

**I Feel and I Invest: Social Emotions and Sustainable Investing in Germany
and Japan**

(Final accepted version by Sustainable Development)

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Abstract

This research focuses on the increasing but unexplored role of individual investors in sustained sustainable investment. Sustainable investment with pecuniary motives tends to be fractured by economic downturns. Drawing on research on social emotions shaping decision-making, this study explores how non-pecuniary motives and emotions—empathy and self-esteem—affect the attention to sustainability ratings by individual investors. We administered the original survey-embedded experiments to nationals of two countries in the Global North, Germany and Japan. We found that evoking empathy can lead experienced Japanese investors to focus on sustainability ratings while German investors are unaffected. On the other hand, self-esteem stimuli are effective for German potential investors who have expressed an interest in investing but not for Japanese investors. These results underline the potential of emotional stimuli in promoting sustainable investment and highlight the importance of tailoring such stimuli to different cultural contexts and groups of people.

Keywords: sustainable investment; supply chain; survey experiment; emotion; company

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Introduction

The consideration of environmental impacts has emerged as an integral part of mainstream investment decision-making in the past decade (Kiran et al. 2020). According to a survey conducted by PwC in 2022, involving 250 institutional investors and asset managers worldwide, three-quarters of institutional investors viewed environmental, social, and governance (ESG) factors as part of their fiduciary duties (PwC 2022). The number of sustainability reporting requirements on asset owners and investment managers is also on the rise (Principles for Responsible Investment 2022). The Sustainable Finance Disclosure Regulation (SFDR) of the EU, introduced in 2023, for instance, mandates asset owners and investment managers to report on how they integrate sustainability risks in investment decisions and whether/how they consider the impact of a product's principal adverse sustainability.

The market downturn in 2022, however, led to unprecedented outflows from the funds devoted to ensure adherence to sustainability principles (Isla and Ross 2022). In 2023, sustainable funds experienced net global outflows for the first time in history (Frances 2024). Investors who had been willing to pay for ESG performance for the prospect of higher returns withdrew their investments from responsible investment funds more rapidly than from broader market funds (Isla and Ross 2022). While these outflows were accompanied by not unreasonable skepticism and distrust towards the evaluation of sustainability performances,¹⁾ they also exposed how fragile sustainable investing is; faced with declining financial returns, investors' focus on sustainability seemed to falter. Such fluctuations in sustainable investing during market downturns deal a critical blow to global supply chain sustainability, particularly in the Global

¹⁾ According to the PwC survey, 71% of institutional investors surveyed and over eight in ten asset managers indicated that mislabeling is prevalent within the asset and wealth management industry.

South, where steadfast private efforts are crucial to compensate for the absence of government regulations.

Against this backdrop, our research aims to contribute to the discussion on how to sustain sustainable investment. In doing so, we shift the focus from institutional investors and their asset managers, who are primarily driven by pecuniary motives, to individual investors. During the COVID-19 pandemic, there was a surge in individual investors directly participating in the stock market, facilitated by recent innovations in fintech within the retail brokerage sector (Ozik et al. 2021). In 2021, individual investors accounted for 52% of global assets under management, a figure expected to rise to 61% by 2030 (Stephanie and Ken 2022). Without participation of these individual investors, making sustainable investing a sustained trend would not be feasible. This leads to our research question: what motivates individual investors to consider the sustainability impacts of their investment?

Literature on the trading patterns of individual investors have long suggested that investors rely on short cuts or “heuristics”, rather than investing based on thorough analysis of information. They buy stocks that are in news and catch their attention (Barber et al. 2022; Ozik et al. 2021), that have recently shown good performances (Barber et al. 2009; Odean 1999), that they previously owned and are familiar with (Ariely et al. 2006; Khan et al. 2017). A firm’s sustainability rating is one of various shortcuts individuals encounter when navigating the myriad of available investment options. Most large traded companies publish sustainability reports, and a number of institutions, including S&P 500 and Bloomberg, post sustainability ratings to guide those interested in responsible investing (Frances 2024; S&P Global 2022). It remains largely unknown, however, whether and when individual investors pay substantial attention to these sustainability ratings, especially in the context they simultaneously receive a number of other shortcuts.

In this study, we build on the burgeoning research that reports non-pecuniary motives for sustainable investment among individual investors (Gutsche et al. 2023; Riedl and Smeets 2017). We also draw from the expanding literature highlighting the

role of social emotions in social decision-making and environmentally responsible behaviors in particular (Berenguer 2007; Czap et al. 2012, 2015; Ferguson and Branscombe 2010; Mallett et al. 2021; Pfattheicher et al. 2016; Schmitt et al. 2018; Taberner and Hernández 2011). Synthesizing insights from these studies, we theorize how evoking social emotions might capture individual investors' attention toward sustainability ratings.

Specifically, we draw attention to two core social emotions: empathy (or empathic concern) as an other-regarding social emotion and self-esteem as a self-regarding social emotion. First, empathy is thought to promote prosocial behavior by appealing to altruistic values, as explained in more detail in the following section (Batson et al. 1987; Eisenberg and Miller 1987; Stocks et al. 2009). Second, people are believed to have an inherent desire to enhance and sustain their self-esteem (Greenberg 2008), and compliments or positive assessments by others for one's prosocial behaviors can boost one's self-esteem (Clary and Snyder 1999; Fu et al. 2017). We posit that providing information that evoke empathy and self-esteem can attract greater attention to sustainability ratings.²⁾ To assess the effectiveness of these strategies, we employ a survey-embedded experiment to nationals of two countries in the Global North, Germany and Japan.

Our study makes both scholarly and practical contributions. First, we contribute to the burgeoning research on non-pecuniary motives for sustainable investment among individual investors (Gutsche et al. 2023; Riedl and Smeets 2017) by highlighting the potential of emotional stimuli in promoting sustainable investment. To our knowledge, this is the first experimental study to examine how social-emotional stimuli influence people's pro-environmental behavior in the context of sustainable investment. The cross-national investigation also distinguishes this study from previous literature based on samples of university students, local residents, or national samples from a single

²⁾ Our focus on empathy and self-esteem, among other emotions, also rests on ethical and sociotropic concerns. Other emotions, such as fear and anger, can also motivate sustainable investing by encouraging people to avoid negative environmental and social consequences of unsustainable investment (e.g., Chu and Yang 2019). However, provoking such emotions would have negative consequences on individual health and society at large.

country (Chu and Yang 2019; Sharma and Christopoulos 2021; Swim and Bloodhart 2015). Second, our findings on the effect of empathy and self-esteem stimuli can also be used by practitioners who seek to advance sustainable investment among individual investors. We need *stories* (not just data) that link sustainability ratings to humanness and mechanisms to *recognize and compliment* individual investors for taking sustainability seriously. This study also underscores the importance of tailoring such stimuli to fit different cultural contexts and different groups of people.

This paper is structured as follows. The next section reviews the literature on the role of social emotions in social decision-making in general. Section 3 zooms in on the role of social emotions in sustainable investment and presents a set of hypotheses concerning empathy and self-esteem. Our research design, including the survey experimental approach, is discussed in Section 4. We then present our results in Section 5 and further discuss key findings in Section 6. Finally, we conclude our paper with the theoretical and practical implications of our findings in Section 7.

Social Emotions in Social Decision-Making

Building on neoclassical economic models, extrinsic motives such as self-interest have been long regarded as a primary driver of the social decision-making. In this context, the provision of public goods often fails because certain individuals bear the costs while the benefits are widely dispersed among others. However, many studies grounded in social psychological theories suggest that social emotions can effectively drive prosocial behavior. We build on this long-standing research tradition that views social emotions as essential to social decision-making (LeDoux 1998; Panksepp 2004; Verweij et al. 2015).

Social emotion is a feeling that is important to individuals in the context of their relationships with others. These emotions address something people care about because of its importance, such as status, power, justice, or feelings of attachment (Hareli and Parkinson 2008). They arise “under the influence of role requirements, status relationships, success or failure in attaining socially prescribed goals, and the actual or imagined evaluative judgments of others” (Hewitt 2020). For example, considering the

feelings of others leads to empathy. Similarly, self-esteem and pride arise from thinking about how others perceive one's behavior, especially when it is seen as praiseworthy. Thus, socially constructed emotions are not merely psychological states but situated experiences (Hewitt 2020).

These social emotions, as situated experiences, have been found to play a pivotal role in shaping individuals' pro-environmental behaviors, spanning from green product consumption to signing up for environmental petitions, recycling, paying green gas taxes, and conserving energy for climate change mitigation. For instance, compassion (Pfattheicher et al. 2016) and empathy (Batson and Ahmad 2009; Berenguer 2007; Czap et al. 2012, 2015; Devoldre et al. 2016) direct individuals to help others suffering from environmental degradation; guilt or collective guilt encourages reparative actions to restore environmental damage (Ferguson and Branscombe 2010; Mallett et al. 2021, 2013); desire for self-esteem motivates engaging in green behaviors as proud and admirable actions (Schmitt et al. 2018; Tabernero and Hernández 2011).

Importantly, these social emotions do not simply undermine or replace rationality. Rather, they can organize and facilitate rationality (Crawford 2014; McDermott 2004; Verweij et al. 2015), assisting individuals in "screening, organizing, and prioritizing the information that bombards" them, and influences what information one finds "salient, relevant, convincing, or memorable" (Bandes and Salerno 2014: 1011).

In the following section, we discuss how social emotions can influence individuals' decisions regarding sustainable investments. This discussion, in turn, prompts us to consider the utilization of emotional stimuli as a potentially effective strategy for drawing investors' attention to information on a company's sustainability rating.

Social Emotions and Sustainable Investment

When making investment decisions, investors typically deal with absolute or risk-adjusted measures of financial value, including the expected profitability or growth rate of companies (Boffo and Patalano 2020). The information that appeals to economic rationality might naturally divert one's attention from the environmental performance of companies. Building on insights from the literature discussed in the previous section

(Batson and Ahmad 2009; Devoldre et al. 2016; Schmitt and Allik 2005; Tabernero and Hernández 2011), we propose that effective social emotion stimuli can refocus investors' attention toward information on corporate environmental performances, encouraging them to pursue more sustainable investments. In the following discussion, we focus on two types of social emotions: empathy (or empathic concern) and self-esteem. We elaborate on why inducing these social emotions can cultivate more sustainable investment behaviors among individuals.

Economic Rationality and Sustainable Investment

Before we elaborate on our expectations of the role of emotions in sustainable investment, we examine the role of economic rationality as a proposition. The pursuit of economic self-interest is usually at odds with environmentally friendly actions, which involve private costs. However, economic interests can be compatible with sustainable investments if the consideration of firms' sustainability performances influences investment gains. According to the OECD publication on ESG investing, sustainable and responsible investing “focuses on maximising financial returns, and utilises ESG factors to help assess risks and opportunities, particularly over the medium to long term (Boffo and Patalano 2020: 14).” With the increasing emphasis on corporate sustainability, companies that overlook it can face backlash from local communities or environmental groups. This can potentially lead to disputes between the company and those adversely affected by its unsustainable activities. In highly contentious cases, companies may face fines or compensation requirements, worsening their financial situation and significantly diminishing the profitability of investments in the company. Failure to consider them in investment decisions can thus result in economic losses. Indeed, Li et al. (2024) observe that retail investors focus on ESG-related events for primarily pecuniary motives and tend to profit by acting on ESG-related news. Therefore, we propose that providing a narrative linking bad environmental performances to financial risks can draw individual investors' attention to sustainability ratings:

Hypothesis 1 Respondents who are informed that bad environmental performance

entails financial risks will pay more attention to environmental performance ratings in their investment decision-making.

Empathy Stimuli and Sustainable Investment

Environmental protection is characterized by providing public goods where individuals bear costs for others' environmental benefits. As such, individuals pursuing economic self-interest often fail to act in a pro-environmental manner. Given the nature of the environmental problem, altruistic values have been regarded as an important driver of pro-environmental behaviors ([Bamberg 2003](#); [Berenguer 2007](#); [Stern and Dietz 1994](#)). Among various social emotions, empathy, generally defined as the ability to understand and experience others' feelings from their frame of reference rather than one's own, is known to facilitate altruistic motivations. Empathy is considered a moral emotion often linked to the interest or welfare of society as a whole or others ([Haidt et al. 2003](#)). In moral psychology, empathy is regarded as the most quintessentially moral feature of human brains and is widely perceived as a key to humanitarian behavior ([Greene 2013](#)). More specifically, empathic concern, an emotional response of compassion caused by witnessing another person's suffering ([Batson et al. 1987](#); [Niezink et al. 2012](#)), is suggested to increase sensitivity to justice for others ([Decety and Yoder 2016](#)) and facilitate altruistic, prosocial behaviors ([Eisenberg and Miller 1987](#); [Stocks et al. 2009](#)) through moral development.³⁾

This empathic response does not depend on personal acquaintance with the victims. Neuroscience research is consistent with this claim, revealing that empathy can be triggered even in the absence of a direct connection with the affected individuals, through verbal narratives from a third party or stimuli involving fictional or imaginary characters ([Blair 2005](#); [Cuff et al. 2016](#); [Pelligra 2011](#)). One important way of arousing empathic concern, or “a royal avenue to empathy” according to [Decety \(2005\)](#), is “perspective taking,” which consists of the effort to adopt the point of view of another

³⁾ The mechanism linking empathic concern to prosocial behavior may not be purely other-regarding. Individuals may engage in sustainable investing because caring for victims makes them feel good about themselves. See [Gutsche et al. \(2023\)](#) for how “warm glow (i.e., impure altruism)” drives sustainable investing.

person and see and feel things from their perspective (Decety 2005; Oswald 1996). ⁴⁾

The empathic concern can be stimulated by taking the perspective of a person in need and imagining how that person is affected by his or her plight (Batson et al. 2002).

The connection between perspective-taking and prosocial attitudes and behaviors is validated by empirical research (Eisenberg and Miller 1987; Hoffman 2001; Segal et al. 2012). In the environmental field, experimental studies find that a perspective-taking manipulation evokes pro-environmental attitudes such as biosphere environmental concerns (Schultz 2000) and promote environmentally responsible behaviors such as water conservation efforts by farmers (Czap et al. 2012, 2015).

In the context of sustainable investments, the misconduct of global corporations causes the suffering of innocent people. Hence, we propose that by providing narratives about the suffering endured by innocent individuals and inviting respondents to engage in perspective-taking, we can stimulate empathic concern. Such empathic concern, in turn, would motivate individuals to make decisions that can minimize their suffering, in our case, by paying more attention to the environmental ratings of the firms and avoiding investing in firms with bad ratings.

Hypothesis 2 Respondents informed of human suffering caused by environmental misconduct by global corporations will pay more attention to environmental performance ratings in their investment decision-making.

Self-esteem Stimuli and Sustainable Investment

In addition to moral emotions such as empathy, self-related emotions can also trigger prosocial behavior. Non-altruistic values can motivate prosocial behavior if the individual experiences the psychological benefits of joy and happiness when acting prosocially. As such social emotion, we focus on self-esteem. Literature suggests that people have a basic need to evaluate themselves (Festinger 1954), and an inherent motivation to enhance and sustain their self-esteem via this evaluative process

⁴⁾ Perspective taking can be both cognitive and affective. Cognitive perspective taking has been conceptualized as “the ability to recognize and understand the thoughts of others,” whereas affective perspective taking is defined as “the ability to identify and understand how another person is feeling” (Oswald 1996: 614).

(Greenberg 2008; Leary and Downs 1995). Without objective standards of comparison, people will use social bases for comparison. In order to increase one's own self-esteem, one therefore often needs a compliment or a positive assessment of one's own appearance in comparison to others, which makes self-esteem a social emotion.⁵⁾

Studies on consumer behaviors, including ethical consumption, have long proposed that choosing superior products and rejecting inferior ones serves consumers' desire to boost their self-esteem by eliciting positive self-relevant emotions such as pride and happiness (Antonetti and Maklan 2014; Banister and Hogg 2004; Hwang and Kim 2018). Scholars observe a similar emotional mechanism in the context of environmentally responsible consumption and find that narcissism enhances green purchases (e.g., Naderi (2018); Naderi and Strutton (2014)). Narcissism is 'a person's ability to maintain a positive self-image through affect-regulation and interpersonal processes to receive the validation and admiration of the people around them (Pincus and Roche 2011: 31-40)'. While clinical narcissism is often treated as a psychological disorder, normal narcissism is a healthy emotion common among humans which lead them to seek social opportunities that provide them with experiences of self-enhancement.

In light of these research findings, self-esteem, by appealing to psychological benefits for oneself, might encourage people to behave in environmentally friendly ways even if they have no other preferences or altruistic motives. We hypothesize that by presenting sustainable investing as a source of pride and self-worth, we can motivate individuals to consider sustainability ratings in their investment decisions by activating their desire to impress others.

Hypothesis 3 Respondents informed of environmental responsible investment being as socially admirable will pay more attention to environmental performance ratings in their investment decision-making.

⁵⁾ Similarly to empathy, self-esteem has both cognitive and emotional components (Scheff and Fearon Jr 2004). It is cognitive in that holding a favorable opinion of oneself involves self-evaluation. Simultaneously, the general "feelings" of self-respect and self-worth are emotional (Kitayama et al. 1995). As these two aspects are difficult to separate empirically, we do not make a distinction between the two.

Cultural Differences in Emotional Stimuli

Many studies in cross-cultural psychology emphasize that the action of emotions in humans is not ubiquitous, but can depend on the cultural or social context. As a complex cultural artifact, emotions can be reproduced and changed over time through interactions between individuals ([Heath 2014](#)). If so, country differences might impact the effectiveness of social emotion stimuli in shaping sustainable investment.

Previous research points out the association between collectivism and empathy (e.g., [Dalsky et al. \(2008\)](#)). This is because giving and receiving sympathy (the acknowledgment of another person's feelings), closely related to empathy, is theorized to be more closely tied to well-being within interdependent than independent cultural contexts ([Kitayama et al. 1995](#)). In a collectivistic society, people tend to see themselves as being part of a larger, interconnected group and put priority on fitting in with others and maintaining harmony, whereas, in an individualistic society, people see themselves as distinct and separate from others, which can make it harder to feel empathy toward others or put themselves in others' shoes.

Empirical research supports this perspective. For example, [Chopik et al. \(2017\)](#) analyzed the largest-ever survey data on empathy targeting 104,365 people across 63 countries and confirmed that collectivistic countries had higher empathy than individualistic countries. In their study that compares empathy among British and East Asian people, [Atkins et al. \(2016\)](#) found that the British participants reported less cognitive empathy -the ability to assess or identify the emotions of another- than their East Asian counterparts in response to observing someone suffering social pain. Furthermore, existing experimental studies also find that the disposition of compassion enhances the effect of compassion-cultivating treatment on entrepreneurs' sustainable decision-making ([Engel et al. 2020](#)). Extending these findings to our research context, it can be posited that empathy stimuli may work more effectively for Japanese than Germans in encouraging sustainable investment.

Meanwhile, there is a substantial amount of evidence that people in East Asian countries report lower levels of self-esteem compared to those in Western countries

(Bond and Cheung 1983; Cai et al. 2007; Campbell et al. 1996; Schmitt and Allik 2005). Cross-country surveys targeting 53 nations by Schmitt and Allik (2005) found that collectivistic cultures tend to have lower levels of self-competence than individualistic cultures. Additionally, studies suggest that self-esteem as a driver of individual behavior is more influential in the West and less so in Asian societies (Diener and Diener 1995; Heine et al. 1999). People raised in collectivistic cultures may even avoid self-enhancement to prevent attracting attention and causing friction within the community (Heine 2001). Given these insights, we anticipate a weaker effect of self-esteem treatments in our Japanese sample compared to the German sample.

In this regard, our surveys in Japan (a collectivist Asian country) and Germany (an individualistic Western country), should reveal the potential and limitation of empathy and self-esteem as a driver of making the tide of global sustainable investment. This line of argument leads us to propose the following hypotheses:

Hypothesis 4 The effect posited in Hypothesis 2 will be stronger in Japan than in Germany.

Hypothesis 5 The effect posited in Hypothesis 3 will be stronger in Germany than in Japan.

Research Design

Case Selection

We administered the surveys to nationals of two countries in the Global North, Germany and Japan. Our choice of Japan and Germany was motivated by our aim to broaden the scope of analysis to diverse cultural contexts. As discussed in the previous section, the role of social-emotional stimuli might vary depending on cultural or social context.

Japan was selected to represent a collectivist Asian society, while Germany was chosen to represent a Western European society that features more individualistic characteristic. Indeed, Hofstede's classification of national cultures positions Germany as one of the more individualistic societies, with an individualism score of 67.

Conversely, Japan is considered more collectivist, with an individualism score of 46 (Hofstede 2001). The literature on social psychology suggests that self-esteem drives individual behaviors more in individualistic societies, whereas empathy might resonate more effectively in collectivist societies (Atkins et al. 2016; Chopik et al. 2017; Diener and Diener 1995; Heine et al. 1999). Thus, Germans and Japanese people may be driven by different social-emotional stimuli due to their cultural differences.

Apart from these distinct cultural contexts, both countries are home to a growing number of individual investors who have recently entered the stock market. During the pandemic, both Germany and Japan have witnessed a significant increase in the proportion of retail investors. In Germany, there was an increase of 2.7 million people saving in shares, equity funds or ETFs in 2020, the first pandemic year. What is notable was the “youth boom”; young adults under the age of 30 investing in shares increased by 70 percent compared to the previous year (Gerrit 2021). In 2023, 17.6 % of Germans aged 14 and older invested in stocks, equity funds, and ETFs (Gerrit 2024).⁶⁾ In Japan, as well, there was an increase in the number of young retail investors creating new online trading accounts. In 2020, 26% of Japanese aged 20 or older invested in stocks or investment trusts (Vertex 2023). Hasegawa Takaaki, Director of Financial Literacy Support at Tokyo Stock Exchange, notes that “[w]ith the aim of expanding Japan’s investor base, as part of our outreach programme, we leverage our fair and neutral position as Japan’s securities market infrastructure to offer various courses for new and novice investors, as well as those not interested in investment (Takaaki 2021).” Japanese individual investors also invest proactively in the global south stock market including China and most recently India (Masaki et al. 2024).

