data from the 100 participants indicated that the effect sizes of the key results ranged from .05 to .06. The necessary sample size was 163 by calculation in G-power 3.1.

A total of 182 participants took part in this study. Of these, 169 participants completed the whole questionnaire and were paid 15 RMB. The valid sample size was 151 after deleting the data which did not pass the lie-detection items. One hundred and ten of them were female (72.8%) and the mean age of all participants was 21.41 ($SD =$ 2.66). All of the participants were Chinese and all questionnaires were translated from English to Chinese and back-translated.

Measures

Relatedness motivation. The Fear for Relatedness Frustration Scale was adapted from the subscale of relatedness frustration in Basic Psychological Need Satisfaction and Frustration Scale (Chen et al., 2015) based on the perspective of fear motive (Schüler et al., 2019) and was used for measuring relatedness motivation. The scale consists of four items (Cronbach's α = .68). Participants were asked to rate on a 7-point scale ranging from 1 = *be not afraid at all* to 7 = *be afraid very much* to indicate how they fear that their relatedness need cannot be fulfilled in daily life (e.g. "I'm afraid that people who are important to me are cold and distant towards me."). The descriptive statistics are summarized in Table 3.

Table 3 Descriptive statistics in Study 1b

	M±SD	1	2	3	4	5	6	7	8	9
Gender	72.8% female									
Age	21.41±2.66	-.21*								
Fear for relatedness frustration	5.02±.91	.05	.05							
Subjective SES	5.24±1.27	-.16	-.07	.02						
SES in childhood	3.34±1.29	-.03	-.11	.08	.35**					
Current SES	3.81±1.27	.06	.00	.19*	.37**	.55**				
Family income	3.75±1.81	.02	.01	.05	.28**	.47**	.30**			
Personal consumption	2.53±1.14	-.12	.04	-.07	.17*	.21*	-.02	.33**		
Prosociality	5.08±.75	-.05	-.05	.15	.19*	.20*	.08	-.02	.17*	
Relatedness need satisfaction	5.37±.82	-.01	.14	.15	.32**	.14	.16*	.06	.24**	.36**

Notes. *p < .05; **p <. 01

Socioeconomic status (SES). The same measurements of SES in Study 1a were adopted in the current study, including subjective SES, SES in childhood (Cronbach's α = .87) and current SES (Cronbach's α = .76) as subjective SES indices, and family income and personal consumption as objective SES. The Cronbach's alphas of the SSES and OSES were .70 and .56 respectively.

Prosociality. The same scale adopted in Study 1a was used in this study (Cronbach's α = .91).

Relatedness need satisfaction. Items related to relatedness need in the Basic Psychological Need Satisfaction and Frustration Scale (Chen et al., 2014) were adopted in this study. Same as autonomy need, there were four items on a 7-point scale (1 = *completely disagree*, 7 = *completely agree*) (Cronbach's α = .79, e.g., "I feel connected with people who care for me, and for whom I care.") which measured relatedness need satisfaction and the other four measured relatedness frustration on a 7-point scale (1 = *completely disagree*, 7 = *completely agree*) (Cronbach's α = .73, e.g., "I feel excluded from the group I want to belong to."). The mean score of satisfaction and reversed mean score of frustration were averaged as the final score of relatedness satisfaction.

Demographic variables. Same as Study 1a.

Results

Descriptive statistics. Gender and age were not significantly correlated with the key variables. As for the key variables, current SES was positively correlated with relatedness motivation. Similar to Study 1a, subjective SES and SES in childhood were positively correlated with prosociality. Subjective SES, current SES and prosociality were positively related to relatedness need satisfaction. All other correlations were not significant.

From relatedness motivation to prosociality. Similar to Study 1a, I first tested the moderating effect of SES on the relation between relatedness motivation and

prosociality. The results are summarized in Table 4. Different from Study 1a, OSES indices could significantly moderate the relationship between relatedness motivation and prosociality ($ps < .04$) instead of subjective SES indices ($ps > .32$), and the direction was consistent with my Hypothesis 1b, such that for people with lower OSES instead of higher OSES (95% BCIs included 0), relatedness motivation positively predicted prosociality (95% BCIs did not include 0). That is, relatedness motivation could be a significantly positive predictor of prosociality when people reported lower rather than higher income or consumption, while the effect of relatedness motivation on prosociality would not change significantly in their perception of SES.

Table 4 Moderation effect in Study 1b

Predictor	outcome	moderator	p	R^2	95% BCI	
					higher SES	lower SES
Relatedness motivation	prosociality	subjective SES	.349	.01	[-.13,.25]	[.00,.36]
Relatedness motivation	prosociality	SES in childhood	.520	.00	[-.04,.38]	[-.10,.25]
Relatedness motivation	prosociality	current SES	.326	.01	[-.18,.25]	[-.00,.34]
Relatedness motivation	prosociality	family income	.036	.03	[-.26,.16]	[.09,.47]
Relatedness motivation	prosociality	personal consumption	.020	.04	[-.13,.19]	[.11,.49]
Prosociality	relatedness need satisfaction	subjective SES	.380	.00	[.04,.51]	[.21,.61]
Prosociality	relatedness need satisfaction	SES in childhood	.051	.02	[.01,.46]	[.32,.75]
Prosociality	relatedness need satisfaction	current SES	.169	.01	[.06,.51]	[.28,.70]
Prosociality	relatedness need satisfaction	family income	.009	.04	[-.06,.41]	[.40,.84]
Prosociality	relatedness need satisfaction	personal consumption	.010	.04	[-.08,.41]	[.37,.81]

From prosociality to relatedness need satisfaction. As for the moderating effect of OSES on the relation between prosociality and relatedness need satisfaction, the results were consistent with the Hypothesis 2b ($ps < .01$), such that prosociality could satisfy relatedness need of people with lower OSES (95% BCIs did not include 0) other than higher (95% BCIs included 0). Similar to the above, subjective indices ($ps > .05$) had

weaker effects on moderating the link from prosociality to relatedness need satisfaction. Prosociality could positively predict relatedness need satisfaction for people with lower instead of higher income or consumption, while this differentiation was not significant for subjective SES indices (only marginally significant for SES in childhood).

The moderated mediation model based on TPM. Based on the results above, the combination of the two measures of objective SES: OSES was tested as the moderator in the whole process from relatedness motivation to prosociality and finally relatedness need satisfaction. The result is summarized in Figure 4.
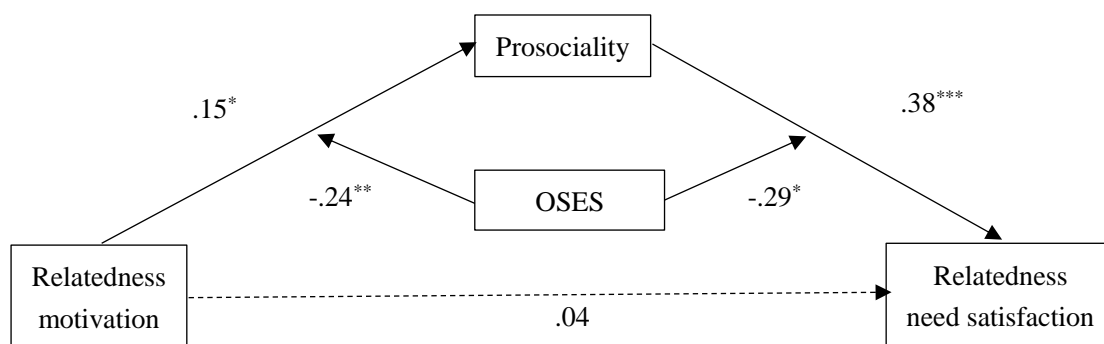

Figure 4 The moderated mediation model for relatedness with prosociality as the mediator

For people with lower OSES, their relatedness motivation could positively predict their prosociality, and higher prosociality may satisfy their relatedness need more, (95% BCI = [.10,.33]), while for people with higher OSES, this mediation model was not significant (95% BCI = [-.06,.02]).

Post-hoc power analysis

Given that the valid sample size was not enough compared to the calculated one, power analysis was conducted based on the actual effect sizes in the current study. Similarly, I only included the two interaction effects in the comprehensive model for OSES when calculating the power. The effect sizes were .06 and .05 respectively, and

the corresponding power of the two interaction effects was .87 and .80, indicating high

power of the results.

Discussion

In Study 1b, the hypotheses related to relatedness were examined. Similar to Study

1a, different effects of subjective and objective SES were observed. However, different

from Study 1a, only objective SES showed the hypothesized pattern, i.e., objective SES

indices were the key indicators to infer whether people's prosociality could be predicted

by their relatedness motivation and then satisfy relatedness need. That is, whether

people may help others out of relatedness motivation and their helping behavior may

satisfy their relatedness need depend on whether they really have enough material

resources instead of their perception of their SES. Adaption may be the essential goal

when people help others out of relatedness motivation, because people tend to seek

support from others to deal with threat from the society and environment. Nevertheless,

people with enough material resources can face with the threat without relying on the

help of others (Whillans et al., 2017). That is, the less material resource one owns (i.e.,

the lower objective SES one owns), the more likely they would help others for building

or strengthening the relationship, and the more likely their helping behavior makes them

expect more support from others, and this mechanism depends on their objective

socioeconomic condition instead of their perception of SES.

To sum up, in Study 1, the results showed that autonomy is linked to higher-SES

people's prosociality and relatedness is linked to lower-SES people's prosociality, and

the results further showed the linkage between autonomy and higher subjective SES and that between relatedness and lower objective SES; that is, only subjective SES supported the autonomy-high-SES hypotheses and only objective SES supported the relatedness-low-SES hypotheses.

In the following studies, I conducted experiments to continue testing the hypotheses and examine whether the differentiation of objective and subjective SES would still show the same pattern.

2.2 Study 2

In the current study, I manipulated motivations and tested their effect on prosocial behavior within different levels of SES.

2.2.1 Study 2a---Autonomy affected higher-SES people's donation

Participants and procedure

Participants were recruited through a WeChat online participant system created by a university in Beijing, China. As the experimenter, I posted the recruitment advertisement, accepted their applications for joining the research, and distributed participant fees through this system. Based on the size of the interaction effect of autonomy motivation and subjective SES on prosociality in Study 1a, the necessary sample size was 148 in the current study.

A total of 150 participants took part in this study. Of these, 147 participants completed the whole process and each of them was paid 20 RMB. One hundred and sixteen of them were female (78.9%) and the mean age of all participants was 21.08 ($SD = 2.25$).

The experiment was conducted using Qualtrics, and all participants were asked to complete the experiment online. The experiment included two parts. The first part was a writing task. All the participants were randomly assigned to the two groups. In the experiment condition ($N = 73$), participants would read the detailed explanation of the concept of autonomy when the writing task began. Afterwards, they were asked to list at least three aspects of the benefits of having autonomy and explain the reasons based on their life experience. In the control condition ($N = 74$), participants needed to recall what they did on the previous day. The participants were asked to write down at least 100 words (200 characters) in Simplified Chinese characters in both groups.

After the writing task, participants were asked to respond to a few questions including manipulation check, demographic information, and SES. At the end of this part, I provided a piece of news about a commonweal activity and asked participants to decide how much they were willing to donate by deducting from their reward of participating in this experiment (0-20 RMB).

Measures

Manipulation check. Three items related to autonomy motivation on a 7-point scale were selected[2] from Autonomy Value Scale ("It is important for me to feel a sense of choice and freedom in the things you undertake."), Autonomy Desire Scale ("I desire that my decisions reflect what I really want") (Van Assche et.al., 2018) and Fear for Autonomy Frustration Scale (Chen et al., 2014; Van Assche, et al., 2018) ("I fear that I

---

[2] These items were selected for manipulation check based on the representativeness of the items on the related constructs. Specifically, the item with the highest factor loading in each scale was included based on the factor analysis results in the pilot study, since the factor loading referred to the relationship between the factor the scale measured and the item.

am forced to do many things I wouldn't choose to do.") to test how participants value autonomy, desire autonomy and fear autonomy frustration (Cronbach's α = .64). Participants were asked to rate their agreement on the above three statements on a 7-point scale (1 = *completely disagree*, 7 = *completely agree*). The three items were averaged as the final score.

Moreover, I added another three corresponding items about relatedness motivation, which were also selected from the subscales together with the three above ("It is important for me to feel the connection with others" from Relatedness Value Scale, "I desire the feeling of connection and closeness with others" from Relatedness Desire Scale, "I fear that I'm excluded from the group I want to belong to" from Fear for Relatedness Frustration Scale), to check if the autonomy manipulation might also influence participants' relatedness motivation (Cronbach's α = .67) in case relatedness motivation might interfere the effect of manipulation. The three items were also averaged.

Socioeconomic status (SES). The SES measurements adopted in this study included the MacArthur Scale (Adler et al., 2000) as a measure of subjective SES, and income and consumption as objective SES, as used in Study 1. The descriptive statistics are summarized in Table 5.

Table 5 Descriptive statistics in Study 2a

	M±SD	1	2	3	4	5
Gender	78.9% female					
Age	21.08±2.25	-.26**				
Subjective SES	4.78±1.27	.00	.09			
Family income	3.14±1.84	.03	.10	.24**		

Personal consumption	2.00±.95	-.02	.17*	.37**	.33**
Donation	3.69±4.48	.19*	-.00	.06	.07	.08

Notes. *p < .05; **p <. 01

Demographic variable. Same as in Study 1, participants were asked to report demographic information, such as gender and age.

Results

Manipulation check. Independent-samples *t* tests were conducted between the experimental group and control group on autonomy and relatedness motivation. The experimental group (*M* = 5.03, *SD* = .90) reported higher autonomy motivation than the control group (*M* = 4.67, *SD* = 1.11) (*t* (145) = 2.17, *p* = .032), while the two groups did not differ in relatedness motivation (*t* (145) = -1.05, *p* = .298). The manipulation was effective.

Descriptive statistics. Gender (1=Male, 2=Female) was found to predict donation significantly, indicating that female participants donated more than their male counterparts. All the SES indices were not significantly correlated with prosocial behavior measured by donation in the current experiment.

Subjective SES. Firstly, I tested the moderating effect of the subjective SES on the relation between manipulated autonomy motivation and prosocial behavior using PROCESS in SPSS 22. After controlling for gender and age, manipulated autonomy motivation and SSES did not predict donation (*p* = .112 and *p* = .715, respectively). The interaction of autonomy motivation and SSES was significant (*b* = 1.92, *p* < .001, R^2

= .07). Simple effect test showed that for people with higher SSES (M + 1SD), autonomy motivation priming led to more donation than the control group (b = 3.61, p < .001), while for people with lower SSES (M - 1SD), the manipulation indicated no significant effect (b = -1.26, p = .211) (see Table 6 and Figure 5).

Table 6 All regression coefficients in Study 2a

	subjective SES	income	consumption
Gender	1.64[†]	1.73[†]	1.94[*]
Age	.11	.05	.09
Manipulation	1.18	1.18	1.10
SES index	.10	.22	.09
Manipulation×SES index	1.92[***]	.78[†]	.70
Simple effect test			
High SES(M+SD)	3.61[***]	2.62[*]	-
Low SES(M-SD)	-1.26	-.25	-

Notes. [†]p < .10; [*]p < .05; [**]p <. 01; [***]p < .001
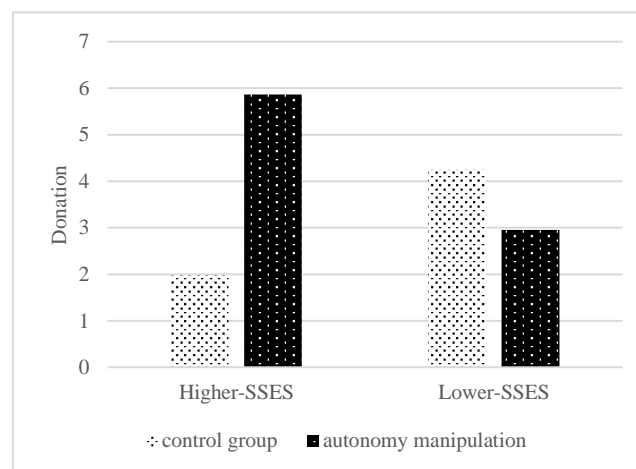

Figure 5 Interaction of autonomy motivation and subjective SES on prosocial behavior

Objective SES. Income and consumption did not predict donation significantly (p = .283 and p = .833, respectively). The interaction of income and manipulation was only marginally significant (b = .78, p = .057, R^2 = .02). People with higher family income (per person per month) in autonomy manipulation group donated more than their counterparts in the control group (b = 2.62, p = .014), and this manipulation effect

was not significant for people with lower income ($b = -.25$, $p = .807$) (see Table 6 and Figure 6). The moderating effect of consumption was not significant ($b = .70$, $p = .392$).
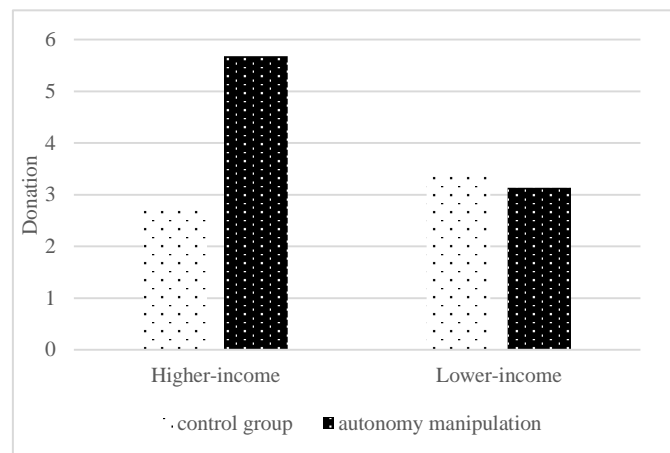

Figure 6 Interaction of autonomy motivation and income on prosocial behavior

Post-hoc power analysis

Power analysis was again conducted based on the actual effect sizes in the current study. I only included the interaction effects for subjective SES and income to calculate the power. The corresponding power of the two interaction effects was .92 and .48, indicating high power for the moderation of subjective SES but low for income.

Discussion

In current study, I manipulated autonomy motivation and tested whether the manipulation had different effects on prosocial behavior for people with different levels of SES. The results showed similar pattern as in Study 1a that the moderation effect of subjective SES was more significant than the two objective SES indices, both on effect size and power, and that autonomy motivation resulted in more prosocial behavior only for people with higher SSES

In the next study, I will manipulate relatedness motivation in a similar way and

test the Hypothesis 1b.

2.2.2 Study 2b---Relatedness affected lower-SES people's donation

Participants and procedure

Participants were recruited through the participant system mentioned above. Based on the effect size in Study 1b, the minimum sample size was 125. A total of 140 participants took part in this study. Of these, 128 participants completed the experiment and each of them was paid 20 RMB. One hundred and seven of them were female (83.6%) and the mean age of all participants was 20.99 ($SD = 1.96$).

The experiment was similar to Study 2a. The first part was a writing task. All the participants were randomly assigned to the two groups. In the experimental condition ($N = 60$), participants were asked to read the detailed explanation of the concept of relatedness carefully at the beginning of the writing task, and to list at least three aspects in which they could benefit from having relatedness and explained the reason based on their daily life. In the control condition ($N = 68$), participants were asked to recall what they did on the previous day. They were asked to write at least 100 words (200 characters) in simplified Chinese characters in both groups. After the writing task, participants responded to a few questions including manipulation check, demographic information, SES and the amount they were willing to donate for a commonweal activity, and the final fee they could get would be the balance after deducting the amount they filled in from 20 RMB.

Measures

Manipulation check. The same six items as used in Study 2a, including three for relatedness motivation (Cronbach's α = .68) and three for autonomy motivation (Cronbach's α = .62), were used in the current study. The final scores were the average of them.

Socioeconomic status (SES). The SES measurements used were the same as in Study 2a. The descriptive statistics are summarized in Table 7.

Table 7 Descriptive statistics in Study 2b

	M±SD	1	2	3	4	5
Gender	83.6% female					
Age	20.99±1.96	-.20*				
Subjective SES	4.88±1.28	-.01	.01			
Family income	3.24±1.58	-.05	-.16	.33**		
Personal consumption	1.98±.87	.01	.06	.29**	.37**	
Donation	3.52±3.45	.23*	-.00	.07	.07	.06

Notes. *p < .05; **p <. 01

Demographic variable. Same as Study 2a.

Results

Manipulation check. Independent-samples T tests showed that the experimental group (*M* = 5.08, *SD* = .87) reported marginally higher relatedness motivation than the control group (*M* = 4.79, *SD* = 1.15) (*t* (126) = 1.69, *p* = .095). However, the relatedness manipulation indicated reversed effect on autonomy motivation, such that those who were primed with relatedness motivation (*M* = 4.86, *SD* = .74) reported significantly

lower autonomy motivation than their counterparts in the control condition ($M = 5.13$, $SD = .69$) (t (126) = 2.16, $p = .033$). The manipulation was only partially effective.

Descriptive statistics. Similar to Study 2a, gender was associated with donation significantly, and the female participants engaged in higher level of prosocial behavior than their male counterparts. People with different levels of subjective and objective SES showed no significant effect on donation in the current study.

Subjective SES. Firstly, the moderating effect of the subjective SES was tested on the relation between manipulated relatedness motivation and prosocial behavior. After controlling for gender and age, manipulated relatedness motivation and SSES did not predict donation ($p = .205$ and $p = .317$, respectively). The SSES significantly moderated the effect of relatedness motivation on donation ($b = -.95$, $p = .050$, $R^2 = .03$). However, for people with lower SSES, relatedness motivation priming group did not indicate more donation than the control group ($b = .38$, $p = .670$). Moreover, for people with higher SSES, the experimental group reported significantly less donation ($b = -2.06$, $p = .018$) than the control group (see Table 8 and Figure 7).

Table 8 Regression analyses in Study 2b

	subjective SES	income	consumption
Gender	2.55**	2.50**	2.16**
Age	.03	-.07	-.03
Manipulation	-.84	-.67	-.63
SES index	.23	.07	-.21
Manipulation×SES index	-.95*	-1.42***	-2.93***
Simple effect test			
High SES(*M+SD*)	-2.06*	-2.53**	-2.72**
Low SES(M-SD)	.38	1.98*	2.35**

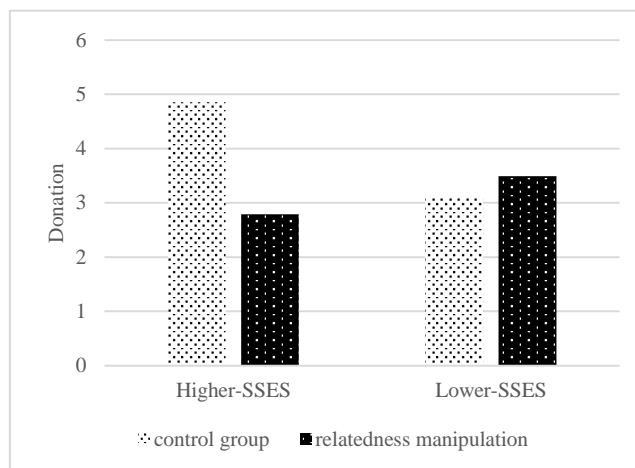*Notes*. *$p < .05$; **$p <. 01$; ***$p < .001$

Figure 7 Interaction of relatedness motivation and subjective SES on prosocial behavior

Objective SES. The two objective SES indices did not predict donation significantly ($p = .727$ & $p = .543$ respectively). The interaction of income and manipulation was significant ($b = -1.42$, $p < .001$, $R^2 = .10$). People with low family income in relatedness manipulation group donated more than those in the control group ($b = 1.98$, $p = .029$). Similar to the above results, people with higher family income donated more in the control group than in the relatedness motivation priming group ($b = -2.53$, $p = .003$) (see Table 8 and Figure 8).
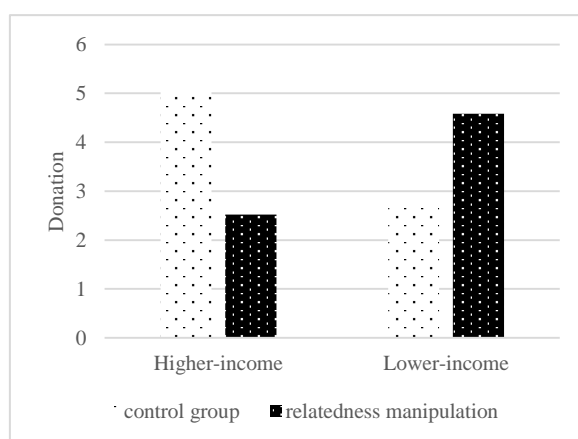

Figure 8 Interaction of relatedness motivation and income on prosocial behavior

The result was similar for consumption. The moderating effect of consumption was significant ($b = -2.93$, $p < .001$, $R^2 = .12$). For people with lower level of personal

consumption, those primed with relatedness motivation donated more than those in the control group ($b = 2.35$, $p = .008$), while this effect was reversed for high-consumption participants ($b = -2.72$, $p = .001$) (see Table 8 and Figure 9).
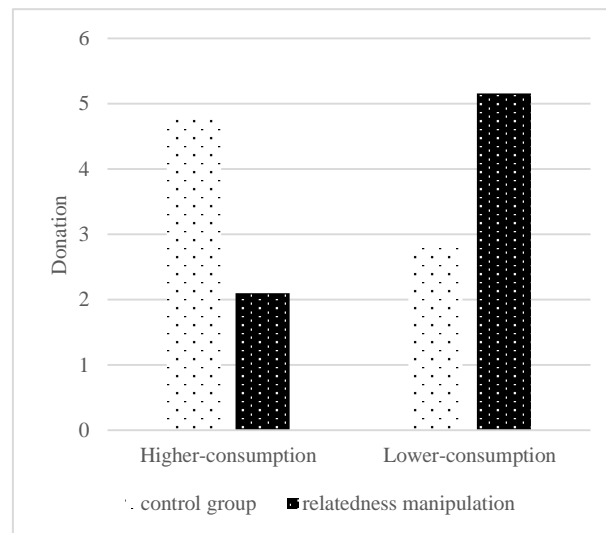

Figure 9 Interaction of relatedness motivation and consumption on prosocial behavior

Post-hoc power analysis

Power analysis was conducted for the effect sizes for all three SES indices in the current study. The corresponding power for subjective SES, income and consumption was .49, .95 and .99 respectively, indicating high power for the moderation of objective SES but low for subjective SES.

Discussion

In the current study, I manipulated relatedness motivation and tested the moderating role of SES on the effect of motivation on prosociality. The results supported a pattern similar to that of Study 1b, with the moderation effects of objective SES indices stronger than subjective SES, both on effect size and power, and with relatedness motivation leading to more prosocial behavior only for people with lower

OSES.

Interestingly, the results in Study 2b also showed the reversed effect that people with higher SES (subjective and objective) would behave less prosocially after relatedness priming. To explain this pattern, we need to note that the relatedness manipulation significantly reduced participants' autonomy motivation in this study. Relatedness motivation addresses the desire to maintain harmonious interpersonal relationship with close and important others. Though both of the autonomy and relatedness motivation are originated from the basic needs and generally moderately positively correlated with each other (e.g. Chen et al., 2015), emphasis on relatedness might activate, to some extent, people's willingness to sacrifice their own autonomy to accommodate the ones they attach importance to, as these two basic needs have often been construed as conflicting with each other (Guisinger & Blatt, 1994; Wiggins & Trapnell, 1996). Given this possibility and the finding related to autonomy that autonomy motivation would be the reason for people with high SES to engage in prosocial behavior, the decline of autonomy motivation caused by the relatedness priming might be a reason for higher-SES people to behave in a less prosocial way.

To sum up, in Study 2, I manipulated autonomy and relatedness motivation respectively and tested if the motivations had different effects on prosocial behavior for people with different levels of SES. The results showed similar pattern as in Study 1 that the autonomy motivation manipulation had greater effect on prosocial behavior for people with higher subjective SES than objective SES indices, and relatedness motivation could increase the willingness to donate when people had lower level of

objective SES instead of subjective SES.

In next study, I will manipulate prosociality to test if the prosocial behavior in daily life might satisfy different kinds of need for people with different levels of SES and the difference between subjective and objective SES would remain.

2.3 Study 3-The effect of manipulated prosociality on need satisfaction

In this study, I will use a recall task to manipulate participants' prosociality and measure SES (subjective and objective) and autonomy, relatedness need satisfaction. As existing literature indicates that the prosocial behavior related to money (such as donation) and time (such as taking part in volunteer activities) may not be the same essentially (e.g. Reed et al., 2016), I designed three groups including prosocial-money condition, prosocial-time condition and one control condition.

Participants and procedure

Based on the effect sizes of the interaction of prosociality and SES on autonomy and relatedness need satisfaction in Study 1a and Study 1b, the minimum sample size needed in the current study was 181.

Participants were recruited through the online BBS of a university in Beijing. A total of 179 participants took part in this study. Of these, 174 participants completed the experiment and each of them was paid 15 RMB. After data screening based on the lie-detection items, there were 170 remaining as a valid sample. One hundred and thirty-two of them were female (77.6%) and the mean age of all participants was 20.52 ($SD =$

2.44).

The participants were invited to the psychological laboratories to participate in the experiment. The experiment materials included one piece of paper and participants' own cellphone. There were two parts on the paper. The first part was a recall task. All the participants were randomly assigned to the three groups. The prosocial-money group ($N = 54$) was asked to recall the money-related prosocial behavior they actually engaged in before (such as donation or lending money to others) and write it down as detailed as possible. The participants in prosocial-time group ($N = 59$) were asked to recall their time-related prosocial behavior (such as joining volunteer activities or spending time on helping others) and describe it in detail. The control group ($N = 57$) was asked to recall what they did the previous day. All participants were asked to write at least 100 words (200 characters) in simplified Chinese.

The second part on the paper was a QR code that contained a Quatrics link which gave participants access to the questionnaire upon being scanned by a smartphone. This questionnaire included measurements of autonomy and relatedness need satisfaction, subjective and objective SES and demographic variables.

Measures

Need satisfaction. The autonomy and relatedness need satisfaction were measured using scales similar to Studies 1a and 1b, including four items each on autonomy satisfaction (Cronbach's α = .81), autonomy frustration (Cronbach's α = .89), relatedness satisfaction (Cronbach's α = .91), relatedness frustration (Cronbach's α

= .74). Different from Studies 1a and 1b, in which the instruction for these items was "Please rate your agreement on the statements below based on your feeling in your own daily life.", the instruction was "Please rate your agreement on the statements below based on the affairs you just recalled." in the current study. Same as in Study 1, the two autonomy scales were combined to one total score on autonomy satisfaction, as well as relatedness. The descriptive statistics are summarized in Table 9.

Table 9 Descriptive statistics in Study 3a

	M±SD	1	2	3	4	5	6
Gender	77.6% female						
Age	20.52±2.44	-.08					
Subjective SES	5.32±1.32	.01	-.14				
Income	4.21±1.93	-.04	.06	.24**			
Consumption	2.64±.96	-.13	.06	.09	.38**		
Autonomy satisfaction	5.10±1.03	.07	.11	.14	.13	.15	
Relatedness satisfaction	4.92±1.25	.09	.11	.13	.00	.07	.60**

Notes. $^{*}p < .05$; $^{**}p < .01$

Socioeconomic status (SES). The SES measurements used were the same as Study 2, including the MacArthur Scale (Adler et.al., 2000) as subjective SES, and income and consumption as objective SES indices.

Demographic variables. Same as in the previous studies, information of gender and age was recorded.

Results

Autonomy need satisfaction. Firstly, I tested the moderating effect of SES on the relation between prosociality and autonomy satisfaction. Since the independent variable included three groups, I adopted the "multicategorical" function in PROCESS to define the independent variable as multicategorical variable. As the control group was coded

as "0", prosocial-money group as "1" and prosocial-time group as "2", I selected the "Helmert" coding method in order to test both the difference between control group and the two experiment groups (coded as D1) and of the difference between prosocial-money group and prosocial-time group (coded as D2).

Subjective SES. The SSES was first tested as the moderator for the effect of prosociality on autonomy need satisfaction. With gender and age controlled, the main effect of D1 was significant ($b = .63$, $p < .001$), indicating that the recalled prosocial behavior, with money and time combined as a whole, could highly satisfy people's autonomy need than recalling normal daily life. D2 did not significantly predict the dependent variable ($b = -.08$, $p = .704$), which indicated that recalling prosocial behavior on money and on time did not differ in the increase of autonomy satisfaction. SSES positively predicted autonomy satisfaction ($b = .14$, $p = .017$). The interaction of D1 and SSES was significant ($b = .38$, $p = .001$, $R^2 = .06$). Simple effect test showed that for people with higher SSES, prosocial behavior could lead to more autonomy need satisfaction ($b = 1.18$, $p < .001$, $R^2 = .14$) instead of people with lower SSES ($b = .13$, $p = .531$). (see Table 10 and Figure 10). The interaction of D2 and SSES was not significant ($b = .11$, $p = .461$), which indicated that the two kinds of prosocial behavior did not have significant difference in the effect on autonomy satisfaction whenever SSES was high or low.

Table 10 All regression coefficients with autonomy satisfaction as dependent variable

	subjective SES	income	consumption
Gender	.24	.23	.23
Age	.07*	.05	.05†
D1	.63***	.62***	.63***
D2	-.05	-.08	-.04

SES index	.14*	.04	.01
D1×SES index	.38***	.08	.06
D2×SES index	.11	.08	-.15
Simple effect test for D1			
High SES(*M+SD*)	1.13***	-	-
Low SES(M-SD)	.13	-	-

Notes. $^{†}p < .10$; $^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$
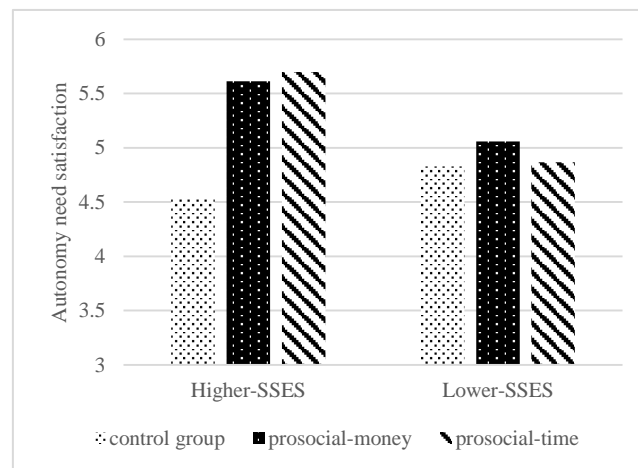

Figure 10 Interaction of prosociality and subjective SES on autonomy need satisfaction

Objective SES. The two objective SES indices did not predict autonomy satisfaction significantly ($p = .298$ and $p = .947$, respectively). The interactions of income and D1 and D2 were neither significant ($p = .380$ and $p = .386$, respectively), as well as consumption ($p = .737$ and $p = .454$, respectively). These results were consistent with the pattern found in Studies 1 and 2 that autonomy was linked to only higher subjective SES instead of objective SES.

Relatedness need satisfaction. The same analysis was conducted for relatedness need satisfaction.

Subjective SES. Similarly, the SSES was first tested as the moderator for the effect of prosociality on relatedness need satisfaction. With gender and age controlled, the main effect of D1 was significant ($b = .53$, $p = .009$), indicating that recalled

prosocial behavior could increase relatedness satisfaction, while the effect of D2 was not significant ($b = .22$, $p = .355$), indicating that the two experimental groups were not different from each other in relatedness satisfaction. SSES positively predicted relatedness satisfaction ($b = .15$, $p = .044$). Similar to the pattern found in Study 1b, subjective SES did not moderate the effects of manipulation on relatedness satisfaction ($p = .132$ for D1 and $p = .901$ for D2) (see Table 11).

Table 11 Regression analyses predicting relatedness satisfaction

	subjective SES	income	consumption
Gender	.32	.33	.32
Age	.08*	.07†	.07
D1	.53**	.50*	.49*
D2	.22	.22	.22
SES index	.15*	-.02	.02
D1×SES index	.22	-.23*	-.53**
D2×SES index	.02	.02	-.11
Simple effect test for D1			
High SES(*M+SD*)	-	-.21	-.26
Low SES(M-SD)	-	.70**	.76**

Notes. †$p < .10$; *$p < .05$; **$p < .01$; ***$p < .001$

Objective SES. As for the two objective SES indices, higher income and consumption did not affect higher relatedness need satisfaction ($p = .922$ and $p = .857$, respectively). Income significantly moderated the effect of D1 on relatedness need satisfaction ($b = -.23$, $p = .012$, $R^2 = .03$). For people with lower levels of family income (per person), prosocial behavior (including money and time) could increase relatedness satisfaction ($b = .70$, $p = .003$, $R^2 = .04$), while this effect was not found among people with higher income levels ($b = -.21$, $p = .437$) (see Table 11 and Figure 11). The interaction of income and D2 was not significant ($b = .02$, $p = .851$), showing that the two types of prosocial behavior had similar effects on people's relatedness with
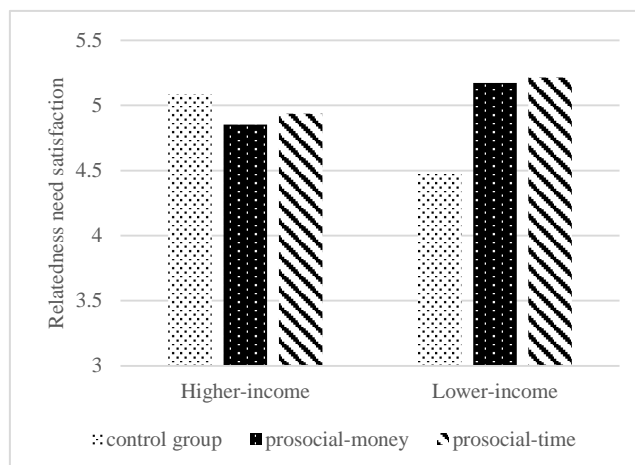
different income levels.

Figure 11 Interaction of prosociality and income on relatedness need satisfaction

Similar interaction effect was found for consumption and D1 ($b = -.53$, $p = .004$, $R^2 = .04$). Prosocial behavior increased participants' relatedness need satisfaction when people had lower ($b = .76$, $p = .001$, $R^2 = .04$) instead of higher level of personal consumption ($b = -.26$, $p = .314$) (see Table 11 and Figure 12). Consumption did not moderate the effect of D2, either ($b = -.11$, $p = .579$). In general, the above results confirmed the hypothesized pattern - the linkage of lower objective SES and relatedness.
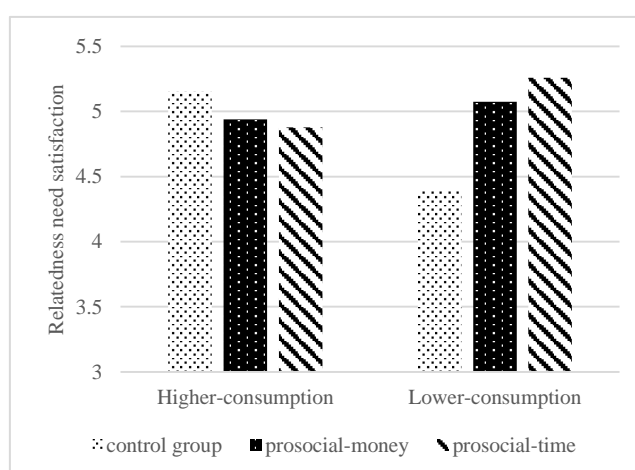

Figure 12 Interaction of prosociality and consumption on relatedness need satisfaction

Post-hoc power analysis

Since the valid sample size was fewer than expected, power analysis was conducted based on the actual effect sizes in the current study. Specifically, I only tested the power of the interaction effect of prosociality and subjective SES on autonomy need satisfaction, and those of prosociality and income, consumption on relatedness need satisfaction, which were .91, .74 and .85, respectively.

Discussion

In the current study, I manipulated prosociality by asking participants to recall the prosocial behavior that they engaged in before and measured their satisfaction of autonomy and relatedness need based on the recalled events to test the effects of prosocial behavior on need satisfaction. More importantly, how SES moderated these effects was examined. The results were consistent with the pattern found in Study 1, such that the prosociality satisfied more autonomy need of people with higher subjective SES and more relatedness need of people with lower objective SES.

Existing literature has documented that engaging in prosocial behavior may satisfy people's autonomy, relatedness and competence need (Caprara & Steca, 2005; Piliavin & Siegl, 2007; Weinstein & Ryan, 2010), which was supported by the results of the current study. People reported significantly higher autonomy and relatedness need satisfaction after they recalled prosocial behavior. Moreover, the moderating effects of SSES and OSES were further examined and found to be significant, indicating that prosociality satisfy different needs of people with different levels of SES, which implied that people with different SES may engage in prosocial behavior for different

goals.

2.4 Study 4

In previous studies, the results basically confirmed my hypotheses that autonomy was linked to high SES and relatedness was linked to low SES on prosociality, and specifically, the association between autonomy and prosociality would be stronger for people with higher subjective SES and the association between relatedness and prosociality would be significantly stronger when people reported lower objective SES. However, all five sub-studies recruited student samples. In the current study, I adopted the same questionnaire used in Study 1a and Study 1b to test if these hypotheses and patterns could be confirmed in community samples.

2.4.1 Study 4a---Autonomy linked to higher SES in a community sample

Participants and procedure

Participants were recruited using the same method as in Study 2, and only non-students could sign up for this survey. The minimum required sample size was 189, which was calculated using G-power 3.1 based on the effect sizes in Study 1a. A total of 234 participants took part in this study. Of these, 199 participants completed the whole questionnaire and each of them was paid 15 RMB. After data screening based on the lie-detection items, the valid sample size was 180. One hundred and forty-one of them were female (78.9%) and the mean age of all participants was 32.79 ($SD = 10.12$).

Measures

Autonomy motivation. The Autonomy Desire Scale was adopted in this study, same as Study 1a. The Cronbach's α was .79. The descriptive statistics are summarized in Table 12.

Table 12 Descriptive statistics in Study 4a

	M±SD	1	2	3	4	5	6	7	8	9
Gender	78.9% female									
Age	32.79±10.12	-.07								
Desire for autonomy	5.28±.92	.02	-.25**							
Subjective SES	5.01±1.56	-.01	.06	-.00						
Social status	2.14±.78	-.17*	.14	-.04	.32**					
Family income	3.96±1.97	.02	-.15*	.15	.19**	.15*				
Personal Consumption	3.49±1.75	-.08	-.11	.09	.13	.16*	.44**			
Education level	4.00±.91	.02	-.35**	.20**	.30**	.12	.38**	.31**		
Prosociality	5.00±.65	-.06	.02	.29**	.17*	.19*	.18*	.10	.22**	
Autonomy need satisfaction	4.83±.84	-.13	.03	.31**	.24**	.26**	.12	.07	.31**	.32**

Notes. $^*p < .05$; $^{**}p < .01$

Socioeconomic status (SES). Similar to Study 2 and Study 3, I included the MacArthur Scale as a measure of subjective SES, and income and consumption as objective SES. Given that the community participants were working with higher status in society, I added one item on a 5-point scale (1 = *very low*, 5 = *very high*) to measure their subjective social status compared to people around them. In addition, the community participants varied more in education levels, which was also an index measuring objective SES (Alder et al., 2000), and I also included one item on a 7-point scale (1 = *primary school*, 7 = *doctoral degree*). The internal consistency of subjective SES and objective SES was .67 and 66, respectively.

Prosociality. The Prosocialness Scale for Adults (Caprara et al., 2005) was adopted as in Study 1. The Cronbach's α was .87.

Autonomy need satisfaction. As in Study 1a, the current study used four items to measure autonomy need satisfaction (Cronbach's α = .71) and four items to   measure autonomy frustration (Cronbach's α = .79). The mean score of satisfaction and the reversed mean score of frustration were averaged as the scores of autonomy satisfaction.

Demographic variables. Age and gender were recorded.

Results

Descriptive statistics. Age was negatively correlated with autonomy motivation, indicating that younger people had higher motivation for autonomy in life.

As for the key variables, participants with higher education levels reported higher autonomy motivation. Subjective SES, status, income and autonomy motivation were significantly and positively correlated with prosociality. The autonomy need satisfaction was positively correlated with subjective SES, status, education level and autonomy motivation. Similar to the previous findings, autonomy need satisfaction was also positively correlated with prosociality.

From autonomy motivation to prosociality. First, I tested the moderating roles of SES indices on the effect of autonomy motivation on prosociality controlling for gender and age. The results are summarized in Table 13, which supported my Hypothesis 1a on the linkage between autonomy and high SES. Most of the five SES indices ($ps < .067$) significantly moderated the relationship between autonomy motivation and prosociality, such that people with higher level of autonomy motivation showed more prosociality when they reported higher (vs lower) SES. In addition, the results showed slightly

different pattern compared with that of student samples, that the objective SES indices

(ps ≤ .016) tended to show stronger moderation effects than subjective SES indices (ps

≥ .019).

Table 13 Moderation effects in Study 4a

Predictor	outcome	moderator	p	R^2	95% BCI	
					higher SES	lower SES
Autonomy motivation	prosociality	subjective SES	.019	.03	[.20,.50]	[-.02,.24]
Autonomy motivation	prosociality	social status	.067	.02	[.17,.44]	[-.05,.26]
Autonomy motivation	prosociality	family income	.002	.05	[.23,.51]	[-.06,.20]
Autonomy motivation	prosociality	personal consumption	.016	.03	[.20,.50]	[-.03,.24]
Autonomy motivation	prosociality	education level	<.001	.06	[.24,.55]	[-.04,.21]
Prosociality	autonomy need satisfaction	subjective SES	.425	.00	[.18,.71]	[.02,.55]
Prosociality	autonomy need satisfaction	social status	.626	.00	[.09,.56]	[15,.66]
Prosociality	autonomy need satisfaction	family income	.006	.04	[.32,.74]	[-.21,.36]
Prosociality	autonomy need satisfaction	personal consumption	.057	.02	[.30,.74]	[-.04,.48]
Prosociality	autonomy need satisfaction	education level	.034	.02	[.29,.76]	[-.14,.41]

From prosociality to autonomy need satisfaction. The moderating effects of SES

indices on the relation between prosociality on autonomy need satisfaction were then

tested. The results are summarized in Table 13, which were consistent, to some degree,

with the results above. The subjective SES indices did not have significant moderating

effects (ps > .42), and only the effects of objective were significant or marginally

significant (ps < .06). For people with higher objective SES, rather than lower objective

SES, prosociality may satisfy their autonomy need, while this differentiation was not

observed with the change of subjective SES, which was inconsistent with the result in

Study 1a.

The moderated mediation model based on TPM. To test the TPM, I integrated the

three measures of objective SES into OSES by standardization and tested its moderating

effect in the whole process from autonomy motivation to prosociality and finally

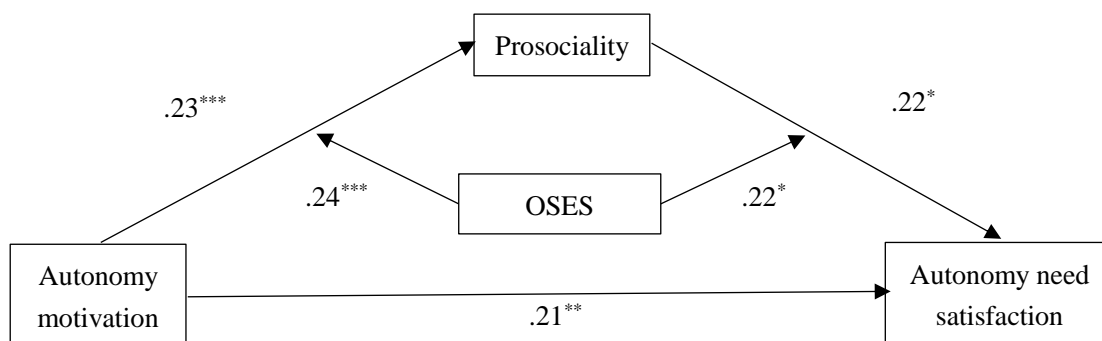autonomy need satisfaction. The result is summarized in Figure 13.

Figure 13 The moderated mediation model for autonomy with prosociality as the mediator for

community sample

The results showed that for people with higher objective SES, autonomy

motivation could positively predict prosociality, and then predicted autonomy need

satisfaction (95% BCI = [.07, .28]), while for people with lower objective SES, this

mediation model was not significant (95% BCI = [-.01, .04]).

Post-hoc power analysis

Since the valid sample size was smaller than required, I conducted power analysis

for the effect size in the current study, including the moderation effect of objective SES

on the relationship between autonomy motivation and prosociality and that between

prosociality and autonomy need satisfaction in the comprehensive model. The power

for the two interaction effects was .97 and .76, respectively, which were acceptable.

Discussion

In the current study, I tested my hypotheses in the community sample. However,

the significant linkage between autonomy and higher subjective SES from Study 1 to Study 3 seemed to change to a significant link between autonomy and higher objective SES. Specifically, the moderation effects of objective SES indices became stronger than subjective SES indices on the relationship between autonomy motivation and prosociality, and even only objective SES indices could moderate the relationship between prosociality and autonomy need satisfaction significantly, while the key moderators were subjective SES indices in Studies 1a, 2a and 3.

To interpret this inconsistency, we need to compare the relationship between subjective and objective SES in student samples with that in community samples. For most Chinese students studying in a university, their objective SES such as income and consumption depends mainly on their parents. However, their subjective SES may be affected by not only their family but also factors related to themselves, such as the university they belong to, their academic performance, and their status in school clubs or students' union. Therefore, their subjective SES may not be congeneric with their objective SES so that the differentiation of the association pattern could be found in the first three studies.

However, for community samples, who have been working and living in the society for several years, earning money for themselves and even have their own families, not only their objective SES derives from the their own income, consumption and education level, but also their perceived status in the society, i.e. subjective SES may also be associated with and even determined by the same factors. That is, objective SES might be more crucial and decisive than subjective SES for people who had left

the ivory tower. Therefore, it is possible that even if people (in community samples) with higher subjective SES want to help others out of their will, they still have to consider the actual resources they possess. It is possible that both the subjective and objective SES indices could moderate the effect of autonomy motivation on prosociality and that objective SES indices had stronger effect in the current study. On the other hand, it is also reasonable that prosociality could only satisfy autonomy need of those with more actual resources and real ability to realize themselves in their social life, that is, only objective SES indices could moderate the effect of prosociality on people's autonomy need satisfaction in community samples.

2.4.2 Study 4b---Relatedness linked to lower SES in a community sample

Participants and procedure

Participants were recruited using the same method as in previous studies. The required sample size was 151. A total of 206 participants took part in this study, and 183 of them completed the entire questionnaire and each of them was paid 15 RMB. The valid sample size was 173 after lie-detection check items. One hundred and thirty-seven were female (79.2%) and the mean age of all participants was 32.27 ($SD = 9.69$).

Measures

Relatedness motivation. The Fear for Relatedness Frustration Scale (Chen et al., 2014; Van Assche, et al., 2018) in Study 1b was used in the current research. The

Cronbach's α of the four items was .75. The descriptive statistics are summarized in Table 14.

Table 14 Descriptive statistics in Study 4b

	M±SD	1	2	3	4	5	6	7	8	9
Gender	79.2% female									
Age	32.27±9.69	.03								
Fear for relatedness frustration	4.18±.1.14	.04	-.14							
Subjective SES	4.83±1.61	.03	.07	-.04						
Social status	2.09±.80	-.10	.14	-.20**	.37**					
Family income	3.89±1.94	-.12	-.14	-.17*	.21**	.19*				
Personal consumption	3.38±1.78	-.10	-.09	-.09	.13	.10	.44**			
Education level	3.38±1.78	.03	-.35**	.01	.28**	.08	41**	.31**		
Prosociality	3.92±.95	-.09	-.06	-.05	.15*	.15*	.25**	.20**	.27**	
Relatedness need satisfaction	4.67±1.12	.06	.06	.03	.19*	.15	.14	-.06	.17*	.25**

Notes. $^*p < .05$; $^{**}p <. 01$

Socioeconomic status (SES). I adopted the same measures of SES in Study 4a, including subjective SES, social status, income, consumption and education level (Cronbach's α = .70 for SSES and .67 for OSES).

Prosociality. The same scale as in Studies 1a and 4a was used (Cronbach's α = .90).

Relatedness need satisfaction. The eight items related to relatedness need in the Basic Psychological Need Satisfaction and Frustration Scale (Chen et al., 2014) were adopted as in Study 1b. Four items (Cronbach's α = .85) measured relatedness need satisfaction and the other four measured relatedness frustration (Cronbach's α = .76), and they were combined as a composite score.

Demographic variables. Gender and age were recorded.

Results

Descriptive statistics. No significant correlation was found for gender and age. Participants who had higher social status and income reported less fear for relatedness frustration. Prosociality was positively correlated with all SES indices except for education level. People's relatedness need satisfaction was positively correlated with their subjective SES and prosociality.

From relatedness motivation to prosociality. I first tested the moderating effect of SES on the relation between relatedness motivation and prosociality. The results are summarized in Table 15. The objective SES indices had significant moderating effects on the relationship between relatedness motivation and prosociality ($ps < .0045$), indicating that people with lower OSES other than higher OSES scored higher in prosociality due to higher relatedness motivation, which supported my Hypothesis 1b. Similar to the pattern found in Study 1b, objective SES indices ($ps < .005$) had stronger moderating effect than subjective ones ($ps > .17$).

Table 15 Moderation effects in Study 4b

Predictor	outcome	moderator	p	R^2	95% BCI	
					higher SES	lower SES
Relatedness motivation	prosociality	subjective SES	.173	.01	[-.22,.04]	[-.10,.16]
Relatedness motivation	prosociality	social status	.871	.00	[-.15,.11]	[-.13,.11]
Relatedness motivation	prosociality	family income	.004	.05	[-.21,.02]	[.00,.27]
Relatedness motivation	prosociality	personal consumption	<.001	.10	[-.24,-.03]	[.05,.30]
Relatedness motivation	prosociality	education level	.001	.06	[-.27,-.02]	[.00,.25]
Prosociality	relatedness need satisfaction	subjective SES	.944	.00	[-.00,.72]	[.07,.68]
Prosociality	relatedness need satisfaction	social status	.506	.00	[-.01,.62]	[.14,.75]
Prosociality	relatedness need satisfaction	family income	<.001	.11	[-.24,.29]	[.67,1.38]
Prosociality	relatedness need satisfaction	personal consumption	<.001	.11	[-.22,.32]	[.64,1.25]
Prosociality	relatedness need satisfaction	education level	.002	.05	[-.26,.35]	[.43,1.10]

From prosociality to relatedness need satisfaction. The moderating analysis of SES on the relation between prosociality and relatedness need satisfaction showed similar results as above, indicating that the objective SES indices ($ps < .003$) had stronger effects than subjective SES indices ($ps > .50$). For people with lower SES and especially objective SES, prosociality could predict relatedness satisfaction, which was consistent with my Hypothesis 2b.

The moderated mediation model based on TPM. With the three objective SES indices combined as OSES, the analysis on the moderated mediation model of relatedness for the community sample was conducted (see Figure 14).
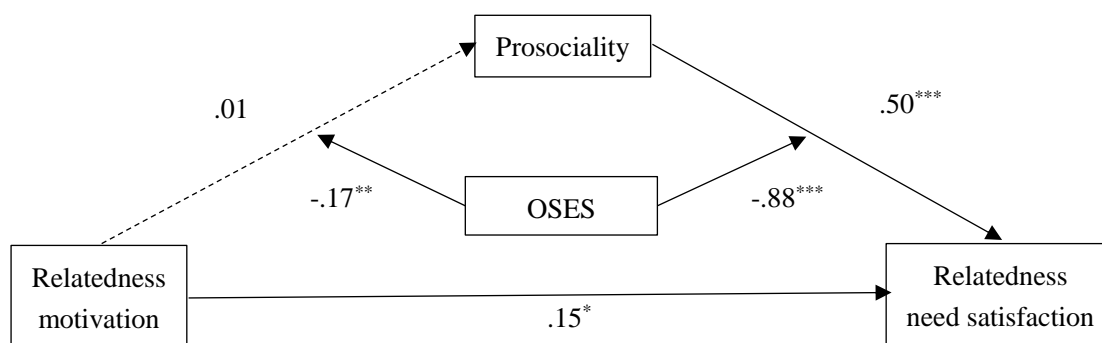
Figure 14 The moderated mediation model for relatedness with prosociality as the mediator for

community sample

For people with lower OSES, their relatedness motivation could predict their prosociality, and then satisfaction of their relatedness need, (95% BCI = [.04,.31]), while for people with higher OSES, this mediation model was not significant (95% BCI = [-.04,.10]).

Post-hoc power analysis

Power analysis was conducted for the effects found in the current study, including the moderation effects in the comprehensive model. The power for the two interaction

effects of objective SES on the relationship between relatedness motivation and prosociality and that between prosociality and relatedness need satisfaction was .96 and 1.00, respectively.

Discussion

In Study 4b, I tested the hypotheses related to relatedness through cross sectional data collected from the community sample. The results showed that for lower-OSES people, relatedness motivation was the predictor of prosociality, which may then be associated with relatedness need satisfaction, i.e., the closer matching relationship between objective SES (vs. subjective SES) and relatedness was also observed.

To sum up, in Study 4, the results of the cross-sectional study were replicated in community samples and generally supported my hypotheses that autonomy motivation could promote higher-OSES individuals' prosociality and then satisfy their autonomy need, and relatedness motivation could facilitate lower-OSES people's prosociality and then satisfy their relatedness need. Though different functional patterns of subjective SES and objective SES were found between community samples and student samples, the overall results   consistently supported the general hypotheses.

2.5 Alternative models-To explain the relationship between SES and prosociality based on the current research

In the previous studies, I examined my hypotheses that people with higher SES

engage in prosocial behavior more for autonomy and those with lower SES more for relatedness, from the perspective that SES moderated the relationship between motivations and prosociality and that between prosociality and needs satisfaction. The results showed that the moderating role of SES was generally confirmed. However, the original purpose of the current research was to explain the contradictory findings on the relationship between SES and prosociality, which referred to the perspective that there were moderators for the relationship between SES as an independent variable and prosociality as an outcome.

Given that interaction effects were bidirectional, I reanalyzed the data in Studies 1, 2 and 4 using motivations as the moderators, SES as an indicator and prosociality as an outcome to directly show how the relationship between SES and prosociality would differ by the levels of autonomy and relatedness motivation.

2.5.1 Alternative models in Study 1

Study 1a. In Study 1a, SSES was found to moderate the effect of autonomy motivation on prosociality. Since the moderation is bidirectional, autonomy motivation could be the moderator of the relationship between SSES and prosociality, and the moderation effect could be also significant ($p = .011$, $R^2 = .05$). The simple slope analysis with autonomy motivation as moderator showed that, for people with higher autonomy motivation, SSES could positively predict prosociality ($b = .48$, $p < .001$), while for those with lower autonomy motivation, the prediction was not significant ($p = .502$) (see Figure 15).
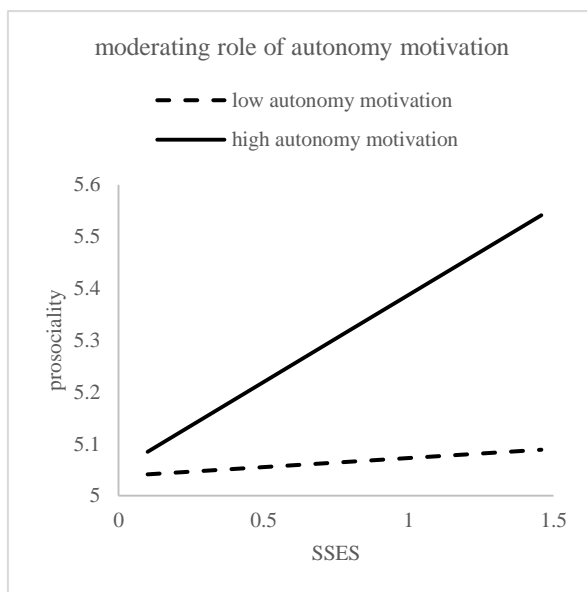
Figure 15 The relationship between SSES and prosociality in Study 1a

Study 1b. Similarly, relatedness motivation in Study 1b may also be a moderator of the relationship between OSES and prosociality ($p = .018$, $R^2 = .04$). Simple slope analysis showed that OSES could positively predict prosociality when people reported lower level of relatedness motivation ($b = .39$, $p < .001$) instead of higher level ($p = .973$) (see Figure 16).

Figure 16 The relationship between OSES and prosociality in Study 1b

To sum up, autonomy and relatedness motivation could moderate the relationship

between SES and prosociality. Specifically, for people with higher autonomy motivation, higher SSES positively predicted prosociality. For people with lower relatedness motivation, higher OSES positively predicted prosociality.

2.5.2 Alternative models in Study 2

Study 2a. In Study 2a, I manipulated autonomy motivation and found significant interaction effect with SSES on prosocial donation ($p < .001$, $R^2 = .07$). With autonomy motivation as a moderator, I directly examined the effect of SSES in the prediction of prosocial behavior in two different groups: autonomy motivation manipulation group and control group, respectively, as simple slope analysis. The results indicated that for participants in autonomy manipulation group, SSES positively predicted prosociality ($b = 3.10$, $p < .001$), while in the control group, this effect was not significant ($p = .287$) (see Figure 17).
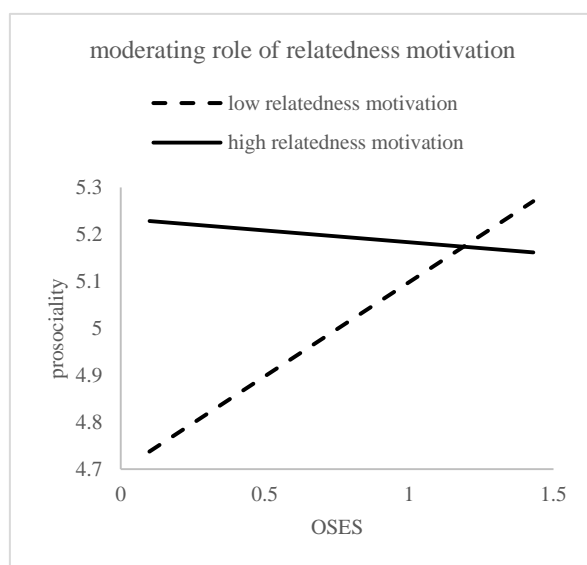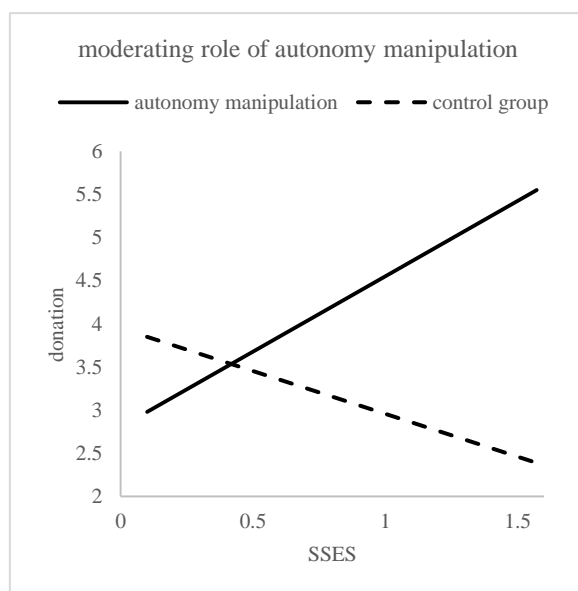

Figure 17 The relationship between SSES and prosociality in Study 2a

Study 2b. In Study 2b, relatedness motivation was manipulated and OSES

significantly moderated the effect of manipulation on prosocial donation ($p < .001$, R^2 = .14). Similarly, simple slope analysis with group as moderator showed that in relatedness motivation manipulation group, OSES could negatively predict prosociality ($b = -2.78$, $p < .001$); for the control group, OSES could positively predict prosocial donation ($b = 1.53$, $p < .001$) (see Figure 18).
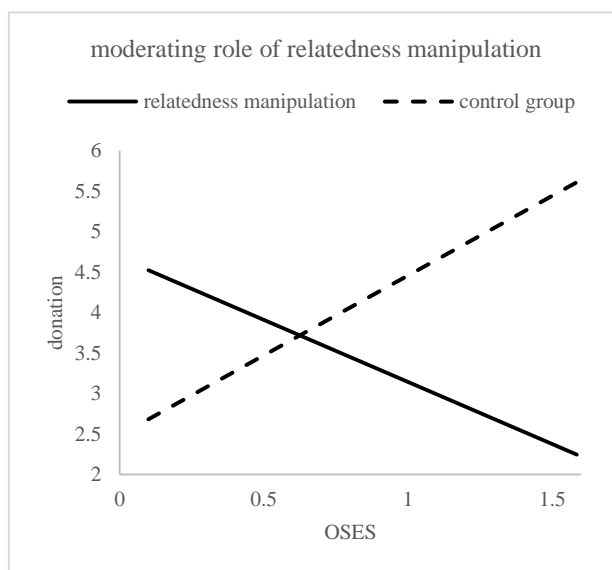
Figure 18 The relationship between OSES and prosociality in Study 2b

To sum up, manipulated autonomy and relatedness motivation could also moderate the relationship between SES and prosocial behavior. Specifically, after being primed with autonomy motivation, higher-SSES people donated more than lower-SSES ones. For people primed with relatedness motivation, OSES negatively predicted prosociality.

2.5.3 Alternative models in Study 4

Study 4a. SSES and OSES were found to moderate the relationship between autonomy motivation and prosociality ($p = .003$, $R^2 = .05$ for SSES and $p < .001$, R^2 = .08 for OSES). With autonomy motivation as a moderator, simple slope analysis

indicated that for people with high autonomy motivation, SSES and OSES could positively predict prosociality in their daily life ($b = .27$, $p < .001$ for SSES and $b = .62$, $p < .001$ for OSES); for those who reported lower levels of autonomy motivation, the effect of SES on prosociality was not significant ($p = .406$ for SSES and .133 for OSES) (see Figure 19 and 20).
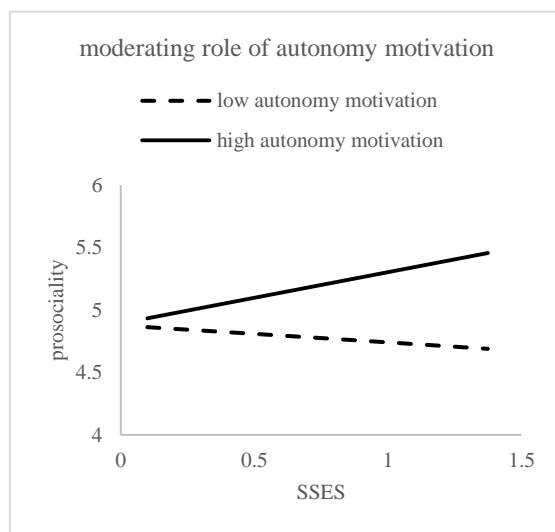
Figure 19 The relationship between SSES and prosociality in Study 4a
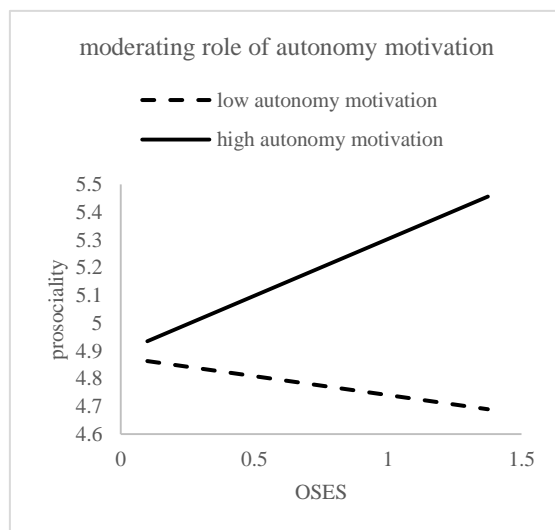
Figure 20 The relationship between OSES and prosociality in Study 4a

Study 4b. Similar simple slope analysis was conducted for the data in Study 4b, since the interaction of OSES and relatedness motivation was significant ($p < .001$, R^2

= .12). For people with higher relatedness motivation, OSES did not predict prosociality

significantly ($p = .142$); for those with lower relatedness motivation, higher OSES

could predict higher prosociality ($b = .18$, $p < .001$) (see Figure 21).

Figure 21 The relationship between OSES and prosociality in Study 4b

To sum up, the findings in Study 4a and 4b were more consistent with Studies 1a
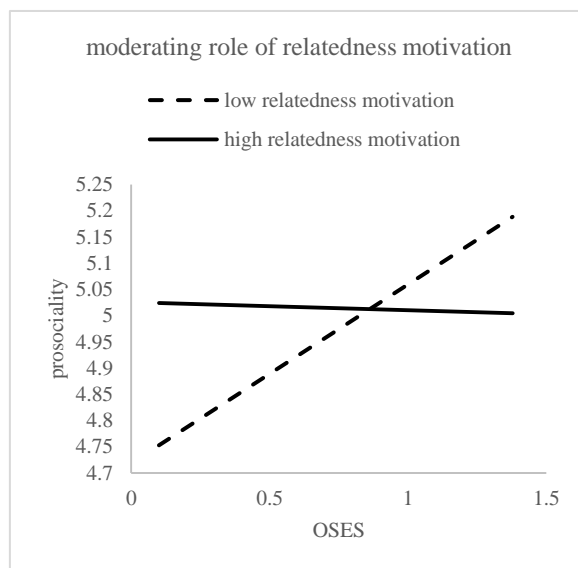
and 1b, respectively. Specifically, for people with high autonomy motivation, SSES was

positively correlated with prosociality, and for people with low relatedness motivation,

OSES could predict prosociality positively.

3 General Discussion

There have been contradictory findings on whether higher SES facilitates or hinders prosociality, and one possible reason is that the motivation to help others may vary across different levels of SES. The present research aimed at exploring the motivations for prosocial behavior of higher-SES and lower-SES people from the perspective of Two-process model. Four studies based on seven samples were conducted and indicated that higher-SES people would help others out of autonomy motivation, and prosociality could lead to autonomy need satisfaction, whereas lower-SES individuals tended to help others out of relatedness motivation, and then had their relatedness need satisfied, i.e. the rich do good for autonomy and the poor for relatedness.

Specifically, the first three studies recruited student samples and suggested that higher-subjective-SES (vs. objective SES) participants would exibit more prosociality because of high autonomy motivation, and experience more autonomy satisfaction. For people with lower objective SES instead of subjective SES, relatedness was the motivating factor to help others and the prosocial behavior satisfied the need for relatedness. Though the results of Study 4, in which community samples were collected, revealed a different pattern that the objective SES was indeed the moderator in the prediction of both the autonomy and relatedness, the directions of the moderating effect supported the my original hypotheses. In general, these findings supported my proposition that the people with high SES do good for autonomy and those with low SES do good for relatedness.

3.1 The differentiation of subjective and objective SES and their linkage with autonomy and relatedness

In recent years, subjective SES has been used as a proxy of SES for at least two reasons. Firstly, subjective SES is people's subjective cognition about the relative rank compared to other people in the aspects of power, wealth, education and so on (Adler et al., 2000), which means that it can be manipulated to some degree when intentionally setting the reference group. Actually, one of the most frequently used manipulation methods is to ask participants to compare themselves to an imaginary group at the bottom or the top of the society shown by the MacArthor Ladder (e.g. Piff et al., 2010). The availability for being manipulated provides a chance for researchers to explore the potential causal relationship by positing SES as the independent variable. In comparison, the objective SES, which is generally represented by income, education and career (Adler et al., 2000) based on the factual characteristics in people's life, is difficult to prime. The second reason is that subjective SES has been found to be a better predictor of many psychological outcomes, such as well-being (Tan et al., 2020), mental health (Adler et al., 2000) and so on. It seems reasonable that the subjective view matters more than objective facts on influencing subjective feelings and volitional behavior.

However, the results in the current research implied that there be differences in essence between objective SES and subjective SES, especially on the issues of the relationship among motivation, SES and prosociality. Objective SES was a key variable in five of the seven sub-studies (Studies 1b, 2b, 3, 4a and 4b). Only objective SES was

able to explain the relationship among relatedness motivation, prosociality and relatedness need satisfaction and even that among autonomy motivation, prosociality and autonomy need satisfaction (for the community sample). In addition, the differences of the results between subjective and objective SES might indicate that the subjective SES and objective SES involve different psychological mechanisms, with empirical evidence showing that they were just slightly or moderately correlated (the correlations mainly ranged from .10 to .30 in the current research).

Existing literature suggests that people with high subjective SES, who identify themselves with those of the higher status, have a greater sense of control (Kraus et al., 2009) (even after controlling for objective SES) and may focus more on themselves and engage in behavior out of autonomous will. These characteristics might not be always found in people with high objective SES, because they may not necessarily consider that they occupy high status given the weak to moderate correlation between subjective and objective SES (Li, Yang, Wu, & Kou, 2020). Therefore, it could be reasonable for only higher-subjective-SES (vs. higher-objective-SES) people to help others for the purposes of realizing their own will, i.e. out of autonomy motivation. Since they help others for self-realization, their helping behavior may satisfy their autonomy satisfaction more.

Nevertheless, objective SES refers to the actual resources that people can gain from the society and mobilize as well as their ability to deal with threat from the environment. Therefore, people with lower objective (vs. subjective) SES who are ill-adapted to the society would be more likely to help others in order to build connection

with and gain acknowledge from other people, i.e. out of relatedness motivation, and their prosocial behavior may satisfy their relatedness need more. This may be the reason why the differentiation of subjective and objective SES and their linkage to prosociality could be observed in student samples.

Empirical evidence may provide some support for the reasoning above, though indirectly. Park and colleagues (2013) found the interaction of culture and type of SES on anger. For American participants, SSES had more significant effect on anger than OSES, while for Japanese participants, OSES indicated higher correlation with anger. This was because Americans are more individualistic and emphasize personal feeling, and individual self was more connected to SSES, while Japanese are more collectivistic and emphasize relationship between individual and group, and then OSES, which could reflect group factors, had greater prediction (Park et al., 2013). Considering the similarity between individualism and autonomy, and that between collectivism and relatedness, this finding may imply the matching pattern between SSES and autonomy, and that between OSES and relatedness.

However, as for community samples, the results showed a different pattern that objective SES instead of subjective SES significantly moderate the relationship between autonomy and prosociality. On one hand, as interpreted before, the basis of subjective SES might be different between student samples and community samples. The students haven't started their career and earned money by themselves. Factors such as academic performance, club activities may have important influence on their consideration of subjective SES, and even more important than family income and

consumption. After they leave the ivory tower and begin their career in the society, their subjective SES would be reshaped by whether their objective financial condition could satisfy their life demands and the constant comparison with colleagues, neighbors or relatives. The essential difference in subjective SES between student and community samples might be a possible reason for different results, which requires future investigation.

One the other hand, life on campus might be simpler than that in society, so that students often could be able to do what they want, i.e. realize their autonomous will (when they think they have relative high level of SES). However, after working in the society, the chance to be autonomous would be less because there would be various limitations due to social role, familial responsibilities and so on, and maybe only those who really own enough material resources are able to achieve their goals. This might be another possible interpretation for objective SES to be more important among community sanples, which also needs future examination.

3.2 Explaining the relationship between SES and prosociality: from the perspective of motivations

As illustrated in the Introduction, the objective of this research was to explore the reason why SES was found to be positively correlated with prosociality in some studies but negatively in other studies. That is, some findings showed that higher-SES people were more prosocial than those with lower SES (with great power comes great responsibility) and others found the reversed tendency (The rich are not benevolent). I hypothesized the reason of this contradiction should be that the motivation (autonomy

vs relatedness) for and the goal (satisfying autonomy vs relatedness need) of prosocial behavior for higher-SES and lower-SES people were different, and then considered SES as the moderator on the relationship among motivation, prosociality and need satisfaction. However, the other perspective, from which certain factors moderated the relationship between SES and prosociality, seemed more intuitively to reconcile the opposite findings. Since the moderating effect is bidirectional, autonomy and relatedness motivation could be potential moderators of the relationship between SES and prosociality in Studies 1, 2, and 4. Therefore, I conducted additional analyses with SES as the predictor, motivations as moderators and prosociality as an outcome variable. Specifically, SSES and OSES were analyzed as separate predictors given that they showed different patterns.

The results of additional analyses showed that SSES could positively predict prosociality when autonomy motivation was high (Studies 1a and 2a). OSES was also positively correlated with prosociality when relatedness motivation was low (Studies 1b, 2b and 4b) and when autonomy motivation was high (Study 4a), and this prediction would be negative when relatedness motivation was activated (Study 2b). Overall, the positive relationship between SES and prosociality was more likely to occur in all studies and even the main effects of SES on prosociality were positive and significant or marginally significant in some of the studies (Studies 1 and 4), which meant that "With great power comes great responsibility" was easier to observe. However, in spite of the relatively stable positive relationship between SES and prosociality, the moderators identified are also noteworthy. In certain condition such as low autonomy

motivation and high relatedness motivation, the relationship between SSES, OSES and prosociality was not significant, and even significantly negative for OSES when relatedness motivation was activated (Study 2b), which indicated that "The rich are not benevolent".

The moderators examined in the current research could partially support other moderators found in existing literature. For example, as mentioned in the Introduction, lower-class individuals tend to engage in prosocial behavior towards ingroup members or those who were most likely to reciprocate (De Dreu et al., 2014). This may be because people showed stronger relatedness motivation towards ingroup members or those who were more likely to pay back, and helping them may improve the probability of the beneficiaries to help them to deal with the threat from the environment and society.

Kraus and Calleghan (2016) found that higher-SES people were more prosocial in public context instead of private context than lower-SES ones. Though the researchers interpreted this result by using "reputation concern" as the motivation of higher-SES people to engage in prosocial behavior, they also found that "pride" motivated higher-SES people's prosociality and this effect could partially account for the effect of "reputation concern". Pride was a kind of self-evaluative emotion which resulted from expressing one's own volition and signaling their value (Kraus & Calleghan, 2016), and is conceptually connected to autonomy motivation. That is, this result was consistent with my finding that higher-SES people engaged in more prosociality when autonomy motivation was high.

In another study (Whillans et al., 2017), wealthier individuals were more willing to help when personal goals were activated and agency was emphasized, while less wealthy ones were more willing to help when shared goals were advocated and communion was emphasized. Similar to the current research, this study also hypothesized the "motivational fit", i.e. the match, that higher-SES people who developed more agentic self-concept would be more generous when helping was for personal goal, and lower-SES people who developed more communal self-concept, in which self was defined as connection with others, should be more inclined to help when communal goal was salient. Conceptually, achieving personal goal implies autonomy motivation, and seeking for communal goal implies relatedness motivation. To sum up, autonomy and relatedness motivation were closely connected with most existing moderators on the relationship between SES and prosociality and theoretically important to interpret this relationship.

3.3 Different concepts of motivations

In the current research, I adopted three kinds of concepts on motivation: desire, fear, and valuation (in manipulation check items in Studies 2a and 2b). Based on SDT theorists' conceptualization (Chen et al., 2014), valuation measures how people think the need satisfaction, i.e. autonomy satisfaction, is important in life; desire measures the degree to which they want the experience of need satisfaction in life; fear measures how they fear the experience of need frustration in life. Though these three concepts could indicate motivation or need strength, there are still different from each other. According to existing literature (Chen et al., 2014), higher valuation might be

associated with more experience of need satisfaction, while higher desire and fear could be more likely found in people who experience more need frustration. As for the difference between desire and fear, since the desire component of motivation is oriented to seeking need satisfaction, and the fear component of motivation focuses on how to escape from need frustration, the difference is supposed to be the tendency of approach and avoidance (Elliot & Thrash, 2002).

In the current study, I adopted the desire component of autonomy motivation and the fear component of relatedness motivation and found consistent results across Studies 1, 2 and 4. Therefore, there may be alternative interpretations for my results that, it is not "The rich do good for autonomy, and the poor for relatedness", but "The rich do good for approach, and the poor for avoidance." This explanation seems to be reasonable, because researchers found the lower SES could be stably matched with higher avoidance motivation (Gilbert, Elliot, & Le, 2022). However, I measured and examined all components, including fear for autonomy frustration and desire for relatedness. The results of these two components were not significant. However, the pattern of results on fear for autonomy frustration was similar to that of desire for autonomy instead of fear for relatedness frustration. The pattern of desire for relatedness was similar to that of fear for relatedness frustration instead of desire for autonomy. Thus, it was the difference between autonomy and relatedness that matters rather than that between approach and avoidance. Moreover, when I manipulated autonomy and relatedness motivation in Study 2, the participants did not only write about the advantages of autonomy and disadvantages of losing relatedness, but also

disadvantages of losing autonomy and advantages of relatedness, and the effects of motivation were still consistent with my hypothesis. Therefore, the effects should have been driven by autonomy and relatedness instead of desire and fear, or approach and avoidance. More research could be conducted in the future to differentiate the effects of these concepts.

3.4 The relationship between SES and motivation

In the current research, I explored the match of autonomy with high SES and that of relatedness with low SES on their prosociality. However, people with higher SES are not necessarily higher on autonomy motivation and lower-SES ones may not be higher on relatedness motivation. Self Determination Theory (Ryan & Deci, 2000) suggested that all human beings have the three basic needs with equal strength. Motive Disposition Theory (McClelland, 2014) and two-process model (Sheldon, 2011) suggested the strength of motivation or need (Van Assche et al., 2018) may be different, but the reasons may vary. Sheldon (2011) suggested that the main factor affecting different levels of motivation is the experience of need satisfaction and frustration during the life events. For example, like the mechanism of positive reinforcement, people may acquire high valuation on the motivation (or need strength) if they experience enough satisfaction of the corresponding need in daily life. In comparison to life experience, SES may be one factor that affects people's motivation, but not the decisive one.

The empirical results also support this statement. The correlations between SES and autonomy, relatedness motivation in Studies 1 and 4 range from -.20 to .32, which

indicated only low to moderate associations. Therefore, it is not because higher-SES people have higher autonomy motivation that make them more prosocial, or because lower-SES ones have higher relatedness motivation that make them help more. Instead, higher-SES people are more prosocial when autonomy motivation is high, and lower-SES people are more prosocial when relatedness motivation is high, i.e. autonomy motivation is the reason why the rich engage in prosocial behavior and relatedness motivation is the reason why the poor behave prosocially. The matching effect on behavior is more suitable than direct correlational or causal relation for explaining the relationship between SES and motivation.

3.5 Could different types of prosocial behavior lead to different patterns in the current research?

When we help others, it usually costs us money or time, which are the main resources we own in life. However, money and time have different psychological properties (Mogilner, 2010). Therefore, some researchers may categorize prosocial behavior into money-related and time-related and make comparison between them (e.g. Reed et al., 2016).

For example, though spending time may enhance happiness (Dunn, Aknin, & Norton, 2008), thinking about money may cause more self-focused orientation and further psychological distance with others (Vohs, Mead, & Goode, 2008). However, spending time to help others may bring about more interpersonal connections and other-focused orientation (Liu & Aaker, 2008). In addition, everyone's time is limited, equal across all human beings, less fungible and unrecoverable (Zauberman & Lynch, 2005).

Therefore, time-related prosocial behavior seems to be associated with higher psychological costs, more opportunity costs and require more consideration on whom and whether to help (Blieszner, 1993). Based on construal level theory (Trope & Liberman, 2003), money which can be seen and touched, may be construed as more concrete than time, and more related to concrete concepts and focus on individual self (Vohs et al., 2008), while time, which is more intangible, may be more connected to abstract constructs and focus on others (Mogilner, 2010).

Based on the distinction between money and time, it seems that money may be conceptually related to autonomy, because it seems to orient more to self, and time may be more likely to have similar effect with relatedness since its strong connection with other-focus orientation. It is likely that people with higher autonomy motivation may prefer helping others with money, and those with higher relatedness motivation may prefer spending time on helping others. It is also plausible if prosocial behavior associated with money may result in more autonomy satisfaction and prosocial behavior associated with time may lead to more relatedness satisfaction. That is, the category of need may interact with type of helping behavior on prosociality and need satisfaction. Moreover, if SES was also included, the model might be more complicated, and the results might be harder to predict, but more interesting.

The hypotheses above seem to be reasonable, but are not fully supported in my studies. Specifically, in my Study 3, I asked participants to recall prosocial behavior with money and time in different experimental conditions, but the results showed no significant difference between money and time. These hypotheses require more

systematical examination in the future, including adopting distinct prosocial tasks.

3.6 Could the two types of motivation be the reasons for higher-SES and lower-SES people to engage in other behavior, such as other kinds of prosocial behavior, or even antisocial behavior?

People with higher SES have more resources and more freedom of choice; therefore, they tend to act out of primary control based on their own will (corresponding to autonomy motivation), and those with lower SES behave by trying to fit in the environment and being connected with others (corresponding to relatedness motivation) to gain protection from the threat of life, and prosocial behavior is assumed to be one possibility of the behavior they engage in based on the current research. However, what if the behavior is opposite to prosocial, such as antisocial behavior? Could the two types of motivation be the reasons for higher-SES and lower-SES people to engage in other behavior and even antisocial behavior? Probably, the answer may be "no".

As a representative theory in positive psychology, Self-determination Theory aims to explore a way for human being to flourish (Ryan et al., 2019). When basic needs are satisfied, people may experience psychological well-being and positive strength for life. As corresponding motivation, autonomy and relatedness motivation are more likely to lead to behavior that may bring well-being, such as prosocial behavior (Ryan et al., 2019), instead of other behavior which leads to ill-being, such as some kinds of antisocial behavior.

I do not mean that no kind of antisocial behavior can be led by autonomy and relatedness motivation. Sometimes people may engage in antisocial behavior to help

others, such as the classical moral dilemmas: the trolley dilemma (Foot, 2002), while actually these cases still have the prosocial side which may bring people satisfaction of certain needs. However, when someone did something which was totally antisocial, I might tend to suggest the motivation be out of other motivations such as psychological reactance (Rain, 2013) or delusion of reference instead of autonomy and relatedness. Nevertheless, this assumption requires future exploration.

3.7 Limitation

The findings in the current research provided a new perspective to integrate the contradictory findings on the relationship between SES and prosociality by showing that with the SES changed, people's main motivation for prosocial behavior may also change, which was proposed (Piff & Robinson, 2017), but not examined yet. Meanwhile, the boundary conditions conceptualized as autonomy and relatedness motivation in the current study may help interpret most other moderators found in existing literature and had important theoretical contribution to the issue whether wealthier or less wealthy individuals are more prosocial.

However, several limitations existed in the current research. Firstly, I adopted many different indicators of SES in the studies. However, the internal consistency of SSES and OSES indicators was not very high. The main reason was that the number of indicators were small (three for SSES and two for OSES), and this may affect the reliability. Thus, relevant results should be interpreted with caution.

Secondly, subjective SES can be manipulated, while I failed to complete this in the current research. Actually, I had conducted a study in which prosociality and

subjective SES were both manipulated and objective SES and need satisfaction were measured using a questionnaire. However, the results showed that the manipulation of subjective SES was not effective and only results related to objective SES were replicated. If subjective SES could be successfully manipulated, I may have an opportunity to examine stronger causal relationship among motivation, prosociality, need satisfaction and SES, which needs future exploration.

Thirdly, autonomy and relatedness motivation were both measured by self-report questionnaires in Studies 1 and 4, and manipulated by explicit writing tasks in Study 2. However, MDT theorists suggest that the real motivation lie under human beings' consciousness, i.e. implicit motives were more representative than explicit ones to influence people's behavior (Schüler et al., 2019). Future work could focus on how implicit measurement or implicit priming technique can be adopted in the examination of the current issue.

Fourthly, I did not include manipulation check items in Study 3 to examine if the events recalled by the participants under experimental conditions were really prosocial behavior. This was partially because the instruction was clear enough to guide participants to write down what I asked them to write. I checked their texts and found that all responses were pertinent and valid. Another reason was that it was hard to administer good manipulation check items for this recall task. I asked the participants in the control condition to write down what happened last day and then how they felt need satisfaction in the recalled event as a measure of dependent variable. However, if I inserted items between the recall task and the measurement of DV by asking them to

rate such as how the event they recalled was helpful for other people, this might have unpredictable influence on their conceptualization of their behavior on the last day and then the measurement of DV. A better paradigm with manipulation check without possible jamming effect is needed to examine the causal relationship between prosociality and need satisfaction in the future.

Fifthly, female participants were always the majority in all of the studies, accounting for more than 70% of all participants. Though the gender invariance of the tested models was not significant (ps > 0.152), indicating that the male and female participants showed consistent pattern in the hypothesized psychological mechanism, the gender imbalance limited the effectiveness of this inference. The gender effect needs more examination in the future.

Finally, more work should continue to be done on the community samples, such as replicating Studies 2 and 3 in community samples. Better explanation on the difference between student samples and community samples found in the current research is needed in future work.

4 Conclusions

Existing literature has documented contradictory findings on the relationship between SES and prosociality. Some researchers found that high-SES people were more prosocial, and others found that low-SES people were more willing to help. Current research hypothesized that the reason for the inconsistent results should be that the motivations for high-SES ones and low-SES individuals to do good are different. Four studies were conducted to examine the hypotheses and suggested that: (1) Autonomy motivation was the main factor that predicted prosociality for people with higher SES, especially higher subjective SES in student samples and higher objective SES in community samples; (2) Prosociality satisfied more autonomy need of people with higher SES, including higher subjective SES for student samples and objective SES for community samples; (3) Relatedness motivation was the main force that predicted prosociality of people with lower SES, especially lower objective SES; (4) Prosociality increased relatedness need satisfaction of lower-SES people, especially those with lower objective-SES. In conclusion, the rich do good for autonomy, whereas the poor do good for relatedness.

Appendices

Appendix 1: Main measures in Studies 1a and 4a

Autonomy Motivation

请根据您自身的真实情况，评估你对下列渴求的认同程度。

	完全不同意	不同意	比较不同意	既不同意也不反对	比较同意	同意	完全同意
你渴望在你从事的事情中感到一种能够选择的感觉和自由的感觉。							
你渴望感觉到自己的决定能够反映自己真正想要的东西。							
你渴望感觉到自己的选择能够表达真正的自我。							
你渴望感觉到自己能一直做自己真正感兴趣的事情。							

Prosociality

请根据您的真实情况对下列描述进行评分，最左端代表"完全不同意"，最右端代表"完全同意"。

	完全不同意	不同意	比较不同意	既不同意也不反对	比较同意	同意	完全同意
我很高兴在朋友/同事的活动中帮助他们。							
我与我的朋友分享我拥有的东西。							
我尽力帮助他人。							
我能够参加志愿活动去帮助有需要的人。							
我重视那些有需要的人。							
我能立刻帮助那些有需要的人。							
我会做我能做的所有事去帮助别人避免陷入麻烦。							
我能强烈地感觉到别人的感觉。							
我愿意让我的知识和能力为他人所用。							
我尽力安慰那些悲伤的人。							
我很轻易地出借钱财或其他东西。							
我很容易对那些不安的人设身处地。							

我尽力接近和照顾那些有需要的人。							
我很容易与朋友分享我遇到的任何好机会。							
我花时间与那些感觉孤独的朋友相处。							
即使没有直接传达给我，我也能直接感受到朋友的不安。							

Autonomy Need Satisfaction and Frustration

请根据您生活中的切身感受对下面的描述进行评分，最左端代表"完全不同意"，最右端代表"完全同意"。

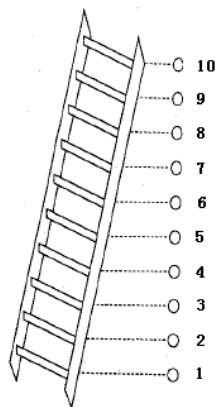|	完全不同意	不同意	比较不同意	既不同意也不反对	比较同意	同意	完全同意
在我从事的事情上，我有选择感和自由感。							
我感觉我的决定反映了我真正想要的东西。							
我感觉我所做的选择表达了我真实的自己。							
我觉得我一直在做自己真正感兴趣的事情。							
我觉得我所做的事情大多都是出于不得已才去做的。							
我觉得我被迫做了很多我自己不会选择去做的事情。							
很多事情我觉得做起来很有压力。							
我觉得我的日常活动像一串我不得不去完成的任务。							

Socioeconomic Status (SES)

1. Subjective SES (used in Studies 1a & 4a)

请想像一下，假如右面的梯子代表了中国社会的结构。

在梯子的最顶层(10)，是拥有最多的权力和财富，受过良好教育，工作待遇高的人。

在梯子的最底端(1)，是拥有最少权力和财富，受教育程度差，工作没有保障的人。

您认为自己站在梯子的哪一级呢？ _____ （1-10）

2. SES in Childhood (used in Study 1a)

请根据您对自身的实际认知，对以下描述进行评分，最左端表示"完全不同意"，最右端表示"完全同意"。

	完全不同意	不同意	比较不同意	既不同意也不反对	比较同意	同意	完全同意
从小到大我家通常都有足够的钱来买各种东西。							
我在相对富裕的街区长大。							
（小时候）与学校的其他孩子相比，我觉得自己相对富裕。							

3. Current SES (used in Study 1a)

请根据您对自身的实际认知，对以下描述进行评分，最左端表示"完全不同意"，最右端表示"完全同意"。

	完全不同意	不同意	比较不同意	既不同意也不反对	比较同意	同意	完全同意
现在我有足够的钱去买我想要的东西。							
当前我不需要太过担心支付自己账单的问题。							
我认为我未来不需要在钱上担心太多。							

4. Family Income (used in Studies 1a & 4a)

您的家庭人均月收入为

1. 2000 元以下　2. 2000-4000 元　3. 4000-6000 元　4. 6000-8000 元

5. 8000-10000 元　6. 10000-15000 元　7. 15000-20000 元　8. 20000-50000 元

9. 50000-100000 元　10. 10 万元以上

5. Personal Consumption (used in Studies 1a & 4a)

您个人的月平均消费（包括衣食住行）为

1. 1000 元以下　2. 1000-2000 元　3. 2000-3000 元　4. 3000-4000 元

5. 4000-5000 元　6. 5000-7000 元　7. 7000-9000 元　8. 9000-12000 元

9. 12000-20000 元　10. 2 万元以上

6. Perceived Social Status (used in Study 4a)

您当前在您所处的角色群体中有着怎样的身份地位？

1. 毫无地位　2. 有一点点地位　3. 有些地位　4. 比较有地位　5. 地位很高

7. Education Level (used in Study 4a)

您当前的最高学历是（包括在读）

1. 小学　2. 初中　3. 高中　4. 本科　5. 硕士　6. 博士　7. 博士后　8. 其他

Appendix 2: Main measures in Studies 1b and 4b

Relatedness Motivation

请评估以下陈述的体验引发你的恐惧感或害怕程度。

	完全不害怕	不害怕	比较不害怕	中等	比较害怕	害怕	非常害怕
被想融入的群体所排挤							
重要的人对你很冷漠，让你觉得有距离感							
和你相处的人讨厌你							
自己与别人的交往是很表面的							

Relatedness Need Satisfaction and Frustration

请根据您生活中的切身感受对下面的描述进行评分，最左端代表"完全不同意"，最右端代表"完全同意"。

	完全不同意	不同意	比较不同意	既不同意也不反对	比较同意	同意	完全同意
我觉得我在乎的人也在乎着我。							
对在乎我和我在乎的人，我觉得我和他们的心是连着的。							
那些对我来说重要的人，我觉得和他们有一种亲近感。							
我和经常相处的人在一起时，能感受到温暖的感觉。							
我觉得被我想要融入的群体排挤。							
对我来说重要的人，我却感到他们对我冷漠，让我有距离感。							
我感觉和我经常相处在一起的人讨厌我。							
我感觉自己和别人的交往都只是很表面的。							

Other measures in Studies 1b and 4b were the same with Studies 1a and 4a, respectively.

Appendix 3: Main experiment materials in Study 2a

Autonomy Manipulation

所谓<u>自主感</u>，意指"自己是自己的主人"，自己的行为和选择<u>来源于自身的意愿和意志</u>，而<u>不是被外界所限制、被他人所控制，或迫于各种各样的压力</u>。"我"是"我"行为的原因，"我"决定了"我"的选择。

<u>拥有</u>自主感对你有哪些<u>好处</u>？<u>缺乏</u>自主感对你有哪些<u>坏处</u>？请结合<u>你自己</u>的实际生活，列举出至少 3 个方面，并详细解释，写在下面的文本框中，字数<u>不少于 100 字</u>。（少于 100 字（200 字符）可能会造成无法跳转到下一页）

Control Condition

请仔细回忆您昨天一天都经历了哪些事情，将这些事情按照时间顺序回忆出来，写在下面的文本框中。字数不少于 100 字。（少于 100 字（200 字符）可能无法跳转到下一页）

Manipulation Check

根据你的真实想法，下面的描述对你的生活有多么重要？	一点也不重要	略为重要	有些重要	一般重要	很重要	非常重要	极为重要
自由地按照自己的方式做事，对你来说很重要。							
请根据您自身的真实情况，评估你对下列渴求的认同程度。	完全不同意	不同意	比较不同意	既不同意也不反对	比较同意	同意	完全同意
你渴望一种感觉，即自己的决定能够反映自己真正想要的东西。							
请评估以下陈述的体验引发你的恐惧感或害怕程度。	完全不害怕	不害怕	比较不害怕	中等	比较害怕	害怕	非常害怕
被迫做一些自己不会选择做的事情。							
根据你的真实想法，下面的描述对你的生活有多么重要？	一点也不重要	略为重要	有些重要	一般重要	很重要	非常重要	极为重要
与他人之间的联系感，对你来说很重要。							
请根据您自身的真实情况，评估你对下列渴求的认同程度。	完全不同意	不同意	比较不同意	既不同意也不反对	比较同意	同意	完全同意
你渴望与他人之间的亲密感和连接感。							
请评估以下陈述的体验引发你的恐惧感或害怕程度。	完全不害怕	不害怕	比较不害怕	中等	比较害怕	害怕	非常害怕
被想融入的群体所排挤							

Donation

筑梦孩子们的清洁包

本次实验项目还有一个目的，是为西南"甘阿凉"三个少数民族自治州的小学生筹集清洁包，以培养其良好的生活卫生习惯，助力其健康成长。请问您是否愿意为其捐款？请在下面填写您愿意捐款的数额（0-20 元），我们将从您的被试酬劳中直接扣除，谢谢！

SES measures were included in Appendix 1.

Appendix 4: Main experiment materials in Study 2b

Relatedness Manipulation:

所谓<u>关联感</u>，意指"感受到与他人之间的关联"，与他人的连接，卷入与归属感。<u>他人对我的需求有回应，我也对他人的需求有回应，他人关心着我，我也有机会去关心他人，而不是被疏远、被排斥的状态。</u>

<u>拥有</u>关联感对你有哪些<u>好处</u>？<u>缺乏</u>关联感对你有哪些<u>坏处</u>？请结合<u>你自己</u>的实际生活，列举出至少 3 个方面，并详细解释，写在下面的文本框中，字数<u>**不少于 100 字**</u>。（少于 100 字（200 字符）可能会造成无法跳转到下一页）

Control Condition

请仔细回忆您昨天一天都经历了哪些事情，将这些事情按照时间顺序回忆出来，写在下面的文本框中。字数不少于 100 字。（少于 100 字（200 字符）可能无法跳转到下一页）

Manipulation Check

根据你的真实想法，下面的描述对你的生活有多么重要？	一点也不重要	略为重要	有些重要	一般重要	很重要	非常重要	极为重要
与他人之间的联系感，对你来说很重要。							
请根据您自身的真实情况，评估你对下列渴求的认同程度。	完全不同意	不同意	比较不同意	既不同意也不反对	比较同意	同意	完全同意
你渴望与他人之间的亲密感和连接感。							
请评估以下陈述的体验引发你的恐惧感或害怕程度。	完全不害怕	不害怕	比较不害怕	中等	比较害怕	害怕	非常害怕
被想融入的群体所排挤							
根据你的真实想法，下面的描述对你的生活有多么重要？	一点也不重要	略为重要	有些重要	一般重要	很重要	非常重要	极为重要
自由地按照自己的方式做事，对你来说很重要。							
请根据您自身的真实情况，评估你对下列渴求的认同程度。	完全不同意	不同意	比较不同意	既不同意也不反对	比较同意	同意	完全同意
你渴望一种感觉，即自己的决定能够反映自己真正想要的东西。							
请评估以下陈述的体验引发你的恐惧感或害怕程度。	完全不害怕	不害怕	比较不害怕	中等	比较害怕	害怕	非常害怕
被迫做一些自己不会选择做的事情。							

Donation

筑梦孩子们的清洁包

本次实验项目还有一个目的，是为西南"甘阿凉"三个少数民族自治州的小学生筹集清洁包，以培养其良好的生活卫生习惯，助力其健康成长。请问您是否愿意为其捐款？请在下面填写您愿意捐款的数额（0-20 元），我们将从您的被试酬劳中直接扣除，谢谢！

SES measures were included in Appendix 1.

Appendix 5: Main experiment materials in Study 3

Manipulation of Prosocial Behavior

我们每天都有着各种各样丰富的生活经历。请仔细回忆您生活中自己曾经真实做过的、帮助他人的事情，可以是花费金钱，比如捐款、路边施舍等；也可以是花费时间，如参加志愿活动、帮助他人解决难题等。然后请将这件事情发生的细节尽可能回忆出来，写在下面的横线上。字数尽量不少于 100 字。

Control Condition

我们每天都有着各种各样丰富的生活经历。请仔细回忆您昨天一天都经历了哪些事情，将这些事情按照时间顺序回忆出来，写在下面的文本框中。字数不少于 100 字。（少于 100 字（200 字符）可能无法跳转到下一页）

Need Satisfaction and Frustration

在您刚才回忆的内容中，您有怎样的感受？请您根据您回忆的内容，对下列可能的感受进行评定，最左端代表感受"极其微弱"，最右端代表感受"极其强烈"

	极其微弱	非常微弱	比较微弱	中等	比较强烈	非常强烈	极其强烈
我回忆的事情，让我觉得我想要自由选择的意愿得到了满足。							
在我回忆的事情中，我觉得我的行动反映了我真正想要的。							
在我回忆的事情中，我觉得我的选择表达了我真实的自己。							
在我回忆的事情中，我觉得我在做自己真正觉得有意义的事情。							
在我回忆的事情中，我觉得大多都是出于不得已才去做的。							
在我回忆的事情中，我觉得我被迫做了很多我自己不会选择去做的事情。							
在我回忆的事情中，我觉得我做了很多迫于压力才会去做的事情。							
在我回忆的事情中，我觉得我在做一些我不得不去完成的任务。							
我回忆的事情，让我感到我和他人能够互相关心。							
我回忆的事情，让我觉得我与他人的心是相连的。							
我回忆的事情，让我感到与他人有一种亲							

近感。							
在我回忆的事情中，我能感觉到和他人在一起的温暖。							
在我回忆的事情中，我感到被想要融入的群体所排挤。							
在我回忆的事情中，我感到他人对我很冷漠，让我有距离感。							
在我回忆的事情中，我觉得他人讨厌我。							
我回忆的事情，我觉得我和别人的关系都只是很表面的。							

SES measures were included in Appendix 1.

References

Adler, N. E., Epel, E. S., Castellazzo, G., & Ickovics, J. R. (2000). Relationship of subjective and objective social status with psychological and physiological functioning: Preliminary data in healthy white women. *Health Psychology*, *19*(6), 586-592. https://doi.org/10.1037/0278-6133.19.6.586

Barclay, P., & Van Vugt, M. (2015). The evolutionary psychology of human prosociality: Adaptations, byproducts, and mistakes. In W. G. Graziano & D. A. Schroeder (Eds.), *The Oxford handbook of prosocial behavior* (pp. 37-60). Oxford University Press. https://doi.org/10.1093/oxfordhb/9780195399813.013.029

Blieszner, R. (1993). Resource exchange in the social networks of elderly women. In U. G. Foa, J. Converse, Jr., K. Y. Törnblom, & E. B. Foa (Eds.), *Resource theory: Explorations and applications* (pp. 67–79). Academic Press.

Buchel, O., Luijkx, R., & Achterberg, P. (2021). Objective and Subjective Socioeconomic Status as Sources of Status-Legitimacy Effect and Legitimation of Income Inequality. *Political Psychology*, *42*(3), 463-481. https://doi.org/10.1111/pops.12707

Caprara, G. V., & Steca, P. (2005). Self-efficacy beliefs as determinants of prosocial behavior conducive to life satisfaction across ages. *Journal of Social and Clinical Psychology, 24*(2), 191-217. https://doi.org/10.1521/jscp.24.2.191.62271

Caprara, G. V., Steca, P., Zelli, A. & Capanna, C. (2005). A New Scale for Measuring Adults' Prosocialness. *European Journal of Psychological Assessment: Official*

Organ of the European Association of Psychological Assessment, *21*(2), 77–89.

https://doi.org/10.1027/1015-5759.21.2.77

Chen, B., Vansteenkiste, M., Beyers, W., Boone, L., Deci, E. L., Van der Kaap-

Deeder, J., Duriez, B., Lens, W., Matos, L., Mouratidis, A., Ryan, R. M.,

Sheldon, K. M., Soenens, B., Van Petegem, S., & Verstuyf, J. (2014). Basic

psychological need satisfaction, need frustration, and need strength across four

cultures. *Motivation and Emotion*, *39*(2), 216-236.

https://doi.org/10.1007/s11031-014-9450-1

Chen, Y., Zhu, L., & Chen, Z. (2013). Family income affects children's altruistic

behavior in the dictator game. *PloS One*, *8*(11), Article e80419.

https://doi.org/10.1371/journal.pone.0080419

Cheng, Y., & Li, D. (2004). A review of factors affecting prosocial behavior. *Journal

of Shanghai Normal University (Philosopy Social Sciences & Elementary

Education), 33*(12), 122-125

Cortina, M. (2017). Adaptive flexibility, cooperation, and prosocial motivations: The

emotional foundations of becoming human. *Psychoanalytic Inquiry, 37*(7), 436-

454. https://doi.org/10.1080/07351690.2017.1362920

Côté, S., House, J., & Willer, R. (2015). High economic inequality leads higher-

income individuals to be less generous. *Proceedings of the National Academy of

Sciences*, *112*(52), 15838-15843. https://doi.org/10.1073/pnas.1511536112

Darley, J. M., & Latane, B. (1968). Bystander intervention in emergencies: Diffusion

of responsibility. *Journal of Personality and Social Psychology*, *8*(4p1), 377–

383. https://doi.org/10.1037/h0025589

Deci, E. L., & Ryan, R. M. (1985). The general causality orientations scale: Self-

determination in personality. *Journal of Research in Personality*, *19*(2), 109-134.

https://doi.org/10.1016/0092-6566(85)90023-6

De Dreu, C. K., Balliet, D., & Halevy, N. (2014). Parochial cooperation in humans:

Forms and functions of self-sacrifice in intergroup conflict. In A. J. Elliot (EDs.),

Advances in motivation science (Vol. 1, pp. 1-47). Elsevier.

https://doi.org/10.1016/bs.adms.2014.08.001

Dietze, P., & Knowles, E. D. (2016). Social class and the motivational relevance of

other human beings: Evidence from visual attention. *Psychological*

Science, *27*(11), 1517-1527. https://doi.org/10.1177/0956797616667721

Donnerstein, E., & Wilson, D. W. (1976). Effects of noise and perceived control on

ongoing and subsequent aggressive behavior. *Journal of Personality and Social*

Psychology, *34*(5), 774-781. https://doi.org/10.1037/0022-3514.34.5.774

Dunn, E. W., Aknin, L. B., & Norton, M. I. (2008). Spending money on others

promotes happiness. *Science, 319*(5870), 1687-1688. DOI:

10.1126/science.1150952

Eagly, A. H., & Crowley, M. (1986). Gender and Helping Behavior. *Psychological*

Bulletin, *100*(3), 283–308. https://doi.org/10.1037/0033-2909.100.3.283

Elliot, A. J., & Thrash, T. M. (2002). Approach-avoidance motivation in personality:

approach and avoidance temperaments and goals. *Journal of personality and*

social psychology, 82(5), 804-818. https://doi.org/10.1037/0022-3514.82.5.804

Foot, Philippa. (2002). The Problem of Abortion and the Doctrine of the Double

   Effect. In P. Foot (EDs.), *Virtues and vices*. Oxford University Press.

   https://doi.org/10.1093/0199252866.003.0002

Franzini, L., & Fernandez-Esquer, M. E. (2006). The association of subjective social

   status and health in low-income Mexican-origin individuals in Texas. *Social

   Science & Medicine (1982)*, *63*(3), 788-804.

   https://doi.org/10.1016/j.socscimed.2006.01.009

Gilbert, K.M., Elliot, A.J. & Le, B.M. (2022). Economic status and avoidance

   motivation: a meta-analysis. *Motive & Emotion, 46*, 293–306.

   https://doi.org/10.1007/s11031-022-09930-9

Gotowiec, S., & van Mastrigt, S. (2019). Having versus doing: The roles of moral

   identity internalization and symbolization for prosocial behaviors. *The Journal of

   Social Psychology*, *159*(1), 75–91.

   https://doi.org/10.1080/00224545.2018.1454394

Graham, J., Haidt, J., Koleva, S., Motyl, M., Iyer, R., Wojcik, S. P., & Ditto, P. H.

   (2013). Moral foundations theory: The pragmatic validity of moral pluralism.

   In *Advances in experimental social psychology* (Vol. 47, pp. 55-130). Academic

   Press.

Griskevicius, V., Delton, A.W., Robertson, T.E., & Tybur, J.M. (2011). Environmental

   contingency in life history strategies: Influences of current and childhood

   environment on reproductive timing. *Journal of Personality and Social

   Psychology*, *100*(2), 241–254. https://doi.org/10.1037/a0021082

Guisinger, S., & Blatt, S. J. (1994). Individuality and relatedness: Evolution of a

fundamental dialectic. *American Psychologist*, *49*(2), 104-111.

https://doi.org/10.1037/0003-066X.49.2.104

Hamilton, W. D. (1963). The evolution of altruistic behavior. *The American

Naturalist*, *97*(896), 354-356. https://doi.org/10.1086/497114

Howe, L. D., Hargreaves, J. R., Gabrysch, S., & Huttly, S. R. A. (2009). Is the wealth

index a proxy for consumption expenditure? A systematic review. *Journal of

Epidemiology and Community Health*, *63*(11), 871–877.

https://doi.org/10.1136/jech.2009.088021

Keltner, D., Kogan, A., Piff, P. K., & Saturn, S. R. (2014). The sociocultural

appraisals, values, and emotions (SAVE) framework of prosociality: Core

processes from gene to meme. *Annual Review of Psychology*, *65*(1), 425-460.

https://doi.org/10.1146/annurev-psych-010213-115054

Korndörfer, M., Egloff, B., & Schmukle, S. C. (2015). A large scale test of the effect

of social class on prosocial behavior. *PloS One*, *10*(7), Article e0133193.

https://doi.org/10.1371/journal.pone.0133193

Kraus, M. W., & Callaghan, B. (2016). Social class and prosocial behavior: The

moderating role of public versus private contexts. *Social Psychological and

Personality Science*, *7*(8), 769-777. https://doi.org/10.1177/1948550616659120

Kraus, M. W., & Keltner, D. (2009). Signs of socioeconomic status: A thin-slicing

approach. *Psychological Science*, *20*(1), 99-106. https://doi.org/10.1111/j.1467-

9280.2008.02251.x

Kraus, M. W., Piff, P. K., & Keltner, D. (2009). Social class, sense of control, and

social explanation. *Journal of Personality and Social Psychology*, *97*(6), 992-

1004. https://doi.org/10.1037/a0016357

Kraus, M. W., Piff, P. K., & Keltner, D. (2011). Social class as culture: The

convergence of resources and rank in the social realm. *Current Directions in

Psychological Science*, *20*(4), 246-250.

https://doi.org/10.1177/0963721411414654

Kraus, M. W., Piff, P. K., Mendoza-Denton, R., Rheinschmidt, M. L., & Keltner, D.

(2012a). Social class, solipsism, and contextualism: How the rich are different

from the poor. *Psychological review*, *119*(3), 546-572.

https://doi.org/10.1037/a0028756

Kraus, M. W., Rheinschmidt, M. L., & Piff, P. K. (2012b). The intersection of

resources and rank: Signaling social class in face-to-face encounters. In S. T.

Fiske & H. R. Markus (EDs.), *Facing social class: How societal rank influences

interaction* (pp.152-172). Russell Sage Foundation.

https://doi.org/10.7758/9781610447812.11

Lammers, J., Galinsky, A. D., Dubois, D., & Rucker, D. D. (2015). Power and

morality. *Current Opinion in Psychology*, *6*, 15-19.

https://doi.org/10.1016/j.copsyc.2015.03.018

Lee, J. (2018). Can a rude waiter make your food less tasty? Social class differences

in thinking style and carryover in consumer judgments. *Journal of Consumer

Psychology*, *28*(3), 450-465. https://doi.org/10.1002/jcpy.1020

Li, J. (2021). From Income to Wealth: Class Identification and Its Change in Urban

China—A Temporal Trend Analysis on Shanghai from 1991 to 2013. *Research*

on Sociology, 36(3), 114–136+228

Li. W., Yang, Y., Wu, J., & Kou, Y. (2020). Testing the Status-Legitimacy Hypothesis

in China: Objective and Subjective Socioeconomic Status Divergently Predict

System Justification. *Personality & Social Psychology Bulletin*, *46*(7), 1044–

1058. https://doi.org/10.1177/0146167219893997

Liu, W., & Aaker, J. (2008). The happiness of giving: The time-ask effect. *Journal of*

consumer research, 35(3), 543-557. https://doi.org/10.1086/588699

McClelland, D. C. (2014). *Human motivation*. Cambridge University Press.

McClelland, D. C., Atkinson, J. W., Clark, R. A., & Lowell, E. L. (1953). *The*

achievement motive. Appleton-Century-Crofts. https://doi.org/10.1037/11144-

000

Miller, J. G., Kahle, S., & Hastings, P. D. (2015). Roots and benefits of costly giving:

Young children's altruism is related to having less family wealth and more

autonomic flexibility. *Psychological Science*, *26*(7), 1038-1045.

https://doi.org/10.1177/0956797615578476

Mogilner, C. (2010). The pursuit of happiness: time, money, and social connection.

Psychological science: a journal of the American Psychological Society, 21(9),

1348-1354. https://doi.org/10.1177/0956797610380696

Na, J., Grossmann, I., Varnum, M. E., Kitayama, S., Gonzalez, R., & Nisbett, R. E.

(2010). Cultural differences are not always reducible to individual

differences. *Proceedings of the National Academy of Sciences*, *107*(14), 6192–6197. https://doi.org/10.1073/pnas.1001911107

Park, J., Kitayama, S., Markus, H. R., Coe, C. L., Miyamoto, Y., Karasawa, M., ... & Ryff, C. D. (2013). Social status and anger expression: the cultural moderation hypothesis. *Emotion*, *13*(6), 1122-1131. https://doi.org/10.1037/a0034273

Piff, P. K. (2014). Wealth and the inflated self: Class, entitlement, and narcissism. *Personality and Social Psychology Bulletin*, *40*(1), 34-43. https://doi.org/10.1177/0146167213501699

Piff, P. K., Kraus, M. W., Côté, S., Cheng, B. H., & Keltner, D. (2010). Having less, giving more: the influence of social class on prosocial behavior. *Journal of Personality and Social Psychology*, *99*(5), 771-784. https://doi.org/10.1037/a0020092

Piff, P. K., & Robinson, A. R. (2017). Social class and prosocial behavior: current evidence, caveats, and questions. *Current Opinion in Psychology*, *18*, 6-10. https://doi.org/10.1016/j.copsyc.2017.06.003

Piff, P. K., Stancato, D. M., Côté, S., Mendoza-Denton, R., & Keltner, D. (2012). Higher social class predicts increased unethical behavior. *Proceedings of the National Academy of Sciences*, *109*(11), 4086-4091. https://doi.org/10.1073/pnas.1118373109

Piliavin, J. A., & Siegl, E. (2007). Health benefits of volunteering in the Wisconsin longitudinal study. *Journal of Health and Social Behavior*, *48*(4), 450-464. https://doi.org/10.1177/002214650704800408

Prentice, M., Halusic, M., & Sheldon, K. M. (2014). Integrating theories of psychological needs-as-requirements and psychological needs-as-motives: A two process model. *Social and Personality Psychology Compass*, *8*(2), 73–85. https://doi.org/10.1111/spc3.12088

Rains, S. A. (2013). The Nature of Psychological Reactance Revisited: A Meta-Analytic Review. *Human Communication Research*, *39*(1), 47–73. https://doi.org/10.1111/j.1468-2958.2012.01443.x

Reed II, A., Kay, A., Finnel, S., Aquino, K., & Levy, E. (2016). I don't want the money, I just want your time: How moral identity overcomes the aversion to giving time to prosocial causes. *Journal of Personality and Social Psychology*, *110*(3), 435-457. https://doi.org/10.1037/pspp0000058

Ren, X., Wen, S., & Xue, L. (2019). Relationship between socioeconomic status and cognitive function in the elderly. *Chinese Mental Health Journal*, *33*(10), 762-768.

Rothbaum, F., Weisz, J. R., & Snyder, S. S. (1982). Changing the world and changing the self: A two-process model of perceived control. *Journal of Personality and Social Psychology*, *42*(1), 5-37. https://doi.org/10.1037/0022-3514.42.1.5

Rusdiana, A. , Sanuri, Subandi, M. , & Mulyawan, S. . (2020). The relationship between socioeconomic status and consumption pattern of fishermen household in indonesia. *Asian Journal of Agriculture and Rural Development*, *10*(1), 141-148. https://doi.org/10.18488/journal.1005/2020.10.1/1005.1.141.148

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of

intrinsic motivation, social development, and well-being. *American Psychologist*, *55*(1), 68-78. https://doi.org/10.1037/0003-066X.55.1.68

Ryan, R. M, Soenens, B., & Vansteenkiste, M. (2019). Reflections on self‐determination theory as an organizing framework for personality psychology: Interfaces, integrations, issues, and unfinished business. *Journal of Personality*, *87*(1), 115–145. https://doi.org/10.1111/jopy.12440

Schmalt, H. D., & Heckhausen, H. (2008). Power motivation. In J. Heckhausen & H. Heckhausen (Eds.), *Motivation and action* (pp. 202–226). Cambridge University Press. https://doi.org/10.1017/CBO9780511499821.009

Schüler, J., Baumann, N., Chasiotis, A., Bender, M., & Baum, I. (2019). Implicit motives and basic psychological needs. *Journal of Personality*, *87*(1), 37–55. https://doi.org/10.1111/jopy.12431

Sheldon, K. M. (2011). Integrating behavioral-motive and experiential-requirement perspectives on psychological needs: A two process model. *Psychological Review, 118*(4), 552–569. https://doi.org/10.1037/a0024758

Sheldon, K. M., & Schüler, J. (2015). Agency and its discontents: A two-process perspective on basic psychological needs and motives. In M. Mikulincer & P. R. Shaver (Eds.), *Handbook of personality and social psychology* (Vol. *4*, pp. 167–187). American Psychological Association. https://doi.org/10.1037/14343-008

Sherrod, D. R., & Downs, R. (1974). Environmental determinants of altruism: The effects of stimulus overload and perceived control on helping. *Journal of Experimental Social Psychology*, *10*(5), 468-479. https://doi.org/10.1016/0022-

1031(74)90015-8

Singh-Manoux, A., Adler, N. E., & Marmot, M. G. (2003). Subjective social status: Its determinants and its association with measures of ill-health in the Whitehall II study. *Social Science & Medicine*, *56*(6), 1321–1333. https://doi.org/10.1016/S0277-9536(02)00131-4

Stephens, N. M., Fryberg, S. A., & Markus, H. R. (2011). When choice does not equal freedom: A sociocultural analysis of agency in working-class American contexts. *Social Psychological and Personality Science*, *2*(1), 33-41. https://doi.org/10.1177/1948550610378757

Stellar, J. E., Manzo, V. M., Kraus, M. W., & Keltner, D. (2012). Class and compassion: Socioeconomic factors predict responses to suffering. *Emotion*, *12*(3), 449-459. https://doi.org/10.1037/a0026508

Stoddard, P., Handley, M. A., Bustamante, A., & Schillinger, D. (2011). The influence of indigenous status and community indigenous composition on obesity and diabetes among Mexican adults. *Social Science & Medicine*, *73*(11), 1635–1643. https://doi.org/10.1016/j.socscimed.2011.09.006

Tan, J. J. X., Kraus, M. W., Carpenter, N. C., & Adler, N. E. (2020). The association between objective and subjective socioeconomic status and subjective well-being: A meta-analytic review. *Psychological Bulletin*, *146*(11), 970-1020. https://doi.org/10.1037/bul0000258

Telle, N., & Pfister, H. (2016). Positive Empathy and Prosocial Behavior: A Neglected Link. *Emotion Review*, *8*(2), 154–163.

https://doi.org/10.1177/1754073915586817

Trommsdorff, G. (2009). Culture and development of self-regulation. *Social and Personality Psychology Compass*, *3*(5), 687-701. https://doi.org/10.1111/j.1751-9004.2009.00209.x

Trope, Y., & Liberman, N. (2003). Temporal construal. *Psychological review, 110*(3), 403-421. DOI: 10.1037/0033-295x.110.3.403

Van Assche, J., van der Kaap, D. J., Audenaert, E., De Schryver, M., Vansteenkiste, M., & van der Kaap-Deeder, J. (2018). Are the benefits of autonomy satisfaction and the costs of autonomy frustration dependent on individuals' autonomy strength? *Journal of Personality*, *86*(6), 1017–1036. https://doi-org.ezproxy.lb.polyu.edu.hk/10.1111/jopy.12372

Varnum, M. E., Blais, C., Hampton, R. S., & Brewer, G. A. (2015). Social class affects neural empathic responses. *Culture and Brain*, *3*(2), 122-130. https://doi.org/10.1007/s40167-015-0031-2

Vohs, K. D., Mead, N. L., & Goode, M. R. (2008). Merely activating the concept of money changes personal and interpersonal behavior. Current Directions in Psychological Science, 17(3), 208-212. https://doi.org/10.1111/j.1467-8721.2008.00576.x

Warburton, W. A., Williams, K. D., & Cairns, D. R. (2006). When ostracism leads to aggression: The moderating effects of control deprivation. *Journal of Experimental Social Psychology*, *42*(2), 213-220. https://doi.org/10.1016/j.jesp.2005.03.005

Wiggins, J. S., & Trapnell, P. D. (1996). A dyadic-interactional perspective on the

   five-factor model. In J. S. Wiggins (Ed.), *The five-factor model of personality:*

   Theoretical perspectives (pp. 88-162). Guilford.

Weinberger, J., Cotler, T., & Fishman, D. (2010). The duality of affiliation motivation.

   In O. C. Schultheiss & J. C. Brunstein (Eds.), *Implicit motives* (pp. 71–88).

   Oxford University Press.

   https://dx.doi.org/10.1093/acprof:oso/9780195335156.003.0003

Weinstein, N., & Ryan, R. M. (2010). When helping helps: Autonomous motivation

   for prosocial behavior and its influence on well-being for the helper and

   recipient. *Journal of personality and social psychology*, *98*(2), 222-244.

   https://doi.org/10.1037/a0016984

Whillans, A. V., Caruso, E., M., & Dunn, E. W. (2017). Both selfishness and

   selflessness start with the self: How wealth shapes responses to charitable

   appeals. *Journal of Experimental Social Psychology, 70*, 242–250.

   https://doi.org/10.1016/j.jesp.2016.11.009

Wilson, E. O. (2012). *The social conquest of earth*. Liveright Pub. Co.

Yang, S., Rao, T., YU, F., & Guo, Y. (2022). Subjective class research in psychology

   of social class: Its contributions and deficiencies. *Advances in Psychological*

   Science, 30(8), 1883-1893. doi: 10.3724/SP.J.1042.2022.01883

Zaki, J., Weber, J., Bolger, N., & Ochsner, K. (2009). The neural bases of empathic

   accuracy. *Proceedings of the National Academy of Sciences*, *106*(27), 11382-

   11387. https://doi.org/10.1073/pnas.0902666106

Zauberman, G., & Lynch Jr, J. G. (2005). Resource slack and propensity to discount delayed investments of time versus money. *Journal of Experimental Psychology: General, 134*(1), 23-37. https://doi.org/10.1037/0096-3445.134.1.23

Zhang, Y., Zhang, J., Li, H., & Jiang. Y. (2022). The relationship between socioeconomic status and depression: A systematic review and meta-analysis. *Advances in Psychological Science*, *30*(12), 2650-2665. doi: 10.3724/SP.J.1042.2022.02650

Zhu, J. Y., Hui, C. M., Chen, S. X., & Guan, Y. (2021). Media influences on group-serving attribution and prosocial intention: testing the mediation of group identification and the moderation of independent self-construal. *Current Psychology*, https://doi.org/10.1007/s12144-021-01615-9