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Nudging ESG Investments via Digital Financial Advising: Evidence From an Investment Game Experiment

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ABSTRACT

The influence of financial advisors on retail investors' sustainable investment choices remains surprisingly underexplored, despite their potential to shape investment behavior. This study uses an experimental design to examine how sustainability-related information provided by a digital (simulated) financial advisor affects individual demand for ESG investments. A total of 708 participants from Germany, France, Italy, and Spain were randomly assigned to either a treatment or control group and completed an incentivized allocation task after watching a video of the advisor. We find that advisor-provided sustainability information significantly increases allocations to sustainable assets. The effect is heterogeneous: Financial literacy amplifies the treatment effect, sustainable finance knowledge has a strong direct positive impact independent of the intervention, and sustainability preferences interact with the treatment only at higher allocations. Perceived real-world impact emerges as a key mediating channel. These results offer important insights for financial advisory practice and investor education policies.

1 | Introduction

The development of sustainable investments (SIs), also known as socially responsible investments (SRI) or ESG (environmental, social, and governance) investments, has become one of the key actions implemented by the United Nations to reach the Sustainable Development Goals (SDGs) by 2030. Sustainable investors, by investing in line with ESG criteria, promote corporate social responsibility in firms, encouraging sustainable development (Pilaj 2017). As documented by a 2021 Global Sustainable Investment Alliance Report (GSIA 2021), although the sustainable investment market tends to be dominated by institutional investors, the interest of retail investors has been steadily growing since 2012, moving from 11% of sustainable assets held by retail investors to 25% in 2020. The interest of retail investors in the sustainability aspects of their investments kept increasing every year (GSIA 2023; Invesco 2021; Morgan Stanley 2024). Mobilizing private capital from retail investors is one of the key actions to foster sustainable economies and address socially responsible development (Tan 2022). Therefore, it becomes crucial to understand the determinants of retail demand for sustainable investments (Cunha et al. 2021) and the dynamics behind them.

Most private investors do not make investment decisions independently, and financial advisors become the primary interaction point between financial institutions and their clients, with agreement on the dominance of limited knowledge and nonautonomous decision-making of the retail investors.[1] Therefore, advisors have a significant impact on how capital is allocated to different products in the financial market (Hackethal et al. 2012; Paetzold et al. 2015). In such a context, financial advisors can be seen as a powerful informational instrument to nudge investors toward these financial products and enhance the diffusion of the sustainable investments market (Heinemann et al. 2018; Pilaj 2017; Strauß 2021), as retail investors often have a limited understanding of sustainable finance and ESG considerations (ESMA 2023). A recent report published by Morgan

Stanley (2024) for the United States, Europe, and Japan shows that 52% of interviewed investors have limited knowledge of how to start sustainable investing and 43% say they lack the necessary financial advice. Surprisingly, however, although recent academic literature has begun to investigate the role of nudges in shaping retail investors' sustainable choices, it has mainly focused on written or impersonal information treatments (Gajewski et al. 2024), whereas the role of financial advisors as active nudging agents has remained largely underexplored.

Moreover, the effectiveness of financial advisors' information is unlikely to be uniform across investors, as it depends on individuals' cognitive abilities, domain-specific knowledge, and motivations. The literature highlights financial literacy as a key determinant of sustainable investing, as it lowers information costs and increases the likelihood of investing in sustainable products (Gutsche and Zwergel 2020). More recent studies emphasize domain-specific sustainable finance knowledge as a distinct dimension, separate from general literacy, in shaping preferences for sustainable products (Filippini et al. 2024). Investors with lower financial and sustainability knowledge face greater informational barriers that can limit their ability to act on advisors' guidance, whereas more knowledgeable investors can better incorporate such advice into their decisions. This implies that the impact of financial advisors on sustainable investing is inherently heterogeneous across investors' knowledge levels.