⁶⁾ The number is not far away from other European countries, for instance, France where 24% of the adult population are investors (Autorité des marchés financiers 2023). Meanwhile, some Anglo-Saxon countries like the US and Australia have long featured a much higher share of individual investors. 61% of the U.S. adult population is known to own stocks (Gallup 2023), and 51 % of Australians hold investments in addition to their home and their super fund (ASX 2023). In this sense, Germany serves as a representative case for understanding broader European trends.

Sample

To test our hypotheses, we administered a survey-embedded experiment to a sample of adult Japanese citizens (in the Japanese language) recruited via Cross Marketing ($N=2507$) between October 11-13, 2023, and a sample of adult German citizens (in the German language) recruited via PureSpectrum ($N=2541$) between October 10-13, 2023.⁷⁾ In both countries, we recruited respondents nationwide to approximate the demographic distribution of the Japanese and German populations by age and gender and sent them the online survey link via the survey companies.⁸⁾ Both surveys were reviewed and approved by the Ethical Review Board of Kyoto University (R5-002) and pre-registered at Open Science Framework (OSF).⁹⁾ We did not collect personally identifiable information; all responses were anonymized and converted into numerical data used exclusively for this research and securely stored in a folder accessible only to research team members. We processed the data using the statistical software R, which is an open-source programming language and environment for statistical computing and graphics.

Survey Design

An experimental method is essential to estimate the causal effect of our information treatment (i.e., exogenous emotional stimuli) on individuals' sustainable investing decision. We opted for a survey-embedded online experiment as it allows us to reach a more diverse set of respondents compared to lab experiments or field experiments, which tend to focus on a narrower and more homogeneous group of the population, such as university students (Birnbaum 2004; Reips 2002). This approach

⁷⁾ The selected companies are known for their high-quality, reliable data used in academic research, and their costs for collecting responses in each country fit within our budget constraints.

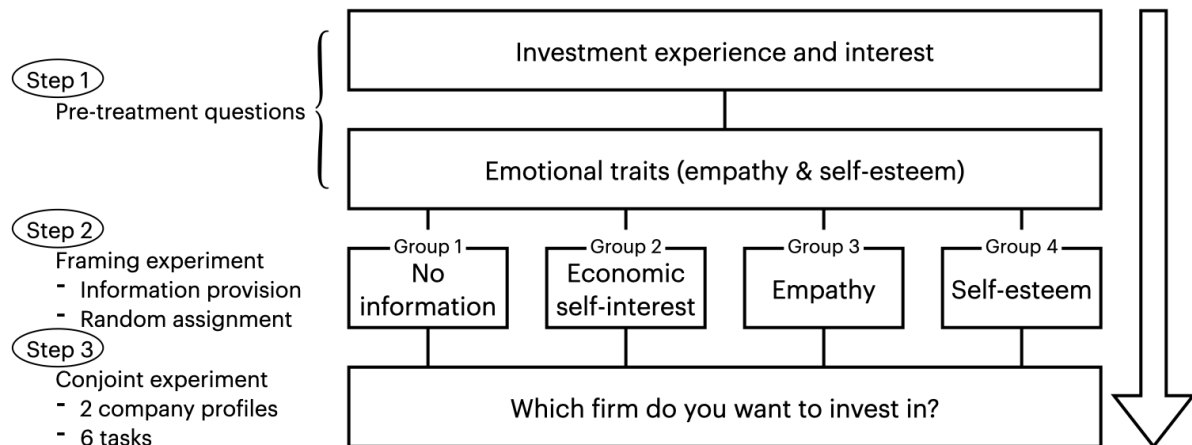
⁸⁾ In many countries, it is often harder to recruit aged respondents than younger respondents. Thus, our samples are slightly over-represented by young people compared to the census data (See Figure A6 in the Appendix). We weighted our data to match our sample to the census data in terms of the distribution by age and compared the result with the original data and the weighted one. The comparison did not pose any substantial difference between the two, which assures the use of the original data in our analysis.

⁹⁾ You can access the pre-registration at:
https://osf.io/qjt6v?view_only=288a401085b6431489e1b902b5c11233.

enhances the generalizability of the findings.¹⁰⁾ Conducting the experiment online also reduces experimenter demand effects (EDE), which refers to “changes in behavior by experimental subjects due to cues about what constitutes appropriate behavior” (Zizzo 2010: 75). Online experiments help minimize “social EDE from the presence of the researcher or as a result of social interactions” that can take place in lab or field settings (Anderson et al. 2017: 455).

The survey flow is summarized in Figure 1. The experimental section of our survey consists of a conjoint experiment nested within a framing experiment. A conjoint experiment is an experimental method in which participants are presented with a series of options, each consisting of different combinations of attribute dimensions. It offers several advantages over a classic survey experiment. First, it provides a more realistic reflection of individuals’ decision-making, as individuals often face choices among products, policies, and, in our case, firms, with multiple dimensions that involve trade-offs. This is expected to enhance external validity of findings. Second, a conjoint analysis allows researchers to evaluate how specific components contribute to the overall support for the entire package. Finally, conjoint analysis can reduce implicit social desirability bias (in our case, the tendency to express a pro-environmental preference more than people actually have) because respondents evaluate multiple dimensions together making it harder for them to consistently provide socially desirable responses on specific dimensions, (Bechtel and Scheve 2013; Hainmueller et al. 2014). Nonetheless, a limitation of the conjoint approach is that while it can compare the favorability among different values within one dimension (e.g., Good vs. Bad in the environmental performance rating), the comparison of the relative importance between different dimensions (e.g., environmental performance rating vs. profitability ratio per stock) can sometimes be less straightforward. In our case, this limitation does not undermine our hypothesis testing, as we are primarily interested in whether our treatment makes respondents pay more attention to environmental ratings compared to the control group, rather than in the relative prioritization of environmental

¹⁰⁾ Existing empirical studies comparing experiments conducted in laboratory and online settings report few differences between participants in terms of the level of attention (Clifford and Jerit 2014).

Figure 1*The survey flow*

considerations over financial and other considerations.

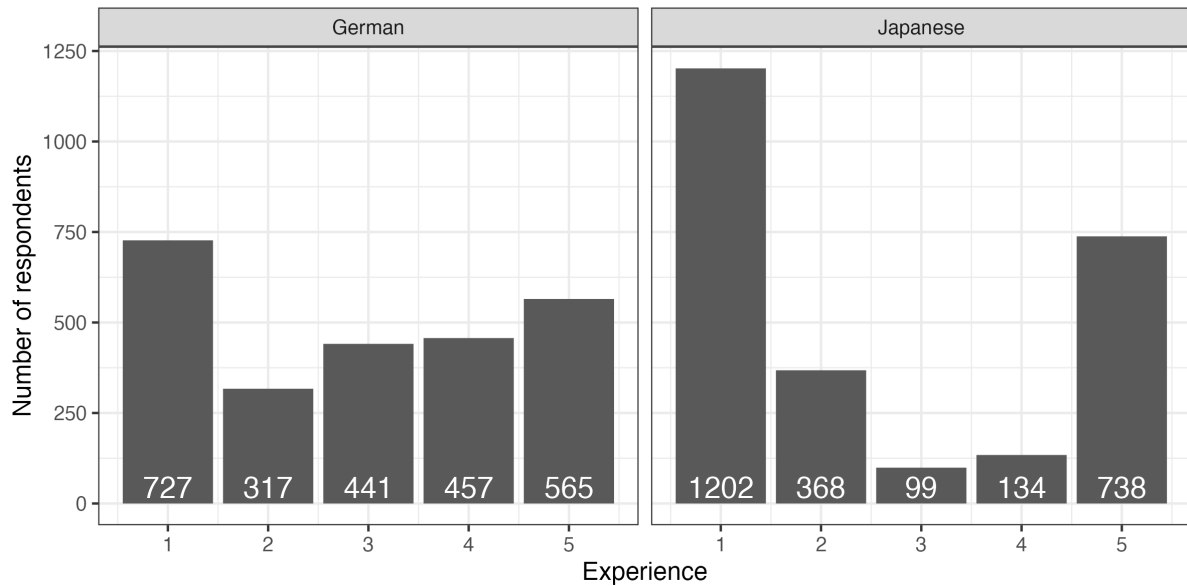
Before the experiment, we asked about respondents' investment experience and interest: "Trading securities such as stocks, government bonds, corporate bonds, and investment trusts and managing assets is called securities investment. Have you invested in securities before?" Respondents selected their answers between (1) No, and I am not interested in investment at all, (2) No, and I have no plan to do so but am interested in investment, (3) No, but I plan to do so in the near future, (4) Yes, I have invested before, and (5) Yes, I have invested before and invest now.

Figure 2 presents the number of respondents who selected each category. In both countries, a substantial share of respondents have neither experience nor interest and thus are unlikely to invest in the future (category 1). Our main analysis in the following section excludes these respondents. We also distinguish between experienced investors (categories 4 and 5) and potential investors who are likely to invest in the future (categories 2 and 3). The experienced and potential investors constitute 71 percent (1,780 respondents) and 52 percent (1,339 respondents) of the Japanese and German respondents, respectively. Our analysis focuses on these respondents.

The survey then moved on to the experimental section. We first gave participants the following common instruction.

Figure 2

Distribution of respondents by investment experience. It presents the number of respondents who selected each category to the question “Have you invested in securities before?” - (1) No, and I am not interested in investment at all, (2) No, and I have no plan to do so but am interested in investment, (3) No, but I plan to do so in the near future, (4) Yes, I have invested before, and (5) Yes, I have invested before and invest now.



Now imagine that you are looking for a new company to invest in. An investment expert recommends two multinational companies; Company A and Company B. They operate in the same industry but differ in terms of headquarters, recent financial statistics, and environmental sustainability of their factories in the Global South.

We then divided participants into four groups (reference group and three treatment groups). The treatment groups received different information before participating in the conjoint experiment, while the reference group received no information. Respondents in the first treatment group (economic self-interest) received information linking low environmental performance to potential financial risks and returns. The treatment text reads:

Some firms perform poorly in terms of environmental sustainability. Their poor performance can result in detrimental financial repercussions, such as substantial fines and monetary compensation for their factories dumping contaminated water into rivers, emitting hazardous chemical particles into the air, and failing to cut their CO2 emissions. **Such consequences impact the company's financial standing and can consequently cause an unpredictable significant decline in investors' earnings.**

Respondents in the second treatment group (empathy) received information about people who are threatened by companies with poor environmental performance. The treatment text reads:

Some firms perform poorly in terms of environmental sustainability. Innocent people who drink toxic water and inhale air containing hazardous particles from their local factories suffer severe illnesses. As these factories fail to cut their CO2 emissions, many others experience devastating climate change-induced floods and droughts, losing their homes and even their lives. **Try to imagine how these people would feel and how their everyday lives are being constantly threatened.**

Lastly, the third treatment group (self-esteem) received self-esteem-evoking information empathizing that environmentally responsible investment is socially admirable. The treatment text reads:

Some firms perform poorly in terms of environmental sustainability. Among the general [Japanese/German] public, **there are admirable people who are dedicated to environmentally conscious investments.** They are acknowledged as role models for other individual investors and are presented with a prestigious award by the government. **You can become one of them** by avoiding investments in firms whose factories dump contaminated water into rivers, emit hazardous chemical particles into the air, and fail to cut their CO2 emissions.

