

**I Feel, Therefore I Am:
Generational Differences in Moral Processing Styles**

by

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GENERATIONAL DIFFERENCES IN MORAL PROCESSING STYLES

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Abstract

Moral decision-making is a core feature of human life. We explored whether generational differences exist in the preference for two types of moral processing styles (the ways in which we integrate moral information and decide to take action): moral reasoning and moral intuition. We analyzed preferences for moral processing styles by using a modified version of the Rational-Experiential Inventory (REI) scale, which was broken down into the Faith in Moral Intuition and Need For Moral Cognition subscales. Preferences for moral intuition and moral reasoning were measured by averaging Faith in Moral Intuition scores and Need for Moral Cognition scores from 120 Generation Z (born after 1996) and 50 Generation X (born between 1965 - 1980) participants. A mediation analysis was also conducted to see if social media usage would explain the expected differences between generations. Gen Z participants scored lower than Gen X participants on Need For Moral Cognition, but no differences emerged on Faith in Moral Intuition. However, the mean difference between Faith in Moral Intuition and Need For Moral Cognition was much larger for Gen X than Gen Z. Social media usage did not mediate the relationship between generation and moral processing styles. It appears that there are generational preferences for moral processing styles, and that moral reasoning is less valued by this younger generation. The reason that these generational differences emerged must be examined in future research.

Keywords: Moral psychology, social media, generational differences, information processing, intuition, rationality

I Feel, Therefore I Am: Generational Differences in Moral Processing Styles

Consider this scenario: One afternoon, Jan was sitting with her husband, Rick, who has been recently diagnosed with dementia. Their son Ben had passed away four years earlier, but Rick sometimes forgets and thinks he is still alive. That afternoon, Rick asks Jan when Ben is going to be coming to see them. Jan is conflicted about what to do. On the one hand, she strongly values honesty, but on the other hand, she also values the idea that she shouldn't cause Rick unnecessary harm. In this situation, should Jan follow her gut to make this decision, or should she deliberate through the pros and cons of each possible outcome in order to make a decision?

Perhaps the choice seems trivial, but perhaps not. On the one hand, if Jan follows her gut, she would primarily be relying on *intuitive processing*, an emotion-centered information processing style that is mostly preconscious, nonverbal, holistic, and intimately associated with affect (Pacini & Epstein, 1999). On the other hand, if Jan followed her deliberation, she would be primarily relying on a *rational processing style*, a reason-centered information processing system that is conscious, slow, analytical, verbal, and relatively affect-free (Pacini & Epstein, 1999). The question that we begin here with is simple: Is it possible that some people find acting on the basis of intuitive processing more preferable compared to more deliberative reasoning when making moral decisions (even if the outcome behavior is the same)?

Although simple, this question is embedded within a long history of philosophical and psychological dialogue about the nature and value of reason and intuition. For instance, some philosophers, like Plato (4th century BC/1949) and Descartes (1637/1993), relegated reason to, the "heavens," while others, like Hume (1777/1960) and Nietzsche (1887/1998), often understood reason to be secondary, if not a servant to our intuitions and emotions. Within the psychological literature, a large body of research has demonstrated that we can distinguish the cognitive

processes of decision-making and information processing into a dual-process model, where one system is fast and intuitive, while the other is slow, logical, and deliberative (Evans, 2003; Kahneman, 2011). Building off of this dual-process model, Pacini and Epstein (1999) developed the Cognitive Experiential Self Theory (CEST). According to this model, there are two separate information processing systems, the experiential (intuitive) system and the cognitive (reason) system, and these systems can be preferred and used to different degrees based on the situational context and as a function of individual differences. Interestingly, studies have shown that personality characteristics (Witteman et al., 2009), biological sex (Sladek, Bond, and Phillips, 2010), and age (Sladek, Bond, and Phillips, 2010) are all intimately related to preferences for both systems. Nonetheless, which system is objectively preferable and subjectively preferred is still a matter of extensive debate (Dijkstra, van der Pligt, van Kleef, & Kerstholt; Marks, Wine, Blore, & Phillips; Pacini, & Epstein, 1999; Epstein, Pacini, Denes-Raj, & Heier, 1996; Sladek, Bond, & Phillips, 2010).

Within the domain of moral psychology, conscious moral reasoning was long seen as the foundation (and most virtuous form) of moral judgement and action (Kohlberg, 1971). But in the early 2000's, Jonathan Haidt, a figurehead of the affective revolution in psychology, teased apart moral decision-making by defining two separate styles of moral processing, reminiscent of the work of Pacini and Epstein (1999). Haidt distinguished moral intuitions, "a rapid, automatic, and usually affect laden process in which an evaluative feeling of good-bad or like-dislike (about the actions or character of a person) appears in consciousness without any awareness of having gone through steps of search, weighing evidence, or inferring conclusion," from moral reasoning, "conscious mental activity that consists of transforming information about people and their actions in order to reach a moral judgement or decision" (Haidt, 2007, p. 998). Haidt made the

argument that moral reasoning is often used as a post-hoc justification for an intuitive moral judgement (i.e., now known as the “social intuitionist model;” 2001). The social intuitionist model has gained support (see Greene & Haidt, 2002) but it has also been extended and challenged by those who perceive that deliberative reasoning may play a more prominent role in moral decision-making than Haidt had originally argued (see Paxton & Greene, 2010; Greene et al., 2008; Pizarro & Bloom, 2003; Tziporah & Saltzstein, 2008).

This current paper will continue to extend this moral-psychological debate by examining generational differences, along with unique cultural experiences which may moderate the degree to which moral intuitions and deliberation are used, understood, and experienced. We are building off a legacy of research that has demonstrated that cultural norms, life experience, and values deeply influence the content and quality of moral attitudes and beliefs (Haidt & Joseph, 2004; Haidt, 2007; Miller, Goyal, & Wice, 2017; Shweder, Much, Mahapatra, & Park, 1997).