Beyond knowledge, declared sustainability preferences capture the motivational dimension of sustainable investing within the trade-off between financial performance and ethical objectives (Starks 2023): Some investors use ESG criteria for financially material risk management (*value*-driven), whereas others are primarily guided by moral goals (*values*-driven). In this context, financial advisors may not only provide information but also activate latent sustainability motivations by reducing uncertainty and legitimizing sustainable choices. Accordingly, the effectiveness of advisor-provided sustainability information is expected to depend on whether investors already hold sustainability-oriented preferences.

This paper aims to advance the literature on sustainable investment choices by testing with an experimental approach whether a treatment consisting in the provision of information on sustainable investments by a certified professional, with an educational purpose, can nudge retail investors toward sustainable investment choices. Importantly, we go beyond estimating an average treatment effect by examining *how* and *for whom* advisor-provided sustainability information affects sustainable investment decisions, focusing on its interaction with financial literacy, sustainable finance knowledge, and sustainability preferences.

We designed a randomized controlled trial simulating a digital financial advisory session with 708 participants from Germany, France, Italy, and Spain. Participants watched a video in which a financial advisor explained basic investment concepts. Although both treatment and control groups were exposed to an initial explanation of financial planning fundamental concepts, the treatment video concluded with an explanation of sustainable investing, whereas the control group concluded with legally dense and neutral content. Prior to the intervention, participants completed an incentivized survey capturing demographics and sustainability-related preferences.

Results show that exposure to information on sustainable investments significantly increased the allocation to a sustainable fund, indicating that financial advisors can serve as effective informational nudges. However, the effect is highly heterogeneous and depends on investors' literacy, knowledge, and motivations. Financial literacy does not directly increase sustainable investment, but it significantly enhances the effectiveness of the advisor's informational nudge by reducing information-processing costs and increasing receptiveness to professional advice. In contrast, sustainable finance knowledge has a strong, direct positive effect on sustainable investment decisions, independent of the treatment, highlighting domain-specific knowledge as a key standalone driver of ESG allocations. Moreover, sustainability preferences interact with the treatment only at higher allocations of sustainable investments. Finally, perceived real-world impact of SI emerges as a key mediating channel through which literacy, knowledge, and preferences shape sustainable investment behavior. The paper proceeds as follows: Section 2 outlines the conceptual framework and hypotheses; Section 3 details the experimental methodology; Section 4 presents empirical results; and the final sections discuss findings, scientific and policy implications, and study limitations.

2 | Theoretical Framework and Research Hypotheses

2.1 | Nudging Sustainable Investment Choices

Neoclassical economics assumes individuals make fully rational decisions, yet extensive evidence from the judgment and decision-making literature challenges this view (Duclos 2015). Behavioral economics shows that cognitive and psychological limitations—such as limited attention, narrow framing, and bounded rationality—shape real-world choices, especially in complex domains like financial decision-making (Barr et al. 2008). In this context, nudges have gained prominence. Thaler and Sunstein (2009) define a nudge as "any aspect of the choice architecture that alters people's behavior in a predictable way without forbidding any options or significantly changing their economic incentives." Rooted in cognitive psychology (Tversky and Kahneman 1974, 1981), nudging acknowledges that individuals are not *homo oeconomicus* and seeks to support better decisions for both individuals and society.

Pilaj (2017) highlights a major limitation in the literature on sustainable investment preferences: the frequent assumption of idealized conditions, such as the absence of choice overload, high salience of sustainable options, and unlimited investor attention. To address these constraints, Pilaj proposes the 5A model, which identifies key behavioral bottlenecks in sustainable investment decisions, notably low *awareness* and weak *informed attitudes* due to limited information and product opacity. Similarly, Gajewski et al. (2024) document a widespread information deficit among retail investors and show that increasing the salience of sustainability features can positively influence behavior. Both contributions stress the central role of financial

institutions and advisors in overcoming these informational and attentional barriers.

Although recent studies have examined nudging tools such as default options, informational messages, visual priming, and option partitioning (Gajewski et al. 2022; Meunier and Richit 2024), the specific role of financial advisors as nudging agents remains largely unexplored. This gap is striking given evidence that the persuasive impact of information depends heavily on its source (Dolan et al. 2012): Advice from a credible and trusted messenger is more likely to be integrated into decision-making. Although the literature has focused mainly on written or impersonal nudges, little attention has been paid to sustainability information delivered by (simulated) professional financial advisors in settings that resemble real-world advisory interactions.

2.2 | The Educational Role of Financial Advisors

According to Morgan Stanley (2024), a substantial proportion of retail investors express interest in sustainable investing but lack the requisite knowledge and financial advice. This underscores the potential value of professional guidance in facilitating informed investment decisions. Despite concerns over advisor compensation structures, highlighted in various empirical studies (Gennaioli et al. 2015; Hoechle et al. 2017; Inderst and Ottaviani 2012; Mullainathan et al. 2012), nonindependent advisors, such as those affiliated with banks and insurers, remain the primary reference point for many retail investors. Indeed, the 2022 Eurobarometer survey on retail financial services confirms that advisor recommendations are the main source of financial information for this group. Yet only 29% of respondents reported receiving information about the sustainability impact of their investments.[2]

In this context, financial advisors can serve as influential educational intermediaries capable of steering private capital toward sustainable finance. However, their role in promoting sustainable investments remains insufficiently explored (Pasquino and Lucarelli 2025). As Paetzold et al. (2015) argue, an advisor–investor asymmetry may arise when advisors focus narrowly on financial returns, whereas investors often consider ethical and risk-related dimensions as well. Such misalignment is partly attributed to incentive structures. Similarly, Valor et al. (2009) and Linciano et al. (2020) found that advisors are more inclined to recommend sustainable investments when these offer superior expected returns, regardless of nonfinancial preferences. Other studies have also identified distortions in the advisor–client relationship. For example, Laudi et al. (2022) report that US advisors often charge a premium for sustainable investment services without providing added informational value.

Despite these asymmetries, the literature converges on the idea that financial advisors could play a pivotal role in stimulating ESG demand (Heinemann et al. 2018; Pilaj 2017; Strauß 2021). To our knowledge, no experimental research has investigated how an information treatment with educational purposes, implemented in a financial advisory setting, can nudge retail investor decisions. Our paper aims to fill this gap in the literature through an experimental investment game designed to study the impact of the financial advisor's informational and educational intervention on investor sustainable decisions. Therefore, our first hypothesis is as follows:

Hypothesis 1. *The financial advisor's informational nudge significantly increases the share of the investor's portfolio allocated to the sustainable investment fund.*

2.3 | Financial Literacy and Sustainable Finance Knowledge

Retail investors often face difficulties in interpreting standard financial metrics such as risk and return; the inclusion of sustainability considerations further increases this complexity, frequently discouraging participation and marginalizing ethical and environmental concerns (Hafenstein and Bassen 2016). Among the determinants of sustainable investment behavior, recent research has emphasized the pivotal role of *financial literacy*, defined by the OECD (2020) as the combination of awareness, knowledge, skills, attitudes, and behaviors necessary to make sound financial decisions. Financially literate investors tend to face lower information-processing costs, thereby increasing the likelihood of investing in sustainable products compared to individuals with limited financial knowledge (Gutsche and Zwergel 2020). Empirical evidence suggests that financial literacy may positively influence sustainable investment behavior. For example, Anderson and Robinson (2022) show that informational frictions and low literacy hinder households from aligning proenvironmental values with investment choices, whereas Carlsson Hauff (2022) finds that the effectiveness of sustainability labels depends on investors' financial knowledge. Cucinelli and Soana (2023) further report that financially literate investors show stronger preferences for socially responsible intermediaries. However, the overall evidence remains mixed. Lanciano et al. (2024) note that the direction and magnitude of the effect are still uncertain, and several studies find weak, negative, or insignificant relationships (D'hondt et al. 2022; Kurowski et al. 2025; Riedl and Smeets 2017; Rossi et al. 2019).

Whereas financial literacy provides the general cognitive foundation for sound financial decision-making, recent research emphasizes the importance of domain-specific knowledge related to sustainable investments. Filippini et al. (2024) introduce the concept of *sustainable finance literacy* and show, using data on Swiss retail investors, that unlike general financial literacy, it strongly predicts ownership of sustainable investments. Consistent evidence is provided by Kurowski et al. (2025) using a measure of *climate literacy*, and by Lanciano et al. (2024), who show that financial literacy is positively associated with a measure of self-assessed sustainable finance literacy, which in turn directly predicts sustainable investment ownership. Other studies using measures of SI knowledge (Gutsche and Zwergel 2020; Wins and Zwergel 2016) and SI awareness (Jonwall et al. 2023) similarly document significant positive effects. Because we employ a self-reported measure of specific knowledge regarding sustainable finance and ESG criteria, we define our construct as *self-reported sustainable finance knowledge* (*SFK*).

This study aims to contribute to this growing body of literature by examining the joint effects of financial literacy and self-reported SFK on retail investors' sustainable investment decisions in a financial advisory setting. Specifically, it investigates how different dimensions of financial competences influence the effectiveness of financial advisory interventions. We expect the informational nudge delivered by the financial advisor to be more effective among individuals possessing at least a basic level of these forms of knowledge, as they face fewer informational barriers and are therefore better equipped to process and integrate the content of the advisory treatment into their investment decisions. Considering that the integration of sustainability factors adds a layer of complexity that can discourage engagement and lead to the neglect of ethical considerations (Pilaj 2017), higher levels of financial literacy and self-reported SFK may enhance the efficacy of financial advisors' education on sustainable investments. Accordingly, we hypothesize the following:

Hypothesis 1a. *The financial advisor's informational nudge positively interacts with the investor's financial literacy, increasing the share of the investor's portfolio allocated to the sustainable investment fund.*

Hypothesis 1b. *The financial advisor's informational nudge positively interacts with the investor's self-reported SFK, increasing the share of the investor's portfolio allocated to the sustainable investment fund.*

2.4 | Declared Sustainability Preferences

Sustainable investing introduces a widely documented dilemma: Investors favor ethical corporate behavior only when it does not compromise financial returns (Pedersen et al. 2021). This tension fundamentally challenges traditional portfolio optimization frameworks, necessitating a revision of equilibrium models to integrate risk, return, and ESG considerations (Pástor et al. 2021; Pedersen et al. 2021). Investor motivations are heterogeneous, governed by varying blends of financial value and ethical values, and sustainable investors operate on a continuum defined by combined pecuniary and nonpecuniary objectives (Starks 2023). On the one hand, sustainability preferences rely on a *value-driven* rationale, seeking to enhance performance and mitigate material risks. On the other hand, sustainability preferences are *values-driven*, prioritizing social and environmental outcomes based on moral beliefs, potentially foregoing financial maximization (Bonnefon et al. 2025).

Given this standpoint, we posit that the advisor's nudge will have a stronger effect on investors who initially report sustainability-oriented preferences, reinforcing investors' motivations. Accordingly, we test the hypothesis that the financial advisor's nudging intervention has a stronger effect on respondents with a higher level of declared sustainable preferences:

Hypothesis 2. *The financial advisor's informational nudge positively interacts with the investor's declared sustainability preferences, increasing the share of the investor's portfolio allocated to the sustainable investment fund.*

3 | Data and Methodology

The survey was administered via the Qualtrics platform to 708 participants recruited from four EU countries: Germany ($n = 242$), France ($n = 197$), Italy ($n = 158$), and Spain ($n = 111$). These countries were selected as they are the most densely populated in the EU, and the number of participants from each country was proportionally aligned with their population density. Sampling was conducted by Qualtrics, an ISO 27001–certified market research firm, which oversaw participant recruitment, data collection, and survey administration. All participants were members of Qualtrics' standard research panel, designed to reflect the demographic and socioeconomic characteristics of the target populations. Respondents were required to be English-speaking, provided informed consent, and received a small financial incentive for their participation.

The survey consisted of three sections and was designed to replicate a realistic financial advisory context. Section 1 collected information on participants' sociodemographic features and other variables identified in the literature as potential drivers of sustainable investment behavior. In Section 2, respondents were randomly assigned to view either a treatment or control video featuring a simulated financial advisor affiliated with a specialized international advisory firm. Although both videos were equal in length and structure, providing essential financial planning educational content, the treatment video concluded with a segment on sustainable investment, whereas the control video concluded with a legal explanation of the MiFID regulatory content. To ensure data quality, videos could not be skipped, and we included a manipulation check after the treatment video to test participants' comprehension and scrutiny.

Section 3 presented participan<ts with an asset allocation task, requiring them to distribute a hypothetical sum across four investment options: two equity funds (differing in composition), one bond fund, and one sustainable fund (details provided below). Respondents who failed the attention check or completed the questionnaire in less than a predetermined minimum time were excluded by Qualtrics to maintain data integrity. The research design, including experimental procedures and core hypotheses, was preregistered on the Open Science Foundation platform.[3]

3.1 | Explanatory Variables of Sustainable Investment Choices

The existing literature on individual investor preferences indicates a set of variables associated with sustainable investment choices. These were all included in the Survey questionnaires (see Section A of Appendix S1).

3.1.1 | Sociodemographic Profile

We collected a set of sociodemographic characteristics as control variables for our study. Several contributions to the literature showed how these variables can differentiate socially responsible investors from traditional investors (Christiansen et al. 2023; Junkus and Berry 2010; Pérez-Gladish et al. 2012). We therefore

measured participants' age, gender, country, monthly income, savings capacity, presence of excessive debt, number of households, number of incomes in the household, and education level (measured as the minimum number of years required to obtain the respective degree).

3.1.2 | Financial Literacy and Sustainable Finance Knowledge

Some studies observed how a higher level of financial literacy leads to a greater preference for sustainable investments (Anderson and Robinson 2022; Aristei and Gallo 2021; Cucinelli and Soana 2023; Phillips and Johnson 2021). Other studies, however, observed a negative or nonsignificant effect of financial literacy on sustainable investment decisions (D'hondt et al. 2022; Gutsche et al. 2021; Rossi et al. 2019). In this study, we adopted a validated measure of financial literacy developed by Lusardi and Mitchell (2008, 2011) and Mitchell and Lusardi (2015) consisting of three questions referring to interest rates, inflation, and diversification. The variable financial literacy consists of the sum of the correct answers and therefore varies between 0 and 3.

In parallel, we examined a second dimension—sustainable finance knowledge—defined as participants' self-reported understanding of sustainable finance and ESG criteria. Prior studies have used various constructs to capture this specific aspect of investors' knowledge. Filippini et al. (2024) introduced a measure of *sustainable finance literacy* reflecting individuals' ability to identify and evaluate financial products based on their stated sustainability characteristics. Kurowski et al. (2025) employed a measure of *climate literacy* that captures individuals' understanding of climate science and climate-related policies increasingly affecting financial markets. Other studies have relied on self-reported indicators of *knowledge* regarding SI characteristics (Gutsche and Zwergel 2020; Wins and Zwergel 2016). Our measure follows the indicator developed by the Italian Financial Education Committee - Edufin (2023), which has also been used in recent academic work (Lanciano et al. 2024). Participants rated their knowledge across two dimensions—sustainable finance and ESG criteria—each on a scale from 0 to 3. The sum of these items forms the sustainable finance knowledge index, ranging from 0 to 6. Because this measure relies on a self-reported degree of knowledge, in contrast to the objective metric of financial literacy we employed, and because knowledge is defined as one of the components of literacy (OECD 2020; Tohar and Akron 2025), we defined this variable as *self-reported sustainable finance knowledge* (*SFK*).

3.1.3 | Investors Profile

These variables capture several questions that are usually asked by financial advisors in their meetings with clients: risk preferences, temporal preferences, investment experience, and sustainability preferences. Although some authors suggest that sustainable investment products are preferred by investors who are more inclined to risk, as they imply less diversification by screening out certain companies (Apostolakis et