Participants were then exposed to a conjoint experiment where they evaluated pairs of company profiles: Company A and Company B. Each profile included five

attributes: (1) profitability ratio per stock (-20, -10, -5, 0, 5, 10, 20 %); (2) growth rate (-20, -10, -5, 0, 5, 10, 20 %); (3) the location of the headquarter (Japan, Germany, China, USA); (4) the global market share (5, 10, 15, 20, 25, 30 %); (5) environmental performance rating (very good, good, poor, very poor). We fully randomized the values of attributes. Table 1 shows a sample set of company profiles. Participants repeated this exercise six times, evaluating a total of six pairs of company profiles.

For each pair, we ask:

Imagine that you have 0.3 million yen [2000 euros] for investment. Which firm do you want to invest your 0.3 million yen [2000 euros] in?

These experimental settings enable us to identify the causal effects of each attribute on the public preference for the company to invest in.¹¹⁾ This yields a sample of 21,360 observations for Germany and 16,068 observations for Japan: 1,780 (the number of respondents in Germany) or 1,339 (the number of respondents in Japan) x 6 (choice tasks) x 2 (company profiles).¹²⁾

Emotional traits and demographic variables

Before the experiment, we also include questions to measure trait empathy and self-esteem in addition to gender, age, and area of living. We utilize the validated short versions for trait empathy and self-esteem measurements to reduce the psychological burden on respondents from answering excessively long questions. Research suggests that long scales can lead to fatigue and boredom among participants, potentially compromising the quality of responses, especially in social surveys that aim to collect many measures from a large sample.(Monteiro et al. 2022; Rammstedt and Beierlein 2014).

First, to measure respondents' trait empathy, we used an 8-item form of the Empathy Quotient (EQ-8) (Loewen et al. 2009), which is a validated short version of

¹¹⁾ The amount of 0.3 million yen/2000 euros was chosen to approximate the monthly salary for entry-level jobs that do not require a college degree in these countries. We believe this amount is a substantial but not exorbitantly high sum, which would make our scenario realistic.

¹²⁾ Right after the conjoint task, we inserted manipulation checks to gauge if respondents who received treatment information reported different perceptions of the companies' environmental performance from those who did not.

Baron-Cohen and Wheelwright (2004)'s original sixty-items scale of EQ to measure empathy in adults. For example, we asked to assess on a 5-point scale how much respondents agreed or disagreed with the statement "I find it easy to put myself in somebody else's shoes" or "I find it hard to know what to do in a social situation." Likewise, we used a 5-item Brief Rosenberg Self-Esteem Scale (B-RESE) to measure respondents' trait self-esteem (Monteiro et al. 2022). It is a validated short version of the original Rosenberg's Self-Esteem Scale (Rosenberg 1965) of which global, cross-cultural applicability has been empirically demonstrated (Schmitt and Allik 2005). Respondents were asked to express how much they agree or disagree with the statement with five scales, such as "I feel I do have much to be proud of" or "On the whole, I am satisfied with myself." Following common standards, we summed each score a respondent gave to each item to obtain an aggregate score, which we regarded as the respondent's level of trait empathy or self-esteem (Baron-Cohen and Wheelwright 2004; Rosenberg 1965).

Towards the end of the survey, we also asked relevant socio-demographic questions. These included education, income, wealth and political ideology. While these questions were not included in the main analysis, we utilized them in supplementary analysis presented in the Appendix. For instance, they were used to examine demographic characteristics of investors based on their investment experience, which aided in interpreting our main findings.

Results

In this section, we first present the baseline preference for sustainable investments in the control group. Then, we present how different treatment information affects public consideration of environmental performance. As our main findings, we present and discuss the results for experienced and potential investors, as respondents who are neither experienced nor interested in retail investors are unlikely to significantly influence the trend towards green investing. Thus, limiting our sample to these individuals ensures the external validity of the results from our survey experiment. In Figures A.2 and A.3 in the Appendix, you will find the results for the non-investors who

indicated that they have neither experience nor interest in investing in the stock market.

Baseline Preference for Sustainable Investment

Figure 3 shows the baseline preference for sustainable investment based on the conjoint result of the control group for German and Japanese samples. Marginal means estimated with the 95% confidence intervals represent the likelihood that respondents select a company attached with a specific attribute value in relation to the number of times the specific attribute value is randomly presented on the conjoint table. The results of experienced investors are red colored while those of potential investors are blue colored. The left and right panel of Figure 3 shows the baseline preference of the German and Japanese sample, respectively.

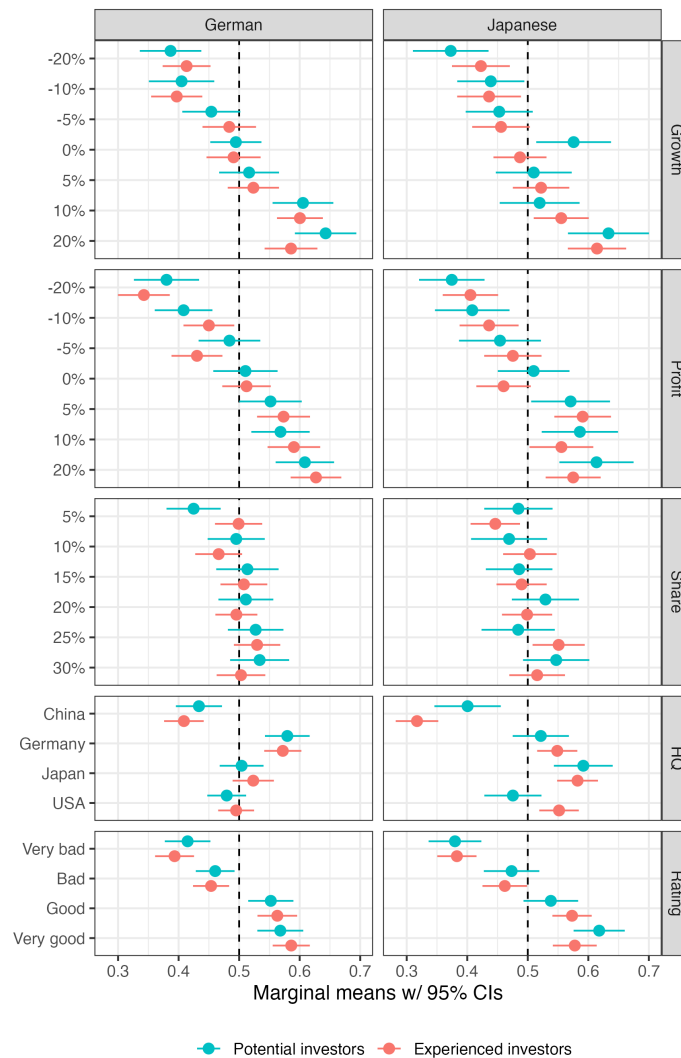
First of all, German and Japanese private investors show almost symmetrical behavior when looking at the company's economic performance indicators, such as growth rate, profitability ratio per stock, and global market share. We observe no statistically significant differences in these attributes between experienced and potential investors. As expected, respondents in both countries tend to choose a company with a higher economic performance in the last five years, especially regarding its profitability ratio per stock and growth rate, as they expect higher investment returns. However, Germans and Japanese are largely indifferent to how dominant companies are on the global market.

We also note that individual investors are considering the locations of company headquarters. German investors, both experienced and potential, prefer domestic companies and show a notable reluctance to invest in Chinese companies. In Japan, experienced investors are reluctant to invest in Chinese companies but do not differentiate between companies from the other three countries (Japan, Germany and the US). On the other hand, Japanese potential investors show a clearer inclination towards domestic companies, compared to the US- or China-based companies.

Lastly, individual investors from both countries are more likely to choose companies with "very good" and "good" environmental performance ratings than those with "bad" or "very bad." Interestingly, our respondents do not seem to discern between

Figure 3

Baseline preference. Marginal means with the 95% confidence intervals, distinguishing between experienced and potential investors. They are estimated based on the conjoint result of the control group.



“very good” and “good” firms but tend to distinguish between “very bad” and “bad” ones. This suggests that individual investors take companies’ environmental performance into account even without any emotional stimuli.

Main Findings: The Effects of Social-Emotion Stimuli

In this section, we discuss the effects of the treatments, in particular two social emotion stimuli. Since our theoretical focus is on the effects of the treatments on investors’ consideration of environmental ratings, the subsequent discussion in this section focuses specifically on the environmental ratings attribute. The results for other

attributes can be found in Figure A.1 in the Appendix.

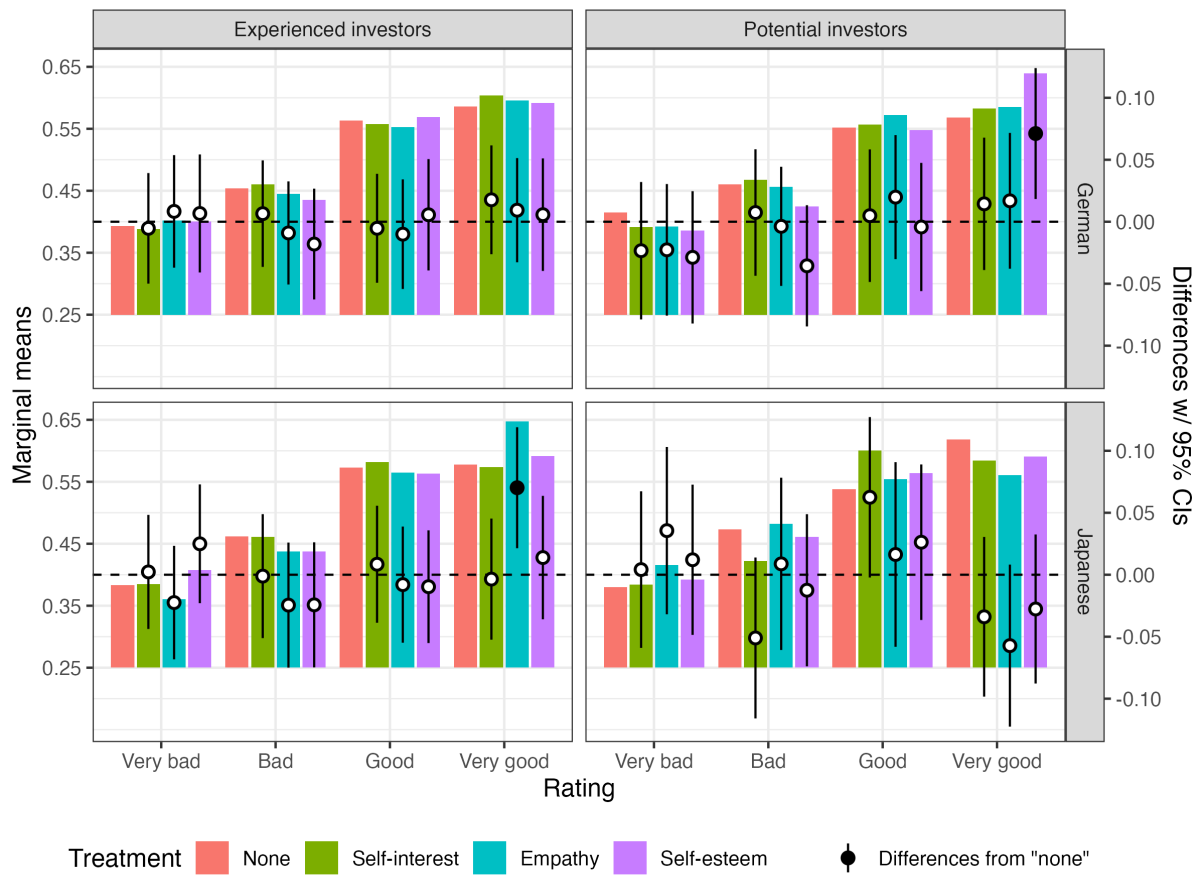
The bars in Figure 4 represent the marginal means of environmental ratings for each experimental group for the German and Japanese samples. The dots with horizontal solid lines represent the treatment effects, i.e., the difference of marginal means between the treatment and control groups, with 95% confidence intervals. Black-colored dots indicate statistically significant treatment effects, while white-colored dots indicate statistically insignificant ones. The panels on the left and right of Figure 4 present the results for experienced and potential investors, respectively.

In Germany, a statistically significant treatment effect is observed for the self-esteem treatment (T3) among potential investors. This result is visualized using the purple-colored bars in the upper right panel. Our finding suggests that potential German investors who received information that environmentally conscious investments are admirable are about 7 percentage points more likely to choose companies with a “very good” environmental performance rating than those in the control group. This finding is significant at the 95% level. The self-esteem treatment also seems to reduce the likelihood of potential investors choosing “bad” companies by around 3 percentage points, but the effect is significant only at the 90% confidence level. Meanwhile, we do not find any meaningful treatment effect among experienced German investors. This result lends partial support to Hypothesis 3.

The results of the Japanese sample show that the empathy treatment (T2) has a statistically significant effect on the experienced investors. The blue colored bars in the lower left panel show this result. Experienced Japanese investors informed that bad environmental performance causes suffering to local people in developing countries are about 8 percentage point more willing to choose companies rated “very good” compared to a reference group that received no information. This finding is significant at the 95% level. The information, however, does not motivate people to further avoid investing in companies with “bad” or “very bad” ratings. Among potential Japanese investors, we found no meaningful treatment effect of our social emotions stimuli. We thus found partial support for Hypothesis 2 as well.

Figure 4

Treatment effects with distinction between experienced and potential investors. Bars represent the marginal means of environmental ratings for each experimental group. The dots with horizontal solid lines represent the treatment effects with 95% confidence intervals.



As for the economic self-interest treatment (T1), it shows no significant effect in Germany. In Japan, while the effect is not strong enough to pass the 95% significance level, it appears to encourage potential investors to reward firms with a “good” rating and punish those with a “bad” rating. Overall, our findings provide the weakest support for Hypothesis 1.

Our results together indicate that different stimuli resonate differently depending on the investor’s country of origin and investment experience. Emotional stimuli of self-esteem appeal to potential German investors, while experienced Japanese investors are more likely to respond to stimuli of empathy. These results support our hypotheses 4 and 5.

Additional Analysis: Heterogeneous Treatment Effects by Emotion Traits

We have hypothesized that the effect of empathy stimuli would be more pronounced in Japan, a collectivist society that, according to existing studies, has a higher level of empathy, which facilitates the effect of empathy-eliciting treatment. On the other hand, we hypothesized that the effect of self-esteem stimuli would be greater in Germany, where people typically possess and prioritize higher self-esteem, potentially influencing their inclination towards choosing eco-friendly products. In this subsection, we investigated whether the country-specific effect we observed in the previous section can be attributed to the different emotional characteristics of people in the two societies. To this end, we used the measures of empathy and self-esteem in the survey.¹³⁾

First, we assessed the level of trait empathy among our German and Japanese respondents. We expected that Japanese investors in our sample would report a higher empathy level than their German counterparts. To distinguish between low and high empathy levels, our approach was as follows: Initially, we summed the responses provided by respondents for each item of the EQ-8 (ranging from 1: Strongly disagree to 5: Strongly agree) to determine each respondent's trait empathy level, resulting in scores ranging between 8 and 40. Subsequently, we rescaled these scores to align with the scale of the original sixty-item EQ, which ranges from 0 to 80 (Baron-Cohen and Wheelwright 2004) using the formula $[(\text{our empathy score} - 8) \times \frac{80}{32}]$. This adjustment allowed us to categorize respondents using established cutoff points: scores less than 33 indicate below-average empathy, scores between 33 and 52 indicate average empathy, scores between 53 and 63 indicate above-average empathy, and scores greater than 63 indicate high empathy (Baron-Cohen 2011). Thus, we classified respondents scoring 53 and above into the high empathy group.

Figure 5 shows the number of respondents by empathy level distinguishing between experienced and potential investors. Contrary to our expectations, the histogram is more left-skewed for the German than the Japanese sample, which suggests that Germans report higher empathy than Japanese. More specifically, in Germany,

¹³⁾ These items were placed before the experiment section.

Figure 5

Distribution of respondents by the level of trait empathy. It shows the number of respondents by empathy level, distinguishing between experienced and potential investors.

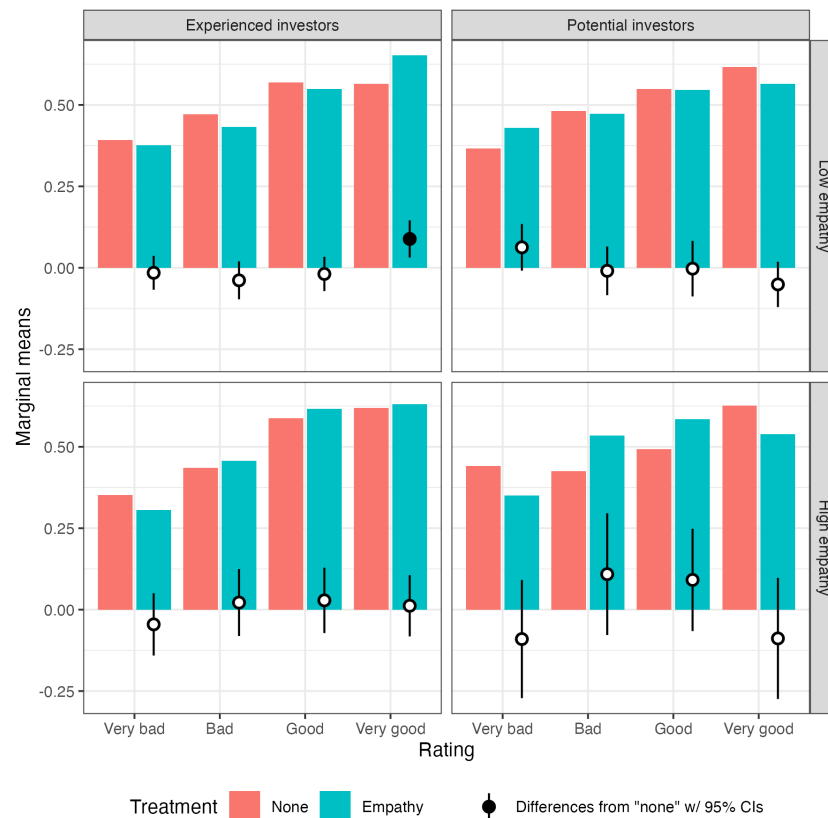


44% of the respondents are categorized into the high empathy group whereas in Japan, only 21% fall into the high empathy group. We thus do not find support for our narrative that the empathy stimuli work in Japan because it is a high empathy society.

To further investigate who responds to the empathy stimuli in our Japanese sample, we estimated the heterogeneous treatment effect of the empathy treatment based on trait empathy scores. Specifically, we calculated the marginal means of the treatment separately for those in the high empathy group and the rest. Figure 6 shows the results. The bars represent the marginal means of environmental ratings for the reference and empathy treatment groups, while the dots with horizontal solid lines represent the empathy treatment effect with 95% confidence intervals. The distinction between the empathy level (high/low empathy) and the investment experience (experienced/potential investors) yields four groups of respondents. The only statistically significant treatment effect is observed in the upper-left panel, where experienced investors with low empathy are more likely to choose “very good” rated companies under the condition of the empathy treatment, compared to the reference group. The empathy stimuli work in the opposite direction to our expectation that its effectiveness would be enhanced by a high emotional trait. Another puzzle concerns potential investors, who do not react to the treatment like experienced investors. We will provide our detailed interpretation in the next section.

Figure 6

Heterogeneous treatment effects by trait empathy (Japanese sample), distinguishing between experienced and potential investors. Bars represent the marginal means of environmental ratings for the reference and empathy treatment groups. Dots with horizontal solid lines represent the empathy treatment effect with 95% confidence intervals.



Next, we examined the self-esteem of our German and Japanese respondents. We expected that the German investors in our sample would report higher self-esteem than their Japanese counterparts. To distinguish between low and high trait self-esteem levels, our approach was as follows: First, we summed the responses given by respondents for each of the five items of the B-RSES (rated from 1: strongly disagree to 5: strongly agree), resulting in scores ranging from 5 to 25. Next, we standardized these scores to align with the range of the original 10-item Rosenberg self-esteem scale (0-30) using the formula: $(\text{our self-esteem score} - 5) * (30 / 20)$. This allowed us to adopt commonly used criteria where scores of 0-14, 15-25 and 16-30 are categorized as low, normal and high self-esteem, respectively. We thus respondents scoring 26 and above into the high self-esteem group.

Figure 7

Distribution of respondents by the level of trait self-esteem. The number of respondents by self-esteem level, distinguishing between experienced and potential investors.

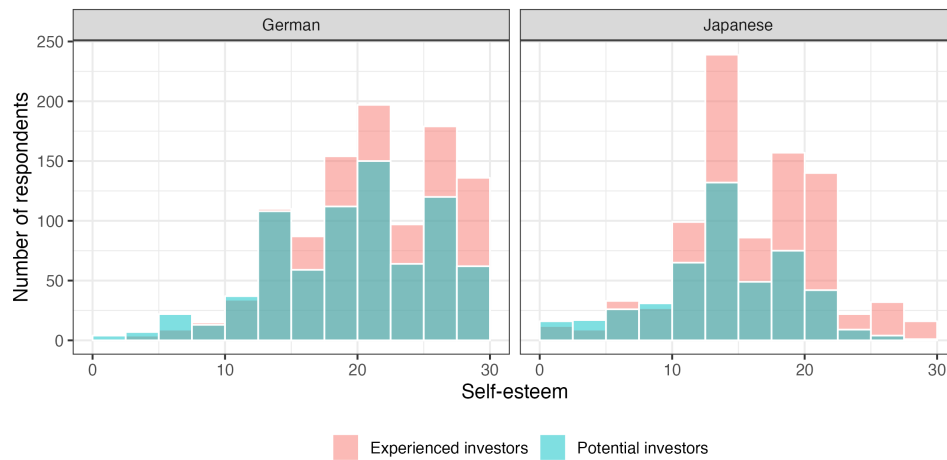
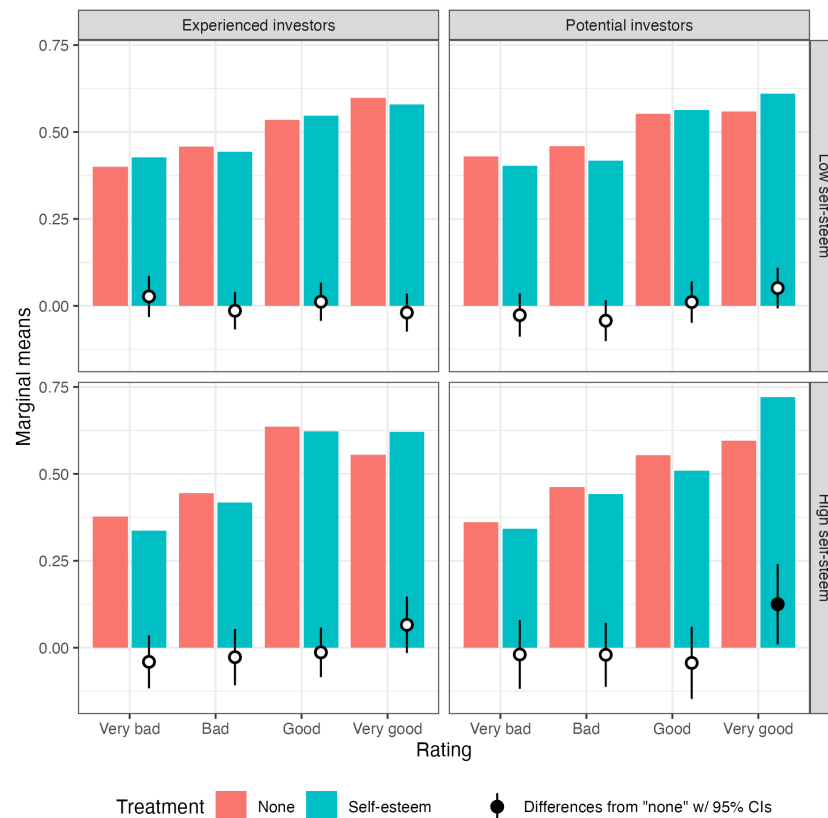


Figure 7 illustrates the distribution of respondents based on self-esteem, distinguishing between experienced and potential investors. The contrast between the German and Japanese distributions is striking. Only 4% of Japanese respondents fall into the high self-esteem group. Among Japanese potential investors, there are merely five individuals with high trait self-esteem. In contrast, 28% of German respondents are classified into the high self-esteem group. This is consistent with the existing literature, which points to higher individual self-esteem in Western societies compared to Asian societies (Bond and Cheung 1983; Cai et al. 2007; Campbell et al. 1996; Schmitt and Allik 2005).

Do our self-esteem stimuli resonate more strongly with German investors with high self-esteem? We investigate whether this is the case by analyzing the heterogeneous effect of the self-esteem treatment by trait self-esteem. The results are summarized in Figure 8. The lower right panel reveals that the marginal means for “very good” companies are notably higher among treated potential investors with high self-esteem compared to the reference group. The difference is statistically significant at the 95% confidence level. Similarly, in the experienced investor group (lower left panel), the marginal mean for “very good” companies in the treated group is higher than the reference group, and the difference is statistically significant at the 90% confidence level. This outcome implies that the observed self-esteem treatment effect among the German

Figure 8

Heterogeneous treatment effects by trait self-esteem (German sample), distinguishing between experienced and potential investors. Bars represent the marginal means of environmental ratings for the reference and self-esteem treatment groups. Dots with horizontal solid lines represent the self-esteem treatment effect with 95% confidence intervals.



sample in Figure 4 is driven primarily by investors reporting high trait self-esteem. This is also consistent with the literature that people with high self-esteem tends to be motivated to maintain and boost self-esteem by engaging in pro-social behaviors whereas individuals with low trait self-esteem may be more inclined to choose inferior products that align with their pessimistic self-views rather than attempting to improve their self-perception (MacDonald and Leary 2012; Stuppy et al. 2020).¹⁴⁾

¹⁴⁾ We were unable to analyze the same heterogeneous effect using the Japanese sample due to the very small sample size (only five individuals) of Japanese potential investors reporting high self-esteem. The complete lack of a self-esteem treatment effect among the Japanese in Figure 4 may be attributed to the scarcity of investors reporting high self-esteem in that population.

Discussion

Many of our findings align with both our expectations and the existing literature. Regarding baseline preferences for sustainable development, we observe that individuals place significant emphasis on economic performance in their investment decisions, which is consistent with our expectations. Additionally, we find that both Japanese and German citizens are less willing to invest in Chinese companies compared to those headquartered in their home country or the US. This common trend may be attributed to individual, non-expert investors relying on heuristics and favoring investments in familiar companies ([Ariely et al. 2006](#); [Khan et al. 2017](#)). Given the relatively recent prominence of Chinese multinationals in the global stock market, investors might find companies from their home country or the US more familiar than Chinese firms.

Overall, our main findings, as summarized in the previous section, are also largely consistent with our expectations. First, we found limited effect of the self-interest treatment. It is not significant at all in the German sample and only has a modest (with 10% significance level) effect among potential investors in Japan. This is not surprising as pecuniary motives alone have been suggested to be insufficient to draw attention to sustainability performances, especially when investors also have other pieces of information that serve as more direct shortcuts to assess financial performance.

Second, we found the self-esteem treatment to be significant in Germany but not in Japan. This is in line with our Hypothesis 4 that posited the treatment to be more effective in a Western, individualistic society. Also as expected, within Germany, we found the treatment effect among both potential and experienced reporting high self-esteem. It is consistent with existing literature that people with high self-esteem tend to be motivated to maintain and boost self-esteem by engaging in pro-social behaviors whereas those with low trait self-esteem may choose inferior products that align with their pessimistic self-views ([MacDonald and Leary 2012](#); [Stuppy et al. 2020](#)).

We, however, also have a puzzling finding that requires further scrutiny, in particular regarding our finding of the empathy treatment in Japan. We, as posited in Hypothesis 5, found a statistically significant treatment effect of the empathy in Japan.

But the effect is confined only to experienced investors, and especially those with relatively lower trait empathy. Why so?

We speculate that the distinction between trait and state empathy can explain this puzzling result. Trait empathy is a general ability to show empathy, closely associated with personal traits (Lawrence et al. 2004), while state empathy is the transient affective reaction elicited in concrete situations (Van der Graaff et al. 2016). The literature suggests that the influence of trait on empathic response is strongly dependent on situational factors (Van der Graaff et al. 2016; Vitaglione and Barnett 2003; Wiseman 1996), such as observer-target similarity (Eklund et al. 2009) and how much observers value the targets (Cuff et al. 2016). Viewed this way, living in a collectivist society featuring high in-group empathy does not necessarily make its members more empathetic towards the “others” outside their own social community unless there is a sufficient perceived similarity or value attached to the “others.”

In Japan, we speculate that the potential for our empathy treatment to elicit state empathy towards environmental victims in the Global South (i.e., the “others”) would vary by generation. This variation is likely rooted in different generations’ varying experiences with environmental issues. The most serious instances of pollution in Japan were notably experienced and widely publicized during the 1970s and 1980s. Given that individuals’ psychological and social development occurs in their formative years, those who experienced the disasters in their formative years (i.e., who were born in the 60s and early 70s and are now in their 50s) are most likely to perceive themselves as (past) victims of environmental degradation. If so, our empathy stimuli highlighting the suffering of environmental victims in the Global South might then resonate more strongly with investors of this generation compared to the younger generation who lack first-hand experiences of severe pollution or the much older generation whose socialization happened before the environment became a public concern. In our sample, the mean age for experienced investors in the Japanese sample is approximately 55, while the mean is only around 45 for potential investors. Therefore, our empathy treatment about pollution victims might more effectively arouse state empathy among

the former than the latter.¹⁵⁾

As for why the treatment effect in the experienced investors group is more salient among those who report low trait empathy, we speculate that individuals reporting high trait empathy in this group are inherently more inclined to engage in sustainable investing compared to their low trait empathy counterparts, even without being influenced by empathy stimuli. Indeed, in the control group, comparing red-colored bars in Figure 6, experienced investors reporting high trait empathy are more likely to choose “very good” ratings than experienced investors in the low empathy group. This suggests that there is greater potential for change among the latter.

Conclusion

In view of the increasing role of individual investors in financing the sustainability transformation, our study examines what motivates these investors to opt for more sustainable investments in their daily investment decisions. When do individual investors pay particular attention to sustainability ratings, one of various shortcuts they encounter when choosing from the myriad of investment options available? Drawing on the expanding literature highlighting the role of social emotions as a driver of environmentally responsible behaviors, we empirically investigate how evoking social emotions, empathy and self-esteem, help individual investors consider sustainability ratings *vis-à-vis* their self-interest. In so doing, we conducted a survey-embedded experiment in Germany and Japan.

Overall, the contribution of this research is two-fold. First, joining the burgeoning research on non-pecuniary motives for sustainable investment among individual investors (Gutsche et al. 2023; Riedl and Smeets 2017), we highlight the potential of emotional stimuli in promoting sustainable investment. Our finding on the effectiveness of the empathy stimuli suggests that we might need “stories,” rather than mere data, to motivate individual investors to take sustainability seriously.¹⁶⁾ Stories

¹⁵⁾ The distributions of demographic attributes between experienced and potential investors are comparable between the two countries. Experienced investors are more characterized by being older, male, having higher income levels, more financial assets, higher education, and being politically right-leaning compared to potential investors. See Figure A.4 in the Appendix for more details.

¹⁶⁾ One might approach individual investors more like consumers of various investment products. A

that link sustainability rating to humanness by illustrating how bad corporate practices cause suffering to human victims could effectively capture the attention of individual investors.

Furthermore, our study highlights the effectiveness of self-esteem stimuli by advocating for the recognition of individual investors' contributions. Similar to awards that commend asset managers and corporations for integrating ESG principles, acknowledging individual investors through certifications could foster sustainable investing ([Environmental Finance 2023](#)).¹⁷⁾ Establishing accessible certification programs where participants undergo online education on sustainable investment principles, align their portfolios with UN Principles for Responsible Investment (PRI) or governmental guidelines, and receive visible badges for social media could boost awareness and attract like-minded investors. This initiative not only boosts individual self-esteem but can also amplifies awareness about responsible investing and attracts like-minded investors.

Secondly, our research underscores the importance of tailoring these stimuli to fit diverse cultural contexts and demographic groups. What resonates in one country or demographic may not have the same impact elsewhere. For example, while sustainable investment awards may resonate strongly in Western countries, their effectiveness could differ in Asian countries like Japan where self-enhancement motives are known to be weaker. Our findings from Japan further suggest that the efficacy of empathy stimuli highlighting the suffering of environmental victims varies among individuals within the country, influenced by varying experiences with environmental disasters.

Our research also identified several avenues for future exploration to address the study's limitations. While our study indicates the potential significance of individual-level factors in utilizing emotional stimuli for sustainable investing, it falls short of rigorous theorization and empirical analysis. Future research could build on our

recent survey of US consumers revealed that they are interested in hearing more about companies' ESG-related "stories" ([Lerzan and Gina 2022](#))

¹⁷⁾ The Ministry of Environment of Japan also establishes the ESG Finances Award Japan, which honors financial institutions, corporations, and other organizations for their sustainable financing activities and sustainable corporate management ([Nikkei Asia 2022](#))

initial findings regarding generational effects and investigate how empathy or self-esteem stimuli resonate across different generational cohorts, including Gen Z, Millennials, Gen X, and Baby Boomers, who hold varying perceptions and experiences with sustainability. Exploring the gendered effects of emotional stimuli and their cultural variations also presents an intriguing avenue for further investigation.

Another limitation of our study is its focus on two advanced economies, one in Asia and one in Europe. However, the rise of individual investors is not restricted to the Global North anymore. Increasing numbers of investors from China, India, and across the Global South are entering retail investment, facilitated by advancements in fintech. Investigating whether investors from the Global South differ in their consideration of sustainability performance compared to their counterparts from the Global North is crucial. A comprehensive analysis involving individual investors from diverse countries can provide valuable insights into these and other pertinent inquiries.

References

- Anderson, B., Bernauer, T., and Balietti, S. (2017). Effects of fairness principles on willingness to pay for climate change mitigation. *Climatic Change*, 142:447–461.
- Antonetti, P. and Maklan, S. (2014). Feelings that make a difference: How guilt and pride convince consumers of the effectiveness of sustainable consumption choices. *Journal of business ethics*, 124:117–134.
- Ariely, D., Loewenstein, G., and Prelec, D. (2006). Tom sawyer and the construction of value. *Journal of Economic Behavior & Organization*, 60(1):1–10.
- ASX (2023). Australian investor study 2023. <https://www.asx.com.au/investors/investment-tools-and-resources/australian-investor-study>. Last accessed: July 2, 2024.
- Atkins, D., Uskul, A. K., and Cooper, N. R. (2016). Culture shapes empathic responses to physical and social pain. *Emotion*, 16(5):587.
- Autorité des marchés financiers (2023). The amf household savings observatory newsletter. <https://www.amf-france.org/sites/institutionnel/files/private/2023-11/loe-54-ven.pdf>. Last accessed: July 2, 2024.
- Bamberg, S. (2003). How does environmental concern influence specific environmentally related behaviors? a new answer to an old question. *Journal of environmental psychology*, 23(1):21–32.
- Bandes, S. A. and Salerno, J. M. (2014). Emotion, proof and prejudice: The cognitive science of gruesome photos and victim impact statements. *Ariz. St. LJ*, 46:1003.
- Banister, E. N. and Hogg, M. K. (2004). Negative symbolic consumption and consumers’ drive for self-esteem: The case of the fashion industry. *European Journal of Marketing*, 38(7):850–868.
- Barber, B. M., Huang, X., Odean, T., and Schwarz, C. (2022). Attention-induced

- trading and returns: Evidence from robinhood users. *The Journal of Finance*, 77(6):3141–3190.
- Barber, B. M., Odean, T., and Zhu, N. (2009). Systematic noise. *Journal of Financial Markets*, 12(4):547–569.
- Baron-Cohen, S. (2011). *Zero degrees of empathy: A new theory of human cruelty*, volume 30. Penguin uk.
- Baron-Cohen, S. and Wheelwright, S. (2004). The empathy quotient: an investigation of adults with asperger syndrome or high functioning autism, and normal sex differences. *Journal of autism and developmental disorders*, 34:163–175.
- Batson, C. D. and Ahmad, N. Y. (2009). Using empathy to improve intergroup attitudes and relations. *Social issues and policy review*, 3(1):141–177.
- Batson, C. D., Chang, J., Orr, R., and Rowland, J. (2002). Empathy, attitudes, and action: Can feeling for a member of a stigmatized group motivate one to help the group? *Personality and Social Psychology Bulletin*, 28(12):1656–1666.
- Batson, C. D., Fultz, J., and Schoenrade, P. A. (1987). Distress and empathy: Two qualitatively distinct vicarious emotions with different motivational consequences. *Journal of personality*, 55(1):19–39.
- Bechtel, M. M. and Scheve, K. F. (2013). Mass support for global climate agreements depends on institutional design. *Proceedings of the National Academy of Sciences*, 110(34):13763–13768.
- Berenguer, J. (2007). The effect of empathy in proenvironmental attitudes and behaviors. *Environment and behavior*, 39(2):269–283.
- Birnbaum, M. H. (2004). Human research and data collection via the internet. *Annu. Rev. Psychol.*, 55(1):803–832.

- Blair, R. J. R. (2005). Responding to the emotions of others: Dissociating forms of empathy through the study of typical and psychiatric populations. *Consciousness and cognition*, 14(4):698–718.
- Boffo, R. and Patalano, R. (2020). *ESG Investing: Practices, Progress and Challenges*. OECD Paris.
- Bond, M. H. and Cheung, T.-S. (1983). College students' spontaneous self-concept: The effect of culture among respondents in hong kong, japan, and the united states. *Journal of Cross-Cultural Psychology*, 14(2):153–171.
- Cai, H., Brown, J. D., Deng, C., and Oakes, M. A. (2007). Self-esteem and culture: Differences in cognitive self-evaluations or affective self-regard? *Asian Journal of Social Psychology*, 10(3):162–170.
- Campbell, J. D., Trapnell, P. D., Heine, S. J., Katz, I. M., Lavalley, L. F., and Lehman, D. R. (1996). Self-concept clarity: Measurement, personality correlates, and cultural boundaries. *Journal of personality and social psychology*, 70(1):141.
- Chopik, W. J., O'Brien, E., and Konrath, S. H. (2017). Differences in empathic concern and perspective taking across 63 countries. *Journal of Cross-Cultural Psychology*, 48(1):23–38.
- Chu, H. and Yang, J. Z. (2019). Emotion and the psychological distance of climate change. *Science Communication*, 41(6):761–789.
- Clary, E. G. and Snyder, M. (1999). The motivations to volunteer: Theoretical and practical considerations. *Current directions in psychological science*, 8(5):156–159.
- Clifford, S. and Jerit, J. (2014). Is there a cost to convenience? an experimental comparison of data quality in laboratory and online studies. *Journal of Experimental Political Science*, 1(2):120–131.
- Crawford, N. C. (2014). Institutionalizing passion in world politics: Fear and empathy. *International Theory*, 6(3):535–557.

- Cuff, B. M., Brown, S. J., Taylor, L., and Howat, D. J. (2016). Empathy: A review of the concept. *Emotion review*, 8(2):144–153.
- Czap, N. V., Czap, H. J., Khachaturyan, M., Lynne, G. D., and Burbach, M. (2012). Walking in the shoes of others: Experimental testing of dual-interest and empathy in environmental choice. *The Journal of Socio-Economics*, 41(5):642–653.
- Czap, N. V., Czap, H. J., Lynne, G. D., and Burbach, M. E. (2015). Walk in my shoes: Nudging for empathy conservation. *Ecological Economics*, 118:147–158.
- Dalsky, D., Gohm, C. L., Noguchi, K., and Shiomura, K. (2008). Mutual self-enhancement in japan and the united states. *Journal of Cross-Cultural Psychology*, 39(2):215–223.
- Decety, J. (2005). Perspective taking as the royal avenue to empathy. *Other minds: How humans bridge the divide between self and others*, 143:157.
- Decety, J. and Yoder, K. J. (2016). Empathy and motivation for justice: Cognitive empathy and concern, but not emotional empathy, predict sensitivity to injustice for others. *Social neuroscience*, 11(1):1–14.
- Devoldre, I., Davis, M. H., Verhofstadt, L. L., and Buysse, A. (2016). Empathy and social support provision in couples: Social support and the need to study the underlying processes. In *Longing, Intimacy and Loneliness*, pages 58–83. Routledge.
- Diener, E. and Diener, M. (1995). Cross-cultural correlates of life satisfaction and self-esteem. *Journal of personality and social psychology*, 68(4):653.
- Eisenberg, N. and Miller, P. A. (1987). The relation of empathy to prosocial and related behaviors. *Psychological bulletin*, 101(1):91.
- Eklund, J., ANDERSSON-STRÅBERG, T., and Hansen, E. M. (2009). “i’ve also experienced loss and fear”: Effects of prior similar experience on empathy. *Scandinavian journal of psychology*, 50(1):65–69.

- Engel, Y., Ramesh, A., and Steiner, N. (2020). Powered by compassion: The effect of loving-kindness meditation on entrepreneurs' sustainable decision-making. *Journal of Business Venturing*, 35(6):105986.
- Environmental Finance (2023). Sustainable investment awards 2024. <https://www.environmental-finance.com/content/awards/sustainable-investment-awards-2024/>. Last accessed: July 2, 2024.
- Ferguson, M. A. and Branscombe, N. R. (2010). Collective guilt mediates the effect of beliefs about global warming on willingness to engage in mitigation behavior. *Journal of Environmental Psychology*, 30(2):135–142.
- Festinger, L. (1954). A theory of social comparison processes. *Human relations*, 7(2):117–140.
- Frances, S. (2024). Us investor exodus deals historic blow to global esg fund market. <https://www.bloomberg.com/news/articles/2024-01-25/sustainable-funds-see-first-ever-global-quarterly-net-outflows>. Last accessed: July 2, 2024.
- Fu, X., Padilla-Walker, L. M., and Brown, M. N. (2017). Longitudinal relations between adolescents' self-esteem and prosocial behavior toward strangers, friends and family. *Journal of Adolescence*, 57:90–98.
- Gallup (2023). Gallup world poll 2023. <https://www.gallup.com/analytics/318875/global-research.aspx>. Last accessed: July 2, 2024.
- Gerrit, F. (2021). Shareholder numbers 2020: Germans are becoming more and more enthusiastic about stocks. <https://www.dai.de/en/detail/aktionaerszahlen-2020-deutsche-begeistern-sich-mehr-und-mehr-fuer-aktien/>. Last accessed: July 2, 2024.
- Gerrit, F. (2024). What do germans think about shares? <https://www.dai.de/en/shareholder-numbers/>. Last accessed: July 2, 2024.

- Greenberg, J. (2008). Understanding the vital human quest for self-esteem. *Perspectives on psychological science*, 3(1):48–55.
- Greene, J. (2013). Moral tribes: Emotion. *Reason, and the Gap Between Us and Them* (NY: The Penguin Press, 2013).
- Gutsche, G., Wetzel, H., and Ziegler, A. (2023). Determinants of individual sustainable investment behavior-a framed field experiment. *Journal of Economic Behavior & Organization*, 209:491–508.
- Haidt, J., Davidson, R. J., Scherer, K. R., and Goldsmith, H. H. (2003). Handbook of affective sciences. *The moral emotions*, pages 852–870.
- Hainmueller, J., Hopkins, D. J., and Yamamoto, T. (2014). Causal inference in conjoint analysis: Understanding multidimensional choices via stated preference experiments. *Political analysis*, 22(1):1–30.
- Hareli, S. and Parkinson, B. (2008). What’s social about social emotions? *Journal for the theory of social behaviour*, 38(2):131–156.
- Heath, J. (2014). Enlightenment 2.0: Restoring sanity to our politics, our economy, and our lives. (*No Title*).
- Heine, S. J. (2001). Self as cultural product: An examination of east asian and north american selves. *Journal of personality*, 69(6):881–905.
- Heine, S. J., Lehman, D. R., Markus, H. R., and Kitayama, S. (1999). Is there a universal need for positive self-regard? *Psychological review*, 106(4):766.
- Hewitt, J. P. (2020). 22 the social construction of self-esteem. *The Oxford handbook of positive psychology*, page 309.
- Hoffman, M. L. (2001). *Empathy and moral development: Implications for caring and justice*. Cambridge University Press.

- Hofstede, G. (2001). *Culture's consequences: Comparing values, behaviors, institutions and organizations across nations*. Sage publications.
- Hwang, K. and Kim, H. (2018). Are ethical consumers happy? effects of ethical consumers' motivations based on empathy versus self-orientation on their happiness. *Journal of Business Ethics*, 151:579–598.
- Isla, B. and Ross, K. (2022). Money before climate; market downturn spurs esg fund exodus. <https://www.reuters.com/business/cop/money-before-climate-market-downturn-spurs-esg-fund-exodus-2022-11-11/>. Last accessed: July 2, 2024.
- Khan, H. H., Naz, I., Qureshi, F., and Ghafoor, A. (2017). Heuristics and stock buying decision: Evidence from malaysian and pakistani stock markets. *Borsa Istanbul Review*, 17(2):97–110.
- Kiran, V., David, S., and Morrow, S. (2020). Institutional investor survey 2020. <https://corpgov.law.harvard.edu/2020/03/25/institutional-investor-survey-2020/>. Last accessed: July 2, 2024.
- Kitayama, S., Markus, H. R., and Lieberman, C. (1995). The collective construction of self esteem: Implications for culture, self, and emotion. In *Everyday conceptions of emotion: An introduction to the psychology, anthropology and linguistics of emotion*, pages 523–550. Springer.
- Lawrence, E. J., Shaw, P., Baker, D., Baron-Cohen, S., and David, A. S. (2004). Measuring empathy: reliability and validity of the empathy quotient. *Psychological medicine*, 34(5):911–920.
- Leary, M. R. and Downs, D. L. (1995). Interpersonal functions of the self-esteem motive: The self-esteem system as a sociometer. In *Efficacy, agency, and self-esteem*, pages 123–144. Springer.
- LeDoux, J. E. (1998). *The emotional brain: The mysterious underpinnings of emotional life*. Simon and Schuster.

- Lerzan, A. and Gina, W. (2022). What's an esg? consumer sentiment on firms' environmental, social and governance performance.
<https://www.fordham.edu/gabelli-school-of-business/industry-collaborations/responsible-business-center/research-and-insights/ntrs-/>. Last accessed: July 2, 2024.
- Li, Q., Watts, E. M., and Zhu, C. (2024). Retail investors and esg news. *Jacobs Levy Equity Management Center for Quantitative Financial Research Paper*.
- Loewen, P. J., Lyle, G., and Nachshen, J. S. (2009). An eight-item form of the empathy quotient (eq) and an application to charitable giving. *Retrieved from crcee.umontreal.ca/pdf/Eight%20Question%20ES_final.pdf*.
- MacDonald, G. and Leary, M. R. (2012). Individual differences in self-esteem. *Handbook of self and identity*, 2:354–377.
- Mallett, R. K., Harrison, P. R., and Melchiori, K. J. (2021). Guilt and environmental behavior. In *Encyclopedia of quality of life and well-being research*, pages 1–5. Springer.
- Mallett, R. K., Melchiori, K. J., and Strickroth, T. (2013). Self-confrontation via a carbon footprint calculator increases guilt and support for a proenvironmental group. *Ecopsychology*, 5(1):9–16.
- Masaki, K., Hideyuki, S., and Yasutaka, T. (2024). Japanese retail investors pile billions into indian equities. <https://www.japantimes.co.jp/business/2024/02/02/markets/japanese-investors-indian-stocks/>. Last accessed: July 2, 2024.
- McDermott, R. (2004). The feeling of rationality: The meaning of neuroscientific advances for political science. *Perspectives on politics*, 2(4):691–706.
- Monteiro, R. P., Coelho, G. L. d. H., Hanel, P. H., de Medeiros, E. D., and da Silva, P. D. G. (2022). The efficient assessment of self-esteem: proposing the brief rosenberg self-esteem scale. *Applied Research in Quality of Life*, 17(2):931–947.

- Naderi, I. (2018). I'm nice, therefore i go green: An investigation of pro-environmentalism in communal narcissists. *Journal of Environmental Psychology*, 59:54–64.
- Naderi, I. and Strutton, D. (2014). Can normal narcissism be managed to promote green product purchases? investigating a counterintuitive proposition. *Journal of Applied Social Psychology*, 44(5):375–391.
- Niezink, L. W., Siero, F. W., Dijkstra, P., Buunk, A. P., and Barelds, D. P. (2012). Empathic concern: Distinguishing between tenderness and sympathy. *Motivation and emotion*, 36:544–549.
- Nikkei Asia (2022). Esg finance award japan. <https://ps.nikkei.com/esgfaj2022/>. Last accessed: July 2, 2024.
- Odean, T. (1999). Do investors trade too much? *American economic review*, 89(5):1279–1298.
- Oswald, P. A. (1996). The effects of cognitive and affective perspective taking on empathic concern and altruistic helping. *The Journal of social psychology*, 136(5):613–623.
- Ozik, G., Sadka, R., and Shen, S. (2021). Flattening the illiquidity curve: Retail trading during the covid-19 lockdown. *Journal of Financial and Quantitative Analysis*, 56(7):2356–2388.
- Panksepp, J. (2004). *Affective neuroscience: The foundations of human and animal emotions*. Oxford university press.
- Pelligra, V. (2011). Empathy, guilt-aversion, and patterns of reciprocity. *Journal of Neuroscience, Psychology, and Economics*, 4(3):161.
- Pfattheicher, S., Sassenrath, C., and Schindler, S. (2016). Feelings for the suffering of others and the environment: Compassion fosters proenvironmental tendencies. *Environment and behavior*, 48(7):929–945.

- Pincus, A. L. and Roche, M. J. (2011). Narcissistic grandiosity and narcissistic vulnerability. *The handbook of narcissism and narcissistic personality disorder: Theoretical approaches, empirical findings, and treatments*, pages 31–40.
- Principles for Responsible Investment (2022). Review of trends in esg reporting requirements for investors. <https://www.unpri.org/download?ac=16705>. Last accessed: July 2, 2024.
- PwC (2022). Esg-focused institutional investment seen soaring 84% to us\$33.9 trillion in 2026, making up 21.5% of assets under management. <https://pwc.to/3GdC8nS>. Last accessed: July 2, 2024.
- Rammstedt, B. and Beierlein, C. (2014). Can't we make it any shorter? *Journal of Individual Differences*.
- Reips, U.-D. (2002). Standards for internet-based experimenting. *Experimental psychology*, 49(4):243.
- Riedl, A. and Smeets, P. (2017). Why do investors hold socially responsible mutual funds? *The Journal of Finance*, 72(6):2505–2550.
- Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton university press.
- Scheff, T. J. and Fearon Jr, D. S. (2004). Cognition and emotion? the dead end in self-esteem research. *Journal for the Theory of Social Behaviour*, 34(1):73–90.
- Schmitt, D. P. and Allik, J. (2005). Simultaneous administration of the rosenberg self-esteem scale in 53 nations: exploring the universal and culture-specific features of global self-esteem. *Journal of personality and social psychology*, 89(4):623.
- Schmitt, M. T., Akin, L. B., Axsen, J., and Shwom, R. L. (2018). Unpacking the relationships between pro-environmental behavior, life satisfaction, and perceived ecological threat. *Ecological economics*, 143:130–140.

- Schultz, P. W. (2000). New environmental theories: Empathizing with nature: The effects of perspective taking on concern for environmental issues. *Journal of social issues*, 56(3):391–406.
- Segal, E. A., Wagaman, M. A., and Gerdes, K. E. (2012). Developing the social empathy index: An exploratory factor analysis. *Advances in Social Work*, 13(3):541–560.
- Sharma, S. and Christopoulos, G. (2021). Caring for you vs. caring for the planet: Empathic concern and emotions associated with energy-saving preferences in singapore. *Energy Research & Social Science*, 72:101879.
- S&P Global (2022). Esg scores and raw data.
<https://www.spglobal.com/esg/solutions/esg-scores-data>. Last accessed: July 2, 2024.
- Stephanie, G. and Ken, J. (2022). A fresh look at how to empower retail investors.
<https://www.weforum.org/agenda/2022/10/a-fresh-look-at-how-to-empower-retail-investors/>. Last accessed: July 2, 2024.
- Stern, P. C. and Dietz, T. (1994). The value basis of environmental concern. *Journal of social issues*, 50(3):65–84.
- Stocks, E. L., Lishner, D. A., and Decker, S. K. (2009). Altruism or psychological escape: Why does empathy promote prosocial behavior? *European journal of social psychology*, 39(5):649–665.
- Stuppy, A., Mead, N. L., and Van Osselaer, S. M. (2020). I am, therefore i buy: Low self-esteem and the pursuit of self-verifying consumption. *Journal of Consumer Research*, 46(5):956–973.
- Swim, J. K. and Bloodhart, B. (2015). Portraying the perils to polar bears: The role of empathic and objective perspective-taking toward animals in climate change communication. *Environmental Communication*, 9(4):446–468.

- Taberner, C. and Hernández, B. (2011). Self-efficacy and intrinsic motivation guiding environmental behavior. *Environment and Behavior*, 43(5):658–675.
- Takaaki, H. (2021). Japan’s exchanges pushing for a shift from savings to investment. <https://focus.world-exchanges.org/articles/japan-investment-education>. Last accessed: July 2, 2024.
- Van der Graaff, J., Meeus, W., de Wied, M., van Boxtel, A., van Lier, P. A., Koot, H. M., and Branje, S. (2016). Motor, affective and cognitive empathy in adolescence: Interrelations between facial electromyography and self-reported trait and state measures. *Cognition and emotion*, 30(4):745–761.
- Vertex (2023). How many people invest in japan? comparison of japanese investment status with the rest of the world. <https://vertex-c.co.jp/column/article/77>. Last accessed: July 2, 2024.
- Verweij, M., Senior, T. J., Domínguez D, J. F., and Turner, R. (2015). Emotion, rationality, and decision-making: how to link affective and social neuroscience with social theory. *Frontiers in neuroscience*, 9:332.
- Vitaglione, G. D. and Barnett, M. A. (2003). Assessing a new dimension of empathy: Empathic anger as a predictor of helping and punishing desires. *Motivation and Emotion*, 27:301–325.
- Wiseman, T. (1996). A concept analysis of empathy. *Journal of advanced nursing*, 23(6):1162–1167.
- Zizzo, D. J. (2010). Experimenter demand effects in economic experiments. *Experimental Economics*, 13:75–98.

	Company A	Company B
Profitability ratio per stock (ROE, 5yr average)	-5%	10%
Company growth rate (5yr average)	-10%	5%
Global market share	50%	15%
Headquarter location	Germany	USA
Environmental performance rating	Good	Very Poor

Table 1*A sample set of company profiles*