Generational Differences

Extensive psychological research has shown that cross-generational comparisons are a valuable measurement strategy as differences among psychological constructs, particularly regarding values and motivation, are often salient (Campbell et al., 2015; Campbell, Twenge, & Campbell, 2017; Lyons, Duxbury, & Higgins, 2007; Twenge et al., 2010). For this particular study, we will focus solely upon the generational differences in the preference for using reason or intuition to solve moral problems by the American Generation Z population (born between 1996-2013) and the American Generation X population (born between 1965-1980). There are a number of reasons why we think generational differences will emerge.

First, within the United States, there appears to be at least two competing ways of dealing with and understanding intuition and reason. On the one hand, there is a long history in Western

philosophy of viewing reason and the inhibition of immediate emotion as a mechanism to increase individual freedom (Aurelius, 2002; Plato, 4th century BC/1949). On the other hand, Americans have also been shown to place much higher value on expressive emotions (e.g., pride, anger) and behaviors (e.g., expression of internal motives and desires) compared with more controlling values (e.g., self-control) and behaviors (e.g., self-regulation of internal motives and desires) (Kitayama, Markus, & Matsumoto, 1995; Lim, 2016; Markus & Kitayama, 1991; Miller, Das, & Chakravarthy, 2011). Connected to this idea, the act of self-regulation has been shown to be experienced as energetically depleting for Americans, while other cultural groups have been shown to experience self-regulation as energizing and autonomous (Baumeister, Bratlavsky, Muraven, & Tice, 1998; Savani, 2017).

Importantly, above and beyond research on expressive emotions, recent work by Lukianoff and Haidt (2018) argue that the value of (1) emotional self-expression, (2) emotional safety, and (3) listening to one's gut-feelings have been taking on an increasingly more important role in the psyche of younger Americans, especially those in Gen Z (1996-2013). The increased emphasis on emotional sensitivity by Gen Z can be seen manifested in moral-political activism promoting trigger warnings, safe spaces, and a heightened awareness of so-called "microaggressions" (indirect, subtle, or unintentional slights against members of a marginalized group that may cause emotional harm; Lukianoff & Haidt, 2018; Wong et al., 2014). Other scholars, such as Jean Twenge (2017), echo and extend Lukianoff and Haidt's arguments by highlighting Gen Z's heightened levels of anxiety, depression, and other mental health issues relative to previous generations. Twenge's (2017) concern for increased levels of emotional distress by Gen Z is backed by data showing that Gen Z both disproportionately suffers from anxiety and depression and are more willing to discuss mental health issues than older

generations (APA, 2019). Nonetheless, the reason for the increased levels of emotional distress (i.e., rates of anxiety and depression) among young adults is an area of deep contention within the psychological literature (see Arnett, 2013). Specifically, Arnett (2013) argues that the emotional struggles of emerging adults (those between the ages of 18 - 25) are a function of the normal course of identity formation, and is not reflective of problematic socialization or a unique feature of Gen Z. On the other hand, both Lukianoff and Haidt (2018) and Twenge (2017) argue that social media is a core explanatory factor for these generational shifts (since Gen Z was the first generation to be raised with social media during their formative developmental years).

The Role of Social Media

Besides Twenge, Haidt, and Lukianoff, there are numerous other scholars who have also begun to examine the implications of social media on our psychological lives (see Brady, Crocket, & Van Bavel, 2020; Crocket, 2017; Davies, 2018; Firth et al., 2019; Giedd, 2012; Haidt & Rose-Stockwell, 2019). These researchers have demonstrated that the “landscape” of social media, like culture, does influence the spread, content, and quality of moral beliefs and attitudes, along with additional effects on selective attention, memory capacity, and perception.

Specifically, scholars such as Molly Crocket (2017) argue that acting upon certain gut-reactions (e.g., moral outrage), that are often unacceptable off-line, become acceptable and reinforced online. Related research has demonstrated that the presence of moral emotional words on social media increased their diffusion by a factor of 20% for each additional word (Brady, Wills, Tucker, Jost, & Van Bavel, 2017) and posts involving indignant disagreement are two times more likely to be liked, shared, and commented on (Pew, 2017). Additionally, because of the ceaseless stream of information that is required to be processed when using online social

networks, individuals tend to utilize more intuitive, heuristic-based information processing styles (Burghardt, et al., 2017; Metzger & Flanagin, 2013; Lerman & Hog, 2014).

The social media landscape thus seems to be transforming our willingness to act upon certain moral emotions, the speed at which we react, and perhaps the degree to which deliberation to act seems necessary.

Overview

With the debate of moral intuition and reason in mind, the research on generational differences, and in the context of this new technological milieu, we plan to explore whether there are generational differences in preferences for using intuition or reason when making moral decisions, and whether those differences could be partially explained by social media usage.

For this project, social media includes all platforms considered social networking by the screen time application on an iPhone iOS version 12 or later, since screentime is being used as the primary measure of social media usage. Twitter, Facebook, Instagram, Snapchat, TikTok, and messaging are all examples of included social media networks.

We will conduct one cross-generational study where participants will report how much they agree with statements regarding how they make moral-decisions. Our hypotheses are as follows: (H1) Gen Z Americans will perceive intuitive moral-processing as more preferable, effective, and typical of oneself compared to Gen X. (H2) Gen Z Americans will perceive deliberative moral-processing as less preferable, effective, and typical of oneself compared to Gen X. (H3) The difference between intuitive and deliberative style scores will be mediated by the amount of time one spends on social media.

Method

Sample

Participants were contacted for this study through social media networks, academic list-servers, and the SUNY New Paltz SONA system. 437 participants responded to the survey, 267 were dropped prior to the final analysis, leaving a final sample size of 170 (N for Males = 40, N for Females = 124). Participants were dropped due to not meeting the eligibility requirements (n = 177), completing less than 95% of the survey (n = 68), leaving the time spent on social media blank (n = 3), having missing data within the MREI scale (n = 13), and/or scoring three standard deviations above or below the mean social media usage score (n = 3). The sample size was determined by conducting an a-priori power analysis through G*Power (Erdfelder, Faul, & Buchner, 1996) setting the parameters of a .50 effect size and statistical power of .80. However, we were able to acquire a sample of Gen Z participants more quickly than the Gen X participants. We decided to keep the additional 70 Gen Z participants for the analysis. All participants had access to a Screen-Time Application (requiring an iPhone with iOS version 12 or later) and were Americans born after 1996 (Generation Z) or between 1965 - 1980 (Generation X). Some participants from SUNY New Paltz were granted credit toward their psychology major for completing the survey. No other participants were compensated. The survey was approved by the SUNY New Paltz Ethics Board.

Gen Z

120 Generation Z'ers (i.e., born from 1996 onward) completed the survey. Of this sample, 23 were male, 91 were female, and 6 identified as non-binary/third gender ($M_{age} = 20.57$).

Gen X

50 Generation X'ers (i.e., born between 1965-1980) completed the survey. Of this sample, 17 were male, 33 were female, and 0 identified as non-binary/third gender ($M_{age} = 46.54$).

Instrument

Deliberative and intuitive moral processing styles were measured by using a self-modified version of the Rational-Experiential Inventory (REI) scale (Pacini & Epstein, 1999). The REI scale was designed to measure self-perceived ability and preference for intuitive and rational information-processing styles. The original scale was composed of the Need For Cognition (NFC) scale and the Faith in Intuition (FIS) scale which was subsequently revised by being broken down into subscales of engagement (i.e., preferences) and ability. The scale has demonstrated strong predictive, convergent, and discriminant validity (Pacini & Epstein, 1999).

We have adjusted the REI scale (aka REI-M) in order to more effectively measure *moral* processing styles. Specifically, we have developed an 18-item version of the REI scale, with 9 items measuring Need For Moral Cognition (NFMC) and 9 items measuring Faith in Moral Intuition (FMI). The 9 items, across both subscales, are broken down into three sub-dimensions of “typical behavior,” “preference,” and “efficacy.” Example items include, “I tend to use my heart as a guide for moral actions” (typical behavior), “When I face a moral issue, I generally enjoy using reason to make a decision” (preference), and “I hardly ever go wrong when I listen to my gut feelings to find the answer to a moral issue” (efficacy). See Appendix I for the full list of items. Respondents rated the questionnaire items on a 5-point likert scale that ranges from 1 (definitely not true of myself) to 5 (definitely true of myself).

Participants reported time spent using social media using the Screen-Time application on their personal cell phones. The participants were provided with instructions to the Screen Time

application and what applications to report. The application tracks active time spent on the iPhone, including time by application categories such as social media networking and entertainment (Sewall, Baker, Merranko, & Rosen, 2020).

Design

Using Qualtrics software, all participants first completed brief demographic questions (e.g., age and gender). Next, participants reported the average daily amount of time they spent on social media in the last week. They then completed the modified version of the REI scale. All participants were debriefed and thanked for their participation.

Results

Descriptives

Across generations, participants spent an average of 4.59 hours ($SD = 4.68$) on social media networks in the past week. Gen Z participants spent an average of 5.43 hours ($SD = 4.88$), while Gen X participants spent 2.58 hours ($SD = 3.44$).

Preliminary analyses

Internal Reliability

Two Cronbach Alpha tests for reliability were conducted to test the internal reliability of the modified REI scale for Faith in Moral Intuition (scale items 1-9), $\alpha = .862$, and Need For Moral Cognition (scale items 10 - 18), $\alpha = .834$, thus providing support for the internal reliability of the modified REI scale.

Additional Cronbach Alpha tests for reliability were conducted to test for internal reliability for the three sub-dimensions (“preference,” “efficacy,” and “tendency”) within each subscale (Faith in Moral Intuition and Need For Moral Cognition). All reliability statistics were

above .60, demonstrating adequate internal reliability for each of the three sub dimensions. See Table 1 for reliability coefficients for each sub-dimension.

Table 1

Reliability Coefficients for Faith in Moral Intuition and Need For Moral Cognition Sub Dimensions

	Faith in Moral Intuition	Need For Moral Cognition
Total	.862	.834
Preference	.619	.689
Efficacy	.624	.608
Tendency	.614	.796

Biological Sex

No significant sex differences emerged between males ($M = 3.94$, $SD = .64$) and females ($M = 3.86$, $SD = .64$) on Need For Moral Cognition scores, $t(162) = .685$, $p = .496$. Additionally, no significant sex differences emerged between males ($M = 3.23$, $SD = .70$) and females ($M = 3.46$, $SD = .69$) on Faith in Moral Intuition Scores, $t(162) = -1.86$, $p = .067$. We therefore collapsed sex for all future analyses.

Faith in Moral Intuition, Need For Moral Cognition, and Social Media

Across generations there was a weak significant negative correlation between Faith in Moral Intuition ($M = 3.40$, $SD = .707$) and Need For Moral Cognition ($M = 3.88$, $SD = .636$), $r(168) = -.217$, $p = .004$. However, this relationship was found to be contingent on generation. Specifically, there was a weak significant negative relationship between Faith in Moral Intuition ($M = 3.47$, $SD = .679$) and Need For Moral Cognition ($M = 3.79$, $SD = .625$) for Gen Z participants, $r(118) = -.198$, $p = .030$, but no relationship between Faith in Moral Intuition ($M = 3.25$, $SD = .754$) and Need For Moral Cognition ($M = 4.10$, $SD = .613$) found for Gen X participants, $p = .212$.

Across generations there was no relationship between social media usage and Faith in Moral Intuition, $p = .804$, nor between social media usage and Need For Moral Cognition, $p = .699$. These findings held true when broken down by generation (see Table 2).

Table 2

Zero-Order Correlations between Faith in Moral Intuition, Need For Moral Cognition, and Social Media Usage

Across Generations

Variables	Need for Moral Cognition	Faith in Moral Intuition	Social Media Usage
Need for Moral Cognition	1		
Faith in Moral Intuition	-.217**	1	
Social Media Usage	-.030	.019	1

** = $p < .01$.

Gen Z

Variables	Need for Moral Cognition	Faith in Moral Intuition	Social Media Usage
Need for Moral Cognition	1		
Faith in Moral Intuition	-.199*	1	
Social Media Usage	-.022	-.095	1

* = $p < .05$.

Gen X

Variables	Need for Moral Cognition	Faith in Moral Intuition	Social Media Usage
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Need for Moral Cognition	1		
Faith in Moral Intuition	-.179	1	
Social Media Usage	.237	.207	1

** = $p < .01$.

Main Analyses

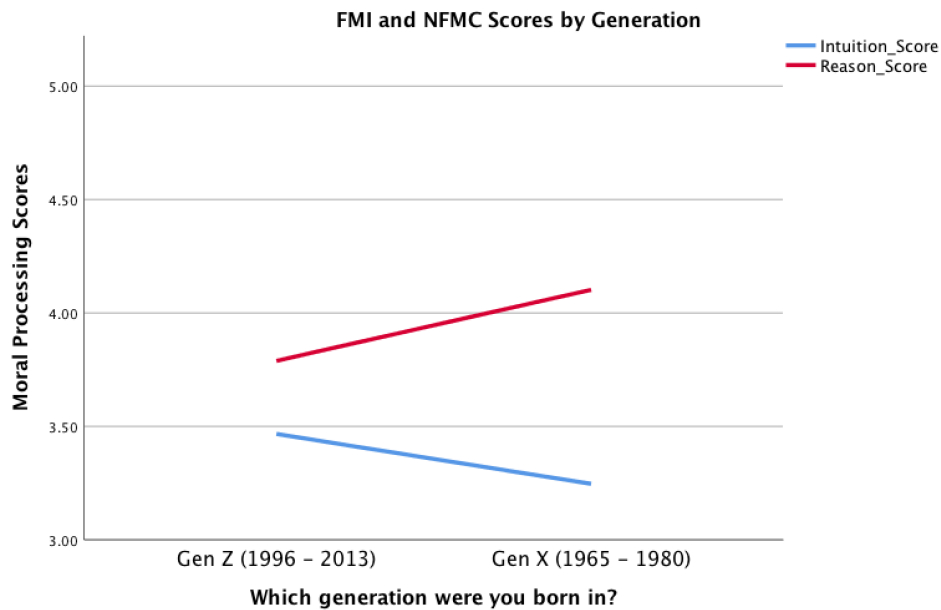
A 2 x 2 mixed factorial ANOVA was conducted with moral processing styles as the within subjects variable, generation as the between subjects variable and moral processing preference scores as the dependent variable. There was a significant main effect of moral processing style, $F(1, 168) = 46.48$, $\eta_p^2 = .218$, $p < .01$. Scores on Faith in Moral Intuition ($M = 3.40$, $SD = .707$) were lower than Need for Moral Cognition ($M = 3.88$, $SD = .636$). There was no significant main effect of generation, $p = .512$. A significant interaction emerged between moral processing styles and generation, $F(1, 168) = 9.59$, $\eta_p^2 = .054$, $p < .01$. An analysis of Tukey simple effects demonstrated that Gen X ($M = 4.10$, $SD = .613$) scored significantly higher than Gen Z on Need for Moral Cognition ($M = 3.79$, $SD = .625$), $t(324) = -2.82$, $p = .026$. Gen X ($M = 3.25$, $SD = .754$) did not score significantly differently from Gen Z ($M = 3.47$, $SD = .679$) on Faith in Moral Intuition, $p = .202$. There was, however, a greater difference between Need for Moral Cognition and Faith in Moral Intuition among those in Gen X. Additionally, both Gen Z, $t(168) = 3.45$, $p < .01$, and Gen X, $t(168) = 5.92$, $p < .01$, endorsed Need for Moral Cognition more than Faith in Moral Intuition.

Hypothesis 1 was therefore not supported in that Gen Z participants ($M = 3.45$, $SD = .679$) did not score significantly different from Gen X participants ($M = 3.25$, $SD = .754$) on Faith in Moral Intuition. Hypothesis 2 was supported, in that Gen Z participants ($M = 3.78$, $SD =$

.625) scored significantly lower than Gen X participants ($M = 4.10$, $SD = .613$) on Need For Moral Cognition (see Figure 2).

Figure 2

Faith in Moral Intuition and Need For Moral Cognition Scores Split by Generation

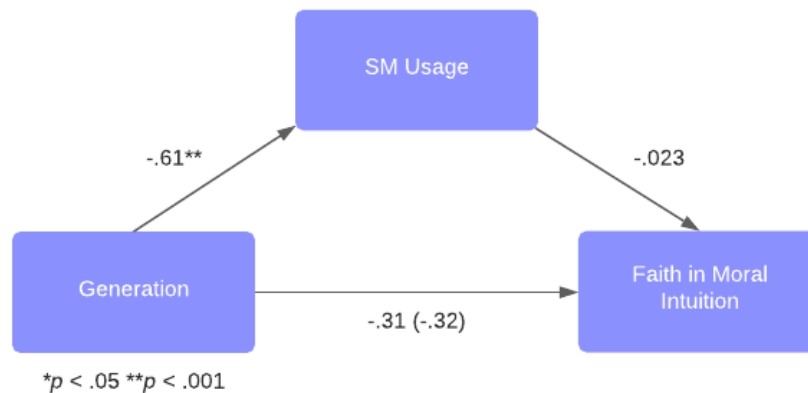


To investigate whether the relationship between generation, the predictor variable, and Faith in Moral Intuition, the outcome variable, are partially mediated by social media usage, a simple mediation analysis was performed using SPSS PROCESS. Hypothesis 3 was not supported in that social media usage was found to not mediate the relationship between generation and Faith in Moral Intuition. Specifically, the indirect effect of social media usage was not statistically significant, $\beta = .0097$, $p > .05$. As Figure 3 illustrates, the standardized regression coefficient between generation and Faith in Moral Intuition were not statistically significant, $\beta = -.311$, $t(168) = -1.86$, $p = .064$. The standardized regression coefficient between generation and social media usage was statistically significant, $\beta = -.610$, $t(168) = -3.76$, $p <$

.001, but the standardized regression coefficient between social media usage and Faith in Moral Intuition was not statistically significant, $\beta = -.023$, $t(167) = -.282$, $p = .779$.

Figure 3

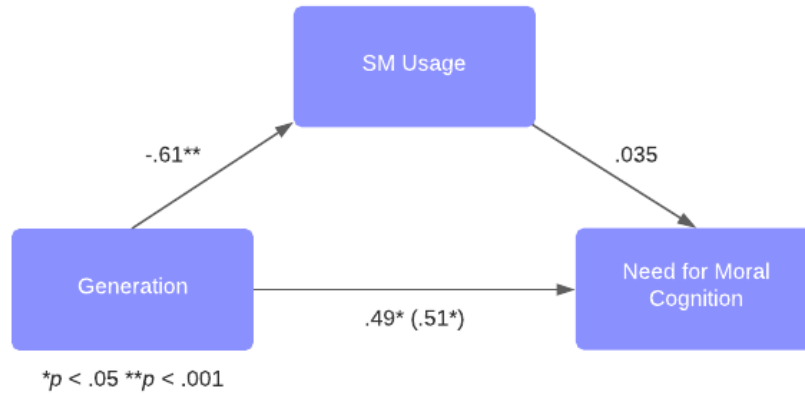
Standardized Regression Coefficients for the Relationship Between Generation and Faith in Moral Intuition as Mediated by Social Media Usage



Next, to investigate whether the relationship between generation, the predictor variable, and Need For Moral Cognition, the outcome variable, are partially mediated by social media usage, a simple mediation analysis was performed using SPSS PROCESS. Hypothesis 4 was also not supported in that social media usage was found to not mediate the relationship between generation and Need For Moral Cognition. Specifically, the indirect effect of social media usage was not statistically significant, $\beta = -.0138$, $p > .05$. As Figure 4 illustrates, the standardized regression coefficient between generation and Need For Moral Cognition was statistically significant, $\beta = .493$, $t(168) = 3.00$, $p = .003$. The standardized regression coefficient between generation and social media usage was statistically significant, $\beta = -.610$, $t(168) = -3.76$, $p < .001$, but the standardized regression coefficient between social media usage and Need for Moral Cognition was not statistically significant, $b = .035$, $t(167) = .453$, $p = .652$.

Figure 4

Standardized Regression Coefficients for the Relationship Between Generation and Need For Moral Cognition as Mediated by Social Media Usage



Discussion

The results of this study demonstrated that there indeed appears to be generational differences in preferences for moral processing styles. Importantly, although generational differences were present and salient, there was a shared hierarchy across generations in that deliberative reasoning was the preferred processing style.

However, aligning with scholarship by Lukianoff and Haidt (2018), who argue that emotional reasoning has become a more highly valued discourse style of Gen Z'ers, Gen Z (1996 - 2013) did indeed show (1) a lower preference for utilizing deliberative reasoning compared those in Gen X (1965 - 1980), (2) a trending, but non-significant, preference for utilizing intuition above those in Gen X, and (3) a larger mean differences between faith in moral intuition and need for moral cognition compared to Gen X. This generational gap between faith in moral intuition and need for moral cognition scores, although aligning with our expectations, was surprising as it does not align with the previous research on rational and intuitive reasoning

(Sladek, Bond, and Phillips, 2010), which have demonstrated a convergence between the rational and experiential thinking styles as we age.

Another pattern that emerged in these data was a significant inverse relationship between preferences for intuition and reason for those in Gen Z, but not for those in Gen X. It is possible that this inverse relationship was a result of Gen Z perceiving reason and intuition as being incompatible with one another, while those in Gen X did not perceive them as inconsistent with each other.

Social Media and Moral Processing Styles

Our proposed explanation to explain deliberative and intuitive moral processing style differences across and within generations as a function of social media usage was not supported whatsoever. These null results are striking as extensive research (Crockett, 2017; Brady, Wills, Tucker, Jost, & Van Bavel, 2017) has shown that social media usage extensively reinforces fast, intuitive moral judgements and decision-making. It appears that we overestimated the degree to which behavior on social media shapes preferences for moral processing styles. However, it is possible that effects of social media usage on preferred processing styles were actually present but not fully tapped into. Specifically, it could be the case that the effect of social media usage is moderated by whether the individual is an active (engages with others through commenting, messaging, and posting) or passive (does not engage with others) social media user (Escobar-viera et al., 2018). More active engagement would likely reinforce tendencies to act on moral emotions, while more passive engagement would likely have less impact on one's willingness to act on moral emotions.

Nonetheless, to explain the generational differences found in moral processing styles, there are other potential alternative explanatory factors such as lifespan changes in personality

characteristics (Roberts, Walton, & Viechtbauer, 2006), educational and parenting practices, and/or cultural values and norms (Butchtel & Norenzayan, 2008). Specifically, in regards to lifespan changes in personality, a meta-analysis found that conscientiousness and emotional stability tend to increase throughout the lifespan (Roberts, Walton, & Viechtbauer, 2006). This is important because it has also been reported that Need for Cognition is positively related to conscientiousness and emotional stability, while Faith in Intuition is negatively related to conscientiousness (Witteman et al., 2009). These personality changes may help us better understand why the divergence between Gen X and Gen Z emerged in Faith in Moral Intuition and Need for Moral Cognition scores.

Limitations

The modified REI scale is a novel measure and thus needs continued replication in order to build confidence in its construct and predictive validity. Fine tuning the scale will be an important next step for those interested in exploring moral processing preferences. Additionally, we hope that our results will be replicated with a larger and more diverse sample which will use alternative measures of moral decision-making to increase convergent validity.

Defining the inclusion and exclusion criteria for social media networks was particularly difficult. Every platform is unique, draws different users, and contains many different properties. The definition we chose was imperfect, but was a result of the practical constraints of using the Screen-Time Application. Relatedly, including “messaging” (i.e., texting) as a social network may skew results as the private messaging is qualitatively very different from publicly facing social media communication. It would therefore be important to conduct future studies which use different operationalizations that explore the relationship between preferred processing styles and social media. We also want to acknowledge that social media is extraordinarily complex. Not

only are the platforms constantly growing and changing, but there are many different ways which people can choose to use these platforms. It is therefore important to not overgeneralize the findings and assume that the null results are fully accurate.

Lastly, due to using a convenience sample of undergraduate college students, we were unable to tap into whether educational levels, both across and within generations, may moderate preferences for faith in moral intuition and need for moral cognition. Studies have shown a robust positive association between educational attainment and need for cognition (see Grass, Strobel, & Strobel, 2017), thus demonstrating the possibility that need for moral cognition and faith in moral intuition scores could vary substantially if we included Gen Z participants who were not enrolled in a university. Studying the effect of education level on preferences for moral processing styles is an area we recommend exploring in future research.

Conclusion

We live in an era of massive cultural and technological change, upheaval, and uncertainty. This era of change, we thought, was likely making us more susceptible to new and unexpected behavioral and psychological transformations. We argued that preferences for reason and intuition were victims to unique cultural inventions; specifically, the rise of social media. Intellectuals across disciplines, from historians (Meacham, 2019; Snyder, 2018) to social scientists (Crockett, 2017; Davies, 2018; Lukianoff & Haidt, 2018), have been raising a similar argument: We appear to be moving into an age of passion, where reasoned debate is no longer held as the gold standard for argumentation, policy, leadership, activism, and moral worth. We indeed found support that preferences for using intuition to solve moral problems differed substantially across generations, but it was not the case that social media was a primary driver for those differences. It is unclear what extent these differences are a product of life experience,

developmental changes, or generational norms and values. Nonetheless, we did indeed demonstrate that it is the subjective experience, one's feeling of good and bad, that is taking on a more central role in the conversation and how younger generations prefer to behave in the world. Perhaps we are moving toward an age where the words of Descartes will *feel* hollow, and are perceived to be in need of revision. A new world, so to speak, where we feel, and therefore, we are.

References

- American Psychological Association. (2019). Stress and Current Events. *Stress in America*, 1-7.
- Arnett, J.J. (2013). The evidence for generation we against generation me. *Emerging Adulthood*, 1(1), 5-10. <https://doi.org/10.1177/2167696812466842>
- Aurelius, M. (2002). *The meditations*. Random House.
- Baumeister, R. F., Bratslavsky, E., Muraven, M., & Tice, D. M. (1998). Ego depletion: is the active self a limited resource? *Journal of Personality and Social Psychology*, 74(5), 1252–1265. <https://doi.org/10.1037/0022-3514.74.5.1252>
- Brady, W.J., Crockett, M.J., & Van Bavel, J.J. (2020). The MAD model of moral contagion: The role of motivation, attention, and design in the spread of moralized content online. *Perspectives on Psychological Science*, 15(4), 978 - 1010. <https://doi.org/10.1177/1745691620917336>
- Brady, W.J., Wills, J.A., Tucker, J.A., Jost, J.J., Van Bavel, J.J. (2017). Emotion shapes the diffusion of moralized content in social networks. *Proceedings of the National Academy of Sciences*, 114(28), 7313-7318. [pnas.org/cgi/doi/10.1073/pnas.1618923114](https://doi.org/10.1073/pnas.1618923114)
- Buchtel, E.E. & Norenzayan, A. (2008). Which should you use, intuition or logic? Cultural differences in injunctive norms about reasoning. *Asian Journal of Social Psychology*, 11, 264-273. [10.1111/j.1467-839x.2009.00266.x](https://doi.org/10.1111/j.1467-839x.2009.00266.x)
- Burghardt, K., Alsina, E. F., Girvan, M., Rand, W., & Lerman, K. (2017). The myopia of crowds: Cognitive load and collective evaluation of answers on Stack Exchange. *PLOS ONE*, 12(3), e0173610. <https://doi.org/10.1371/journal.pone.0173610>

- Campbell, W. K., Campbell, S. M., Siedor, L. E., & Twenge, J. M. (2015). Generational differences are real and useful. *Industrial and Organizational Psychology, 8*(03), 324–331. doi:10.1017/iop.2015.43
- Crockett, M.J. (2017). Moral outrage in a digital age. *Nature, Human Behavior, 1*(11), 769-771. 10.1038/s41562-017-0213-3
- Davies, W. (2018). *Nervous states: Democracy and the decline of reason*. W.W. Norton & Company, Inc.
- Descartes, R. (1993). *Discourse on methods; and meditations on first philosophy*. Yale University Press. (Original work published in 1637)
- Dijkstra, K. A., van der Pligt, J., van Kleef, G. A., & Kerstholt, J. H. (2012). Deliberation versus intuition: Global versus local processing in judgment and choice. *Journal of Experimental Social Psychology, 48*(5), 1156–1161. <https://doi.org/10.1016/j.jesp.2012.05.001>
- Erdfelder, E., Faul, F., & Buchner, A. (1996). GPOWER: A general power analysis program. *Behavior Research Methods, Instruments & Computers, 28*(1), 1–11. <https://doi.org/10.3758/BF03203630>
- Evans, J. St. B.T. (2003). In two minds: dual-process accounts of reasoning. *Trends in Cognitive Sciences, 7*(10), 454-459. <https://doi.org/10.1016/j.tics.2003.08.012>
- Epstein, S., Pacini, R., Denes-Raj, V., & Heier, H. (1996). Individual differences in intuitive–experiential and analytical–rational thinking styles. *Journal of Personality and Social Psychology, 71*(2), 390–405. <https://doi.org/10.1037/0022-3514.71.2.390>
- Escobar-Viera, C. G., Shensa, A., Bowman, N. D., Sidani, J. E., Knight, J., James, A. E., & Primack, B. A. (2018). Passive and active social media use and depressive symptoms

- among United States adults. *Cyberpsychology, Behavior, and Social Networking*, 21(7), 437–443. doi:10.1089/cyber.2017.0668
- Firth, J., Torous, J., Stubbs, B., Firth, J.A., Steiner, G.Z., Smith, L., Alvarez-Jimenez, M., Gleeson, J., Vancampfort, D., Armitage, C.J., Sarris, J. (2019). The “online brain”: how the internet may be changing our cognition. *World Psychiatry*, 18(2), 119-129. 10.1002/wps.20617
- Giedd, J.N. (2012). The digital revolution and adolescent brain evolution. *Journal of Adolescent Health*, 51(2), 101-105. <https://doi.org/10.1016/j.jadohealth.2012.06.002>
- Glockner, A., & Witteman, C. (2010). Beyond dual-process models: a categorization of processes underlying intuitive judgement and decision making. *Thinking & Reasoning*, 16(1), 1-25. 10.1080/13546780903395748
- Grass, J., Strobel, A., & Strobel, A. (2017). Cognitive investments in academic success: The role of need for cognition at university. *Frontiers in Psychology*, 8. doi:10.3389/fpsyg.2017.00790
- Greene, J., & Haidt, J. (2002). How (and where) does moral judgment work? *Trends in Cognitive Sciences*, 6(12), 517–523. [https://doi.org/10.1016/S1364-6613\(02\)02011-9](https://doi.org/10.1016/S1364-6613(02)02011-9)
- Greene, J. D., Morelli, S. A., Lowenberg, K., Nystrom, L. E., & Cohen, J. D. (2008). Cognitive load selectively interferes with utilitarian moral judgment. *Cognition*, 107(3), 1144–1154. <https://doi.org/10.1016/j.cognition.2007.11.004>
- Haidt, J. (2001). The emotional dog and its rational tail: A social intuitionist approach to moral judgment. *Psychological Review*, 108(4), 814–834. <https://doi.org/10.1037/0033-295X.108.4.814>

Haidt, J. (2007). The new synthesis in moral psychology. *Science*, 316, 998-1002.

10.1126/science.1137651

Haidt, J., & Joseph, C. (2004). Intuitive ethics: how innately prepared intuitions generate culturally variable virtues. *Daedalus*, 55-66.

Haidt, J., Koller, S. H., & Dias, M. G. (1993). Affect, culture, and morality, or is it wrong to eat your dog? *Journal of Personality and Social Psychology*, 65(4), 613–628.

10.1037/0022-3514.65.4.613

Haidt, J., & Rose-Stockwell, T. (2019, December). The dark psychology of social networks. *The Atlantic*.

<https://www.theatlantic.com/magazine/archive/2019/12/social-media-democracy/600763/>

Henrich, J., Heine, S.J., & Norenzayan, A. (2010). The weirdest people in the world?

Behavioral and Brain Sciences, 33(2-3), 61-83.

<https://doi.org/10.1017/S0140525X0999152X>

Hume, D. (1960). *An enquiry concerning the principles of morals*. La Salle, IL: Open Court.

(Original work published 1777).

Kasachkoff, T., & Saltzstein, H. D. (2008). Reasoning and moral decision-making: A critique of the Social Intuitionist Model. *International Journal of Developmental Science*, 2(3),

287–302. <https://doi.org/10.3233/DEV-2008-2307>

Kohlberg, L., & Gilligan, C. (1971). The adolescent as a philosopher: The discovery of the self in a postconventional world. *Daedalus*, 100(4), 1051-1086.

Kahneman, D. (2011). *Thinking, fast and slow*. Farrar, Straus and Giroux.

- Kasachkoff, T., & Saltzstein, H. D. (2008). Reasoning and moral decision-making: A critique of the Social Intuitionist Model. *International Journal of Developmental Science*, 2(3), 287–302. <https://doi.org/10.3233/DEV-2008-2307>
- Kitayama, S., Markus, H. R., & Matsumoto, H. (1995). Culture, self, and emotion: A cultural perspective on "self-conscious" emotions. In J. P. Tangney & K. W. Fischer (Eds.), *Self-conscious emotions: The psychology of shame, guilt, embarrassment, and pride* (p. 439–464). Guilford Press.
- Kitayama, S., Markus, H.R., Kurokawa, M. (2010). Culture, emotion, and well-being: Good feelings in Japan and the United States. *Cognition and Emotion*, 14(1), 93-124.
10.1080/026999300379003
- Lerman, K., & Hogg, T. (2014). Leveraging position bias to improve peer recommendation. *PLOS ONE*, 9(6), e98914. <https://doi.org/10.1371/journal.pone.0098914>
- Lim, N. (2016). Cultural differences in emotion: differences in emotional arousal level between East and the West. *Integrative Medicine Research*, 5, 105-109.
<http://dx.doi.org/10.1016/j.imr.2016.03.004>
- Lukianoff, G. & Haidt, J. (2018). *The coddling of the american mind*. New York: Penguin Press.
- Lyons, S.T., Duxbury, L., & Higgins, C. (2007). An empirical assessment of generational differences in basic human values. *Psychological Reports*, 101(2), 339-352.
<https://doi.org/10.2466/pr0.101.2.339-352>
- Marks, A. D. G., Hine, D. W., Blore, R. L., & Phillips, W. J. (2008). Assessing individual differences in adolescents' preference for rational and experiential cognition. *Personality and Individual Differences*, 44(1), 42–52. <https://doi.org/10.1016/j.paid.2007.07.006>

- Margittai, Z., Nave, G., Strombach, T., van Wingerden, M., Schwabe, L., & Kalenscher, T. (2016). Exogenous cortisol causes a shift from deliberative to intuitive thinking. *Psychoneuroendocrinology*, *64*, 131–135. <https://doi.org/10.1016/j.psyneuen.2015.11.018>
- Meacham, J. (2019). Mueller offers a lesson in the power of reason over passion. *Time*. <https://time.com/5560225/jon-meacham-lessons-from-mueller-report/>
- Mega, L. F., Gigerenzer, G., & Volz, K. G. (2015). Do intuitive and deliberate judgments rely on two distinct neural systems? A case study in face processing. *Frontiers in Human Neuroscience*, *9*. <https://doi.org/10.3389/fnhum.2015.00456>
- Metzger, M. J., & Flanagin, A. J. (2013). Credibility and trust of information in online environments: The use of cognitive heuristics. *Journal of Pragmatics*, *59*, 210–220. <https://doi.org/10.1016/j.pragma.2013.07.012>
- Miller, J.G., Das, R., & Chakravarthy, S. (2011). Culture and the role of choice in agency. *Journal of Personality and Social Psychology*, *101*(1), 46-62. [10.1037/a0023330](https://doi.org/10.1037/a0023330)
- Miller, J.G., Goyal, N., & Wice, M. (2017). A cultural psychology of agency: morality, motivation, and reciprocity. *Perspectives on Psychological Science*, *12*(5), 867-875. <https://doi.org/10.1177/1745691617706099>
- Nietzsche, F. (1998). *On the Genealogy of Morality* (Clark, M., & Swensen, A. J., Trans.). Hackett Publishing Company. (Original work published 1887).
- Pacini, R., & Epstein, S. (1999). The relation of rational and experiential information processing styles to personality, basic beliefs, and the ratio-bias phenomenon. *Journal of Personality and Social Psychology*, *76*(6), 972–987. <https://doi.org/10.1037/0022-3514.76.6.972>
- Paxton, J. M., & Greene, J. D. (2010). Moral reasoning: hints and allegations. *Topics in Cognitive Science*, *2*(3), 511–527. <https://doi.org/10.1111/j.1756-8765.2010.01096.x>

- Pizarro, D. A., & Bloom, P. (2003). The intelligence of the moral intuitions: A comment on Haidt (2001). *Psychological Review*, *110*(1), 193–196.
<https://doi.org/10.1037/0033-295X.110.1.193>
- Plato. (1949). *Timaeus* (B. Jowett, Trans.). Indianapolis, IN: Bobbs-Merrill. (Original work published 4th century B.C.).
- Roberts, B. W., Walton, K. E., & Viechtbauer, W. (2006). *Patterns of mean-level change in personality traits across the life course: A meta-analysis of longitudinal studies. Psychological Bulletin*, *132*(1), 1–25. doi:10.1037/0033-2909.132.1.1
- Savani, 2017. Reverse ego depletion: acts of self-control can improve subsequent performance in Indian cultural contexts. *Journal of Personality and Social Psychology*, *113*(4), 589–607. <https://doi.org/10.1037/pspi0000099>
- Shweder, R. A., Much, N. C., Mahapatra, M., & Park, L. (1997). The “big three” of morality (autonomy, community, divinity) and the “big three” explanations of suffering. In *Morality and health* (pp. 119–169). Taylor & Frances/Routledge.
- Sewall, C.J.R., Bear, T.M., Merranko, J., & Rosen, D. (2020). How psychosocial well-being and usage amount predict inaccuracies in retrospective estimates of digital technology use. *Mobile Media & Communication*, *0*(0), 1-21. <https://doi.org/10.1177/2050157920902830>
- Sladek, R., Bond, M.J., & Phillips, P.A. (2010). Age and gender differences in preferences for rational and experiential thinking. *Personality and Individual Differences*, *49*(8), 907–911. <https://doi.org/10.1016/j.paid.2010.07.028>
- Snyder, T. (2018). The road to unfreedom: Russia, Europe, America. *Tim Duggins Books*.

- Strohminger, N., Knobe, J., & Newman, G. (2017). The true self: A psychological concept distinct from the self: *Perspectives on Psychological Science*, *12*(4), 551-560.
<https://doi.org/10.1177/1745691616689495>
- Twenge, J. M. (2017). *IGen: why today's super-connected kids are growing up less rebellious, more tolerant, less happy-- and completely unprepared for adulthood (and what this means for the rest of us)*. First Atria books hardcover edition. New York, NY: Atria Books.
- Twenge, J.M., Campbell, S.M., Hoffman, B.J., & Lance, C.E. (2010). Generational differences in work values: Leisure and extrinsic values increasing, social and intrinsic values decreasing. *Journal of Management*, *36*(5), 1117-1142.
<https://doi.org/10.1177/0149206309352246>
- Wang, Q., & Jeon, H. J. (2020). Bias in bias recognition: People view others but not themselves as biased by preexisting beliefs and social stigmas. *PLOS ONE*, *15*(10), e0240232.
<https://doi.org/10.1371/journal.pone.0240232>
- Wong, G., Derthick, A. O., David, E. J. R., Saw, A., & Okazaki, S. (2013). *The What, the Why, and the How: A review of racial microaggressions research in psychology*. *Race and Social Problems*, *6*(2), 181–200. doi:10.1007/s12552-013-9107-9
- Witteman, C., van den Bercken, J., Claes, L., & Godoy, A. (2009). Assessing rational and intuitive thinking styles. *European Journal of Psychological Assessment*, *25*(1), 39–47.
<https://doi.org/10.1027/1015-5759.25.1>

Appendix

Moral-Rationality Value Scale

The following series of questions will be about moral issues (issues related to things being "right" or "wrong").

Please identify how much the following statements accurately reflect who you are
1 (definitely not true of myself) - 5 (definitely true of myself)

Dimension 1: Preference

- When I face a moral dilemma, I generally enjoy using reason to make a decision
- I generally don't like to do a lot of thinking about moral problems that I encounter in my life.
- I generally enjoy reasoning to solve hard moral problems in my life.

Dimension 2: Efficacy

- I think it is a good idea to rely on reason when making moral decisions.
- I think it is foolish to make important moral decisions based on reason.
- I hardly ever go wrong when I listen to my reasoning to find the answer to a moral dilemma.

Dimension 3: Typical behavior

- I often use reason when making a moral decision
- I generally do not depend on reasoning for my moral actions
- I tend to use reasoning as a guide for making moral choices

Moral-Intuition Value Scale:

Dimension 1: Preference

- I generally enjoy relying on my gut to make moral decisions
- I generally do not like following my moral intuitions
- I generally enjoy using my intuition to solve hard moral problems in my life

Dimension 2: Efficacy

- I think it is foolish to make important moral decisions based on intuitions
- I find using my Intuition to be a very useful way to solve moral dilemmas
- I hardly ever go wrong when I listen to my gut feelings to find the answer to a moral dilemma

Dimension 3: Typical behavior

- I often go by my gut-feelings when deciding on a course of moral action
- I generally do not depend on hunches for my moral actions
- I tend to use my heart as a guide for moral actions

Screen Time Measure

- 1) Please report how many hours per day you spend on social media using the screen time application on your phone.

Step 1: Go to “Settings”

Step 2: Click on “Screen Time”

Step 3: You should see your “daily average” screen time usage from the past week. Please input this information here:

Step 4: Underneath your daily average screen time, please click “See all activity”

Step 5: Scroll down to the “most used” section

Step 6: Click on “Show Apps & Websites”

Step 7: Please input the daily average time for Instagram:

Step 8: Please input the daily average time for Facebook:

Step 9: Please input the daily average time for Twitter:

Step 10: Please input the daily average time for Tik Tok:

Step 11: Please input the daily average time for Snapchat: