A Preregistered Study of the Relationship Between Childhood Socioeconomic Background, Life History Strategies and Conformity

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1. Introduction

Conformity refers to peoples‘ tendencies to change their attitude or behavior to be in line with the social norms accepted by other people (Baron, Byrne, & Branscombe, 2007; Cialdini & Goldstein, 2004). Social norms can have a substantial impact on individuals' decision making (Wood & Hayes, 2012). For instance, social norms are used as tools for changing behaviors such as unhealthy eating, smoking, drug use, gambling, and as marketing tools for making products more appealing in numerous advertising campaigns (e.g. Donaldson, Graham, & Hansen, 1994; Schultz, 1999; Larimer & Neighbors, 2003; Goldstein et al., 2008). Social norms are thus fundamental in the economic and social fabric, and the question arises as to how people develop their tendency to conform to them.

Recent findings suggest that social cognition can be calibrated from early life experiences. For instance, Petersen and Aarøe (2015) show that birth weight can influence social trust of individuals when they are adults, through the adoption of large clusters of personality traits called life history strategies. An important factor in early life experiences is childhood socioeconomic background (SES). Socioeconomic status is one of the main elements shaping human behavior in early life stages and adulthood (Belsky, Schlomer, & Ellis, 2012; Simpson, Griskevicius, Kuo, Sung, & Collins, 2012). Jordan, Amir and Rand (2017) showed that differences in childhood SES are associated with different levels of tendencies in individuals to cooperate (another aspect of social cognition) with other people when they are adults. In line with the recent findings we propose that childhood SES will be associated with different levels of conformity during adulthood. As in previous studies we rely on the theory of life history strategies to propose a pre-registered study that will investigate the link between childhood SES, the adoption of different variations of life history strategies, and conformity.

1.1. Life History Theory

Life history theory constitutes an evolutionary framework of individual differences. According to the theory, organisms face some fundamental trade-offs that they have to resolve when they decide about how to allocate their limited resources to various aspects of their lives (e.g. investing in development vs. reproduction or investing in the quality vs. the quantity of offspring). The way people resolve these trade-offs has important consequences for many behaviors in diverse areas of individuals' lives such as health, diet, romantic and social relationships, and economic investments (Kaplan & Gangestad, 2005; Ellis et al., 2009; Griskevicius et al. 2011; Griskevicius et al., 2013). Life history theory highlights the ecological conditions that favor the adoption of particular personality traits (called life history strategies) that are connected with a specific way of resolving these trade-offs (see Kaplan & Gangestad, 2005).

Life history strategies vary along a fast to slow continuum (Ellis et al., 2009). Fast and slow strategies have their own distinctive features. At a physiological level, fast strategies are connected with earlier sexual maturity and development while slow strategies are linked with later sexual maturity and development. With regard to psychological reactions, fast strategies are linked with opportunism and a disregard for future consequences while slow strategies are linked with delaying of gratification and an increased interest in maximizing future pay-offs. These are only a few examples of how life history strategies can influence human behavior.

1.2. Life history strategies and SES

How people adopt the variations of life history strategies depends heavily upon the conditions individuals experience in early childhood (Belsky, Steinberg, & Draper, 1991). Childhood environments that are characterized by hard and unpredictable conditions steer individuals to the adoption of fast life history strategies, which in turn result in early sexual maturity and quicker development (Belsky, Houts, & Fearon, 2010). For example, according

to recent findings harsh environments lead individuals to start reproducing at an earlier age than mild environments (Griskevicius et al., 2011; Low et al., 2008). Adopting fast strategies which leads to earlier reproduction provides evolutionary advantages to organisms, as giving birth at an earlier age when living in harsh and unpredictable environments, where life span is shorter, is a way to ensure the reproduction and the passing of genes (Griskevicius et al., 2013; Chisholm et al., 1993). However, in environments characterized by less unpredictable and harsh conditions, the adoption of slower strategies is favored (Ellis et al., 2009). In less unpredictable and harsh environments life span is longer, and thus the chances to reproduce are higher. This allows organisms to invest more in their physical and social development, which in turn can increase the chances to find the right partner and rear fit offspring.

In modern human societies an important element that influences under what kind of conditions individuals live is SES (Griskevicius et al. 2013). A lower SES is characterized by more harsh and unpredictable conditions than higher SES. Therefore, several studies showed that growing up in low SES leads to the adoption of fast life history strategies, while growing up in high SES leads to the adoption of slow life history strategies (Griskevicius et al., 2011; Griskevicius et al. 2013).

1.3. Childhood SES, life history strategies and conformity

Conformity is a behavioral strategy designed and targeted to match or imitate the behavior, beliefs and expectations of other individuals (Cialdini & Trost, 1998). Numerous studies indicate that conformity can be highly prevalent (see Cialdini & Goldstein, 2004). In evolutionary literature, conformity is defined as a form of acquiring information by copying other individuals (Boyd & Richerson, 1985). According to that literature, people have two different ways to acquire information: acquiring information individually, in which humans acquire information through experimentation and trial-and-error, and acquiring information by copying others (Boyd & Richerson, 1985, 1988; Toelch et al., 2008). Both ways of

acquiring information are usually used adaptively by humans as they both have advantages and disadvantages. Individual acquisition of information is more costly and time consuming as it involves more effort and dedication and requires more resources, but it tends to be more accurate and reliable. On the other hand, copying others is less costly and it is faster but also less accurate and reliable (Boyd & Richerson, 1985; Laland, 2004). Individuals use both types of acquiring information interchangeably depending on which type of strategy is more suitable to the circumstances they live in.

Harsh and unpredictable environments are characterized by increased dangers and mortality. In addition, available resources are limited, therefore, in those environments organisms have limited energy to spare (Ellis et al., 2009). This makes the individual acquisition of information difficult and in many cases dangerous. When information is highly costly to be acquired individually, humans turn to copying others to acquire information (Boyd & Richerson, 1998; McElreath et al., 2005; Morgan et al., 2011). Furthermore, harsh and unpredictable environments create a focus on immediate results (Griskevicius et al., 2011; Low et al., 2008) and this in turn might favor copying others as it is faster to implement.

On the other hand, in less harsh environments, resources are more abundant, and risks and mortality are less salient. Furthermore, these environments foster the adoption of slow life history strategies which are characterized by a focus on forfeiting immediate results for future larger benefits (Griskevicius et al., 2011; Low et al., 2008). Therefore, individual acquisition of information can be an adaptively more fit strategy for those environments as it is focused on accuracy rather than speed (Boyd & Richerson, 1998; McElreath, R., et al., 2005; Morgan et al., 2011). As a result, we expect individuals raised in harsh childhood environments (where individual learning is too costly) to be sensitized to acquire information through copying others (conform to social suggestion), while we expect people raised in less harsh environments to be sensitized to be more independent acquisition of information.

Some recent findings provide preliminary support for our expectations. Observational studies show that lower SES children pay closer attention to other children compared to high SES children (Scherer, 1974; Stipek & Ryan, 1997). Moreover, Kraus and Keltner (2009) show that low SES people pay more attention to the social context and are more motivated to act in ways that increase their connection with other people than high SES individuals. Furthermore, studies show high SES people exhibit a greater sense of agency compared to low SES individuals. High SES individuals have been found to value their own preferences and choices more than low SES individuals (Snibbe & Markus, 2005; Stephens, Markus & Townsend, 2007). However, none of the previous studies has shown that different childhood SES backgrounds can be associated with different levels of conformity on a behavioral level.

In conclusion, we expect that individuals who grew up in low SES environments will have been sensitized to acquire information through copying others and conform more to social suggestions as a part of the adoption of faster life history strategies. People who grew up in high SES environments will have been less sensitized to acquire information through copying others and thus will be less susceptible to conformity as a part of the adoption of slower life history strategies. Therefore, we expect that childhood SES will be associated with conformity and that this association will be mediated by the adoption of different variations of life history strategies.

2. Methods

In the study we attempted to establish the association between childhood SES and conformity, and intended (according to our pre-registration plan) to test whether this possible relationship is mediated by the adoption of different variations of life history strategies.

2.1.Participants

Previous studies on the association of childhood SES and life history strategies have reported medium to small effects (e.g. Mell et al. 2018; Stamos, Altsitsiadis and Dewitte 2019). Therefore, to be able to detect a small effect we decided to opt for 1000 participants. A power analysis yielded that with 1000 participants to have a 99% power to detect a small effect as large as 0.2 (G*Power 3.1.9.2, Faul, Erdfelder, Lang & Buchner, 2007; two-tailed, α =.05). We used Amazon Mechanical Turk to gather the data as it is one of the most reliable platforms to gather data from such a large sample of participants (Buhrmester, Kwang, & Gosling, 2011). Furthermore, in the context of our proposed studies, Mechanical Turk enabled us to take advantage of a more diverse participant pool in terms of age, and more importantly, childhood SES, than student populations commonly used in lab studies. We closed the survey for further participants when the target sample size had been reached. Only complete questionnaires without missing data for the predictor and the outcome variable were analyzed. Participants received 0.5 US dollar in exchange for their participation.

2.2.Procedure and Measures

Participants were welcomed to the survey, signed the consent form, and were told that the purpose of the study is to investigate the link between art appreciation and personality differences. After that they received the conformity measure followed by a scale measuring the adoption of different variations of life history strategies and measures of childhood and current SES. Next, participants were asked questions about their age, gender, level of education and race. Last, they received attention check questions and a question about what they think was the purpose of the study. They were debriefed and thanked.

Conformity: As a conformity measure we used an adapted measure earlier used by Alquist, Ainsworth, and Baumeister (2013). Participants were told that they had to rate a series of paintings as a measure of their art preferences. Six abstract paintings by Paul Klee and Wassily Kandinsky were presented to the participants (see Appendix 1). Each painting

included the average ratings ostensibly given by previous raters that had taken the survey. These ratings averaged around either a seven or a three for each painting. Three paintings displayed averages around three and three around seven. The order of the paintings was randomized. Participants were asked to rate the extent to which they like each painting on a scale of 1 (not at all) to 9 (extremely). As a conformity measure we computed a value that reflected the extent to which each participant matched her/his ratings to the average ratings of the previous participants. Specifically, we assessed the extent to which participants gave high ratings to paintings that had a high average rating and low ratings to paintings that were rated poorly by previous participants. To do that, we reverse-coded the ratings each participant gave for the low-rated paintings and summed them with the ratings each participant gave for the high-rated paintings.

Life history strategies: To assess to what extent participants have adopted fast or slow life history strategies we used K-SF-42 (Figueredo et al., 2017). K-SF-42 is a shorter 42-item version of the 199-item Arizona Life History Battery (ALHB; Figueredo, 2007) which is a set of cognitive and behavioral indicators of life history strategies compiled and adapted from various sources. This construct is measured with a single, broad variable, using different items that assess various domains (e.g. mother/father relationship quality, family social contact and support, experiences in close relationships). The items were scored and aggregated (summed up and not averaged) in such a way that a higher score on the scale signifies the adoption of slower life history strategies, on the fast–slow continuum. Participants were invited to answer questions such as “How much love and affection did your biological father give you while you were growing up?”, “How much time and attention did your biological mother give you when you needed it?” or “During the last month… How much have your relatives shown interest and concern for your well-being?”.

Childhood and Current SES: To assess childhood SES we used established measures (Griskevicius, Tybur, et al., 2011; Griskevicius et al., 2013). For childhood SES we used two different measures. The first assesses childhood SES in a more subjective way. Participants were asked to indicate their agreement with the three following statements, measured on a 9-point scale (1 = strongly disagree - 9 = strongly agree): "My family usually had enough money for things when I was growing up," "I grew up in a relatively wealthy neighborhood," and "I felt relatively wealthy compared to the other kids in my school.". The second measure assessed childhood SES in a more objective way. Participants had to answer the following question: "What was your household income when you were growing up?" Eight response options will be provided: $15,000 or less, $15,001–$25,000, $25,001– $35,000, $35,001–$50,000, $50,001–$75,000, $75,001–$100,000, $100,001–$150,000, and $150,000 or more (Mittal and Griskevicius, 2016). In line with previous studies (e,g, Chua et al., 2016; Richardson, La Guardia and Klay 2018) we assessed the internal consistency of the two measures (subjective and objective SES). To assess the internal consistency we planned to conduct the analysis treating the (aggregated) subjective and the (single items) objective scale as two variables. If the correlation between the two variables was strong ($r>0.5$), we would standardize the two measures and combine them. If the internal consistency is was not sufficient, we conducted a different analysis for each measure with a reduced "α" level ($\alpha<0.025$) to correct for multiple testing. A power analysis yielded that with 1000 participants, there is 99% power to detect a small effect (G*Power 3.1.9.2, Faul, Erdfelder, Lang & Buchner, 2007; two-tailed, $\alpha = .025$). To measure current SES (as a control variable) we used a similar question: "What is your current household income?" (Mittal and Griskevicius, 2016). Similarly to the previous studies (Griskevicius, Tybur, et al., 2011; Griskevicius et al., 2013; Mittal and Griskevicius, 2016) and because the bins that are used in

the standard version gauging household income are not equal in size, we treated the variables (both current and childhood) as quasi-continuous (like the classic likert scale). `

Demographics: We included several demographic items: age, gender, level of education (What is the highest level of education you have completed? 1=Did Not Complete High School, 2=High School/GED, 3=Bachelor's Degree, 4=Master's Degree, 5=Ph.D, 6=Other, 7=Prefer not to say), and race (What is your race/ethnicity? 1=American Indian or Alaska Native, 2=Asian, 3=Black or African American, 4=White/ Caucasian, 5=Hispanic/Latino, 6=Other, 7=Prefer not to say) to be able to assess the representativeness of our sample. To do that we compared our demographics with the US Census estimates (2020), testing the goodness of fit (with a chi-square test) and central tendency with the national sample.

Attention Check: For attention check we used two questions. The first was adopted from Hauser and Schwarz (2016). Participants had to answer the following question: “Which of these personality traits best describe you and your personality? (click on all that apply)” followed by a list of 12 personality trait options. However, within the block of instructions for this question, we included a sentence specifying that in order to demonstrate attention to the instructions, participants should ignore all the personality items and instead mark the “other” box and type “I read the instructions” into the accompanying text box. The second attention question was adapted from Kim et al. (2018). Participants were asked to select a certain option (“agree”) from the provided 7-point scale (from strongly disagree to strongly agree) for “quality check purposes”. The question was embedded within the childhood socioeconomic background scale.

3. Results

The survey was run online through Mechanical Turk on the 16th of November 2020 and 1037 responses were received. None of these participants realized the purpose of the survey, however, 202 participants did not pass both of the attention check questions. All tests were conducted on both the full dataset and the subset who passed the attention check questions, with both samples resulting in the same significant outcomes, so the cleaner dataset (n = 835) is analyzed and used to report the following results. A summary of the full raw dataset's results can be found in Table A- 2.

Initially we tested the correlation between the two childhood SES variables, objective and subjective, to determine if a single combined variable could be used. A Pearson correlation analysis revealed an r = 0.38 ($p < .001$), which indicated they are not sufficiently correlated to combine them. To check further we conducted a Spearman's correlation test, to rule out categorizing the objective SES as quasi-continuous as a reason for the Pearson test to yield only a moderate relationship[1]. We found that rho = 0.34 ($p < .001$), confirming that the two variables are not sufficiently correlated to combine into one measurement. Subsequently, we conducted the following tests using both subjective (SSES) and objective SES (OSES) and an $\alpha = 0.025$, to account for multiple testing.

We analyzed the bivariate correlation (using Pearson's r) between the focal variables: conformity, Life History Strategies (LHS), and both measures of childhood SES. There was a significant positive correlation between conformity and LHS – higher LHS refers to slower life history strategies – (r = 0.12, $p < .001$), however, no significant correlation between conformity and SSES (r = 0.06, $\alpha = 0.025$, $p = .07$) was present, nor was there one between conformity and OSES (r = 0.02, $\alpha = 0.025$, $p = .49$)[2]. LHS and SSES were strongly positively

[1] The Spearman's test treats the objective SES as ordinal and tests for a monotonic relationship.
[2] Spearman's test also shows no correlation rho = 0.02, $p = .54$.

correlated, r = 0.6 ($p < .001$), and to a lesser extent LHS and OSES were correlated, r = 0.17 ($p < .001$).

As there was no direct relationship present between childhood SES and conformity we forego the intended mediation analysis between the two variables with LHS as a mediator.

To control for demographics, we integrated the bivariate correlations reported above into two linear regression models, one with conformity as the dependent variable (DV) and another with LHS as the DV. As the two measures of SES are correlated, yet not correlated enough to combine, we conduct each regression with only one measure of SES at a time to avoid any unknown interaction between the two effecting the results. See Table 1 for the regression of the measures of SES measures on the DV conformity. See

Table 2 and Table 3 for the regressions on conformity controlling for all demographic (age, gender, race, and education) and control (current SES) variables.

Table 1: Linear Regression against dependent variable Conformity

Coefficients	**β**	***SE***	***t value***	***p***
Reg. model SSES on conformity				
SES Subjective	0.06	0.02	1.79	0.074
Reg. model OSES on conformity				
SES Objective	0.02	0.09	0.69	0.492

Note: N=835 for each regression. β is standardized coefficients.

Table 2: Linear Regression with SSES and Demographic variables against Conformity

Coefficients	**B**	***SE***	***t value***	***P***
SES Subjective	-0.01	0.03	-0.16	0.872
LHS	**0.15**	**0.01**	**3.33**	**0.001**
Gender	-0.04	0.30	-1.24	0.214
SES Current	0.06	0.09	1.77	0.078
Age	-0.05	0.01	-1.52	0.130
Education	**-0.09**	**0.26**	**-2.26**	**0.024**

Race	**-0.08**	**0.38**	**-2.35**	**0.019**

Note: N=817. Bold is $p < 0.05$. β is standardized coefficients. Base variables: Gender 0 = Male; Race 0 = White/Caucasian, 1 = All other races; Education = removed observations with "Other" and "Prefer not to say" (n = 18) to keep accurate ascending numeric variable.

Table 3: Linear Regression with OSES and Demographic variables against Conformity

Coefficients	**β**	***SE***	***t value***	***p***
SES Objective	-0.04	0.12	-0.74	0.461
LHS	**0.15**	**0.00**	**3.95**	**<0.001**
Gender	-0.04	0.30	-1.23	0.219
SES Current	0.09	0.12	1.82	0.069
Age	-0.06	0.01	-1.63	0.104
Education	**-0.08**	**0.25**	**-2.18**	**0.029**
Race	**-0.08**	**0.38**	**-2.35**	**0.019**

Note: N=817. Bold is $p < 0.05$. β is standardized coefficients. Base variables: Gender 0 = Male; Race 0 = White/Caucasian, 1 = All other races; Education = removed observations with "Other" and "Prefer not to say" (n = 18) to keep accurate ascending numeric variable.

As seen above the reported bivariate correlations were not affected by the addition of the demographic and control variables. The same can been seen below in the regressions on the DV LHS (Tables Table 4 - Table 6 follow the same structure as above regressions), neither of the relationships between SES measures and LHS were affected by these additions.

Table 4: Linear Regression against dependent variable LHS

Coefficients	**β**	***SE***	***t value***	***p***
Reg. model SSES on LHS				
SES Subjective	**0.60**	**0.14**	**21.38**	**<0.001**
Reg. model OSES on LHS				
SES Objective	**0.17**	**0.68**	**4.86**	**<0.001**

Note: N=835 for each regression. Bold is $p < 0.05$. β is standardized coefficients.

Table 5: Linear Regression with SSES and Demographic variables against LHS

Coefficients	**β**	***SE***	***t value***	***p***
SES Subjective	**0.56**	**0.15**	**19.12**	**<0.001**
Gender	0.04	1.85	1.35	0.179
SES Current	0.001	0.54	0.03	0.978
Age	0.01	0.08	0.48	0.632
Education	**0.13**	**1.53**	**4.27**	**<0.001**
Race	**0.10**	**2.32**	**3.51**	**<0.001**

Note: N=817. Bold is $p < 0.05$. β is standardized coefficients. Base variables: Gender 0 = Male; Race 0 = White/Caucasian, 1 = All other races; Education = removed observations with "Other" and "Prefer not to say" (n = 18) to keep accurate ascending numeric variable.

Table 6: Linear Regression with OSES and Demographic variables against LHS

Coefficients	**β**	***SE***	***t value***	***p***
SES Objective	**0.10**	**0.90**	**2.26**	**0.02**
Gender	0.01	2.22	0.29	0.775
SES Current	-0.06	0.86	-1.32	0.187
Age	-0.05	0.10	-1.51	0.132
Education	**0.30**	**1.77**	**8.56**	**<0.001**
Race	**0.09**	**2.78**	**2.59**	**0.010**

Note: N=817. Bold is $p < 0.05$. β is standardized coefficients. Base variables: Gender 0 = Male; Race 0 = White/Caucasian, 1 = All other races; Education = removed observations with "Other" and "Prefer not to say" (n = 18) to keep accurate ascending numeric variable.

The sample (n = 835) used for this study is made up of 43% female respondents (57% male), which is statistically dissimilar to the US census sample ($X^2 = 23$, df = 1, $p < .001$). With ages ranging from 18 to 72 years old and a mean age of 39, a Welch's t-test determines the age dispersion and mean is significantly different to the national US adult population with mean age 48 (two-sample $t(847) = 20.84$, $p < .001$). Furthermore, 80% of the sample is Caucasian, 10% is Black or African American, 4% is Asian, another 4% is Hispanic, and the remaining 2% is either American Indian, Alaska Native or another race, which is also

statistically dissimilar to the national sample ($X^2 = 29$, df = 4, $p < .001$). To see if these differences may be influencing the results and affecting the generalizability to the US population, a multiverse analysis (Steegen, Tuerlinckx, Gelman, & Vanpaemel, 2016) was conducted on the clean dataset. A multiverse analysis involves conducting the analysis of interest across a set of plausible data sets, normally excluding outliers, that can be constructed from the same raw data set (Steegen et al., 2016). As demographics like race and gender cannot hold outliers to crop for a reasonable representative sample, we conduct the multiverse analysis on different age distributions only. However, to account for race and gender distributions we also conduct the analyses on a sample of the clean dataset which has had random observations removed from the aforementioned categories which were overly represented, to reach a statistically similar distribution to the US Census data. All of the above analyses result in the same significant findings as the original clean dataset, see appendix Tables Table A- 1 and Table A- 2 for a summary of these results. Furthermore, regression analyses are run on each sub-sample and result in the same significant relationships as reported above. As such we conclude that the dataset used for the analysis does not significantly distort our findings.

4. Discussion

We conducted a high-powered pre-registered study to explore the association between childhood SES, life history strategies and conformity. Our initial hypothesis was that childhood SES would be negatively associated with conformity through the adoption of different life history strategies. We expected that people who grew up in low SES environments would conform more to social suggestions as a part of the adoption of faster life history strategies, while people who grew up in high SES environments would be less

susceptible to conformity as a part of the adoption of slower life history strategies. The results did not support our hypothesis, however, they provided several interesting insights.

First of all, we replicated the findings of previous studies showing an association between childhood SES and the adoption of different life history strategies (e.g. Brumbach , Figueredo and Ellis 2009; Griskevicius et al. 2011). For both subjective and objective SES measures we found a significant correlation with the life history strategies adoption measure. Our results provide some additional evidence that the association between childhood SES and the adoption of life history strategies is relatively robust and can be found consistently across different measures. The correlation was stronger for subjective SES than for objective SES. This could be occurring for several reasons. First the relationship between subjective SES and life history strategies can be magnified due to common method bias (Biderman, Nguyen, & Cunningham, 2011), which applies more to items that require subjective assessments (such as subjective SES items and Life history strategy items) than to items that ask for a more objective assessment.. A second reason may be that participants cannot accurately calculate or recall the income which may result in a less accurate objective measure and lead to a weaker link between objective SES and life history strategies. One last reason could be found in the age span of our sample. Our sample consisted of different ages groups which means that they grew up in different decades. The purchasing power of a family income of $20.000 in the 70's was different to the power of the same income in the 90's and this influences the socioeconomic background from which participants grew up. Our objective measure of childhood SES does not account for the levels of inflation and as a result the loss of purchasing power. This in turn may create noise and result in a weaker correlation between the two measures.

Opposite to our predictions we found a weak but significant positive correlation between the life history strategies measure and conformity. Our results show that people

adopting fast history strategies are less conformist while people adopting slow history strategies are more conformist. Our data provides some evidence that low (high) SES environments and fast (slow) history strategies might be associated with less (more) conformity. Past findings may provide an explanation for this finding. In general, fast strategies have been associated with lack of social trust (Stamos, Altsitsiadis and Dewitte 2019). This lack of social trust might also influence their tendencies to conform to social suggestion. Fast strategists have been found to score lower than slow strategists on the Agreeableness dimension of the Big Five scale (Gladden, Figueredo & Jacobs, 2009). Low agreeableness might show lower tendencies to conform. Several studies have fast strategies associated with social deviance (Bogaert & Rushton, 1989; Ellis, 1988; Geary, 2002; Figueredo et al., 2005).

More importantly, contrary to our expectations we found no direct association between childhood SES and conformity; neither subjective or objective SES had a significant association with the conformity measure. Our findings suggest that there is no direct link between childhood SES and conformity. So our findings led us to reject the hypothesis that people growing up in harsh environments become more conformists to social suggestions as it is more adaptive. Why could this be the case, although our literature review had suggested that this relationship was plausible? First, conforming to social suggestions (as we operationalized it) might not be adaptive as in harsh environments trusting others might not provide benefits (Stamos, Altsitsiadis, Dewitte, 2019). The expected benefits that we envisaged based on our literature review may be overruled by the lower trust level that characterizer low SES individuals. Second, it may be the case that the lack of relationship resulted from the specific norm we used in our study. In our study we tested the tendencies to conform with social suggestions that can be characterized as descriptive. Descriptive suggestions usually involve perceptions of the type of behaviors typically performed. Future

research could try to test the findings with social suggestions that are more injunctive such as lay theories about what people are supposed to do into the test.

Last, according to recent studies there is another moderator that might intervene in the association between childhood SES and conformity, environmental stressors. Early childhood environments prepare people to behave adaptively in their adulthood by the adoption of different life-history strategies which are more likely to manifest in behavior in difficult situations, for example when individuals experience environmental stressors. According to these studies, environmental stressors are crucial for the expression of life history strategies (e.g. Griskevicius et al. 2013; Mittal and Griskevicius, 2014). Environmental stressors make people who grew up poor behave differently than people who grew up rich, as a function of the different life history strategies that they adopted in their childhood (Griskevicius et al. 2012; Mittal and Griskevicius, 2014). For example, university students who grew up in low SES conditions tend to behave more riskily and impulsively (as a result of having adopted faster life history strategies) after they read a news article that elicits a sense of economic uncertainty (Griskevicius et al., 2011, 2013; Mittal & Griskevicius, 2014). Future endeavors could explore whether the lack of relationship between childhood SES and conformity in our study may be due to the fact that we have measured the variables under low levels of stress. In line with the cited research, environmental stressors may act as a moderators and may be necessary for the relationship between childhood SES and conformity to emerge.

5. Limitations

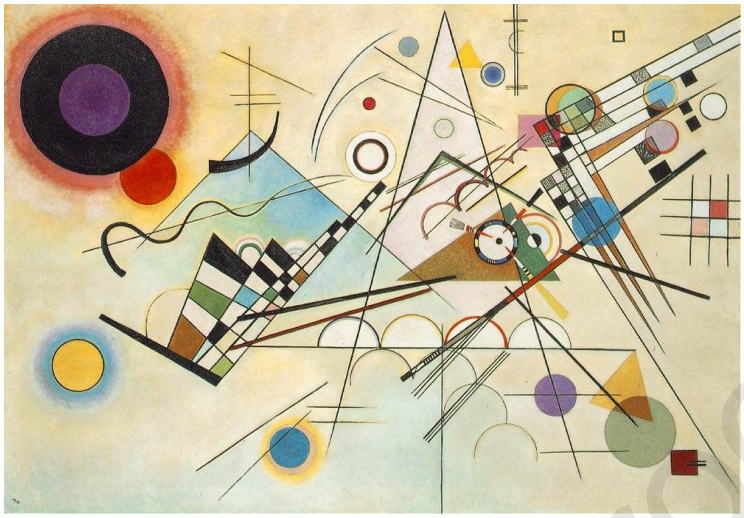
The design of this study comes with some shortcomings. We recruited our participants from Amazon Mechanical Turk which poses a limit on the generalizability of our results as the participants are US based which limits the cultural diversity of our sample. Moreover, our sample was different from the national US sample when it comes to gender, age and race distribution. Although our analysis showed that our results do not get influenced by these

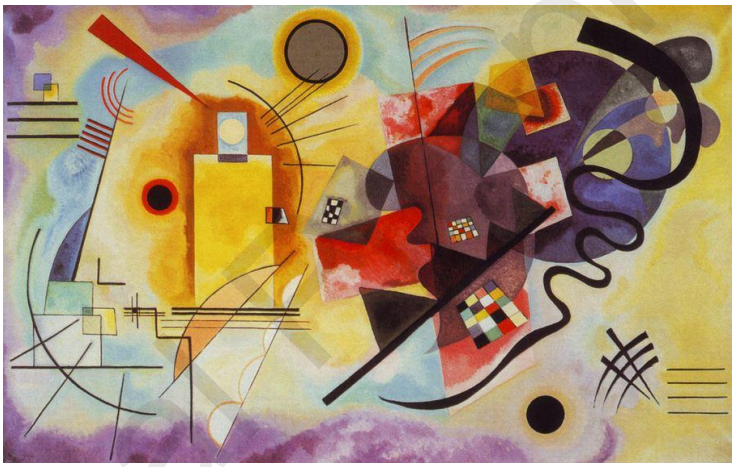
differences future research should try to replicate the results in a more representative US sample to assess the robustness. Another limitation of this study is that it relies on retrospective self-reporting to assess childhood socioeconomic status. It is possible that these self-reported measures are sensitive to memory biases. The task we used to measure the tendencies to conform, assess how social suggestion can influence individual preferences which sometimes are relatively costless and hence easier to change. Furthermore, our task used a specific form of art (painting) to assess conformity which might create some biases as some people are indifferent towards art.

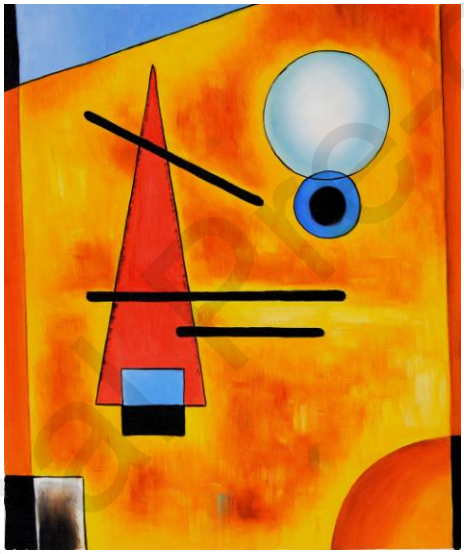
6. Conclusion

Our high powered study explored the relationship between childhood SES, life history strategies and conformity using descriptive social suggestions in an online setting. Whilst not finding supporting evidence for a direct link between childhood SES and conformity, we did find significant evidence for a correlation between childhood SES and life history strategies, in the form of low (high) SES backgrounds adopting fast (slow) strategies. This replicates existing findings within the literature. Furthermore, we found a small yet significant correlation between life history strategies and conformity providing some evidence that those with fast (slow) life history strategies are less (more) conformists.

Appendix 1: The paintings by Paul Klee and Wassily Kandinsky







Appendix 2: Tables

Table A- 1: Summary of Multiverse Analysis

Clean Dataset

Age: Full Range	
Sample	n = 835
Age	t(847) = 20.84***
Mean Age	39
SSES & OSES	rho = 0.38***
Conformity & LHS	rho = 0.12***
Conformity & SSES	rho = 0.06
Conformity & OSES	rho = 0.02
LHS & SSES	rho = 0.60***
LHS & OSES	rho = 0.17***

Age: 18 - 64	
Sample	n = 809
Age	t(823) = 24.78***
Mean Age	38
SSES & OSES	rho = 0.37***
Conformity & LHS	rho = 0.11**
Conformity & SSES	rho = 0.06
Conformity & OSES	rho = 0.02
LHS & SSES	rho = 0.60***
LHS & OSES	rho = 0.16***

Age: 18 - 59	
Sample	n = 775
Age	t(790) = 29.61***
Mean Age	37
SSES & OSES	rho = 0.35***
Conformity & LHS	rho = 0.11**
Conformity & SSES	rho = 0.06
Conformity & OSES	rho = 0.01
LHS & SSES	rho = 0.60***
LHS & OSES	rho = 0.13***

Age: 20 - 74	
Sample	n = 832
Age	t(844) = 20.7***
Mean Age	39
SSES & OSES	rho = 0.38***
Conformity & LHS	rho = 0.11**
Conformity & SSES	rho = 0.06
Conformity & OSES	rho = 0.02
LHS & SSES	rho = 0.60***
LHS & OSES	rho = 0.16***

Age: 20 - 64	
Sample	n = 806
Age	t(820) = 24.66***
Mean Age	38
SSES & OSES	rho = 0.36***
Conformity & LHS	rho = 0.11**
Conformity & SSES	rho = 0.05
Conformity & OSES	rho = 0.01
LHS & SSES	rho = 0.60***
LHS & OSES	rho = 0.15***

Age: 25 - 74	
Sample	n = 805
Age	t(817) = 19.37***
Mean Age	40
SSES & OSES	rho = 0.38***
Conformity & LHS	rho = 0.11**
Conformity & SSES	rho = 0.06
Conformity & OSES	rho = 0.02
LHS & SSES	rho = 0.60***
LHS & OSES	rho = 0.16***

Age: 25 - 64	
Sample	n = 779
Age	t(792) = 23.33***
Mean Age	39
SSES & OSES	rho = 0.36***
Conformity & LHS	rho = 0.11**

Age: 25 - 59	
Sample	n = 745
Age	t(760) = 28.21***
Mean Age	38
SSES & OSES	rho = 0.34***
Conformity & LHS	rho = 0.10**

Conformity & SSES	rho = 0.05	Conformity & SSES	rho = 0.05
Conformity & OSES	rho = 0.01	Conformity & OSES	rho = 0.004
LHS & SSES	rho = 0.60***	LHS & SSES	rho = 0.60***
LHS & OSES	rho = 0.14***	LHS & OSES	rho = 0.11**

Note: $p < 0.001$***, $p < 0.01$**, $p < 0.05$*.

Table A- 2: Summary of Analysis' on Random Sample, Full Dataset and Clean Dataset

Random Sample		**Full Raw Dataset**	
Sample	n = 643	Sample	n = 1037
Gender Distribution	$X^2 = 0.1$, p = 0.75	Gender Distribution	$X^2 = 18.05$***
Race Distribution	$X^2 = 6.3$, p = 0.18	Race Distribution	$X^2 = 33.95$***
Age	t(649) = 14.01***	Age	t(1056) = 21.86***
Mean Age	41	Mean Age	40
SSES & OSES	rho = 0.43***	SSES & OSES	rho = 0.36***
Conformity & LHS	rho = 0.09*	Conformity & LHS	rho = 0.11***
Conformity & SSES	rho = 0.04	Conformity & SSES	rho = 0.05
Conformity & OSES	rho = 0.02	Conformity & OSES	rho = 0.03
LHS & SSES	rho = 0.60***	LHS & SSES	rho = 0.59***
LHS & OSES	rho = 0.22***	LHS & OSES	rho = 0.14***

Clean Dataset	
Sample	n = 835
Gender Distribution	$X^2 = 22.72$***
Race Distribution	$X^2 = 28.88$***
Age	t(847) = 20.84***
Mean Age	39
SSES & OSES	rho = 0.38***
Conformity & LHS	rho = 0.12***
Conformity & SSES	rho = 0.06
Conformity & OSES	rho = 0.02
LHS & SSES	rho = 0.60***
LHS & OSES	rho = 0.17***

Note: $p < 0.001$***, $p < 0.01$**, $p < 0.05$*.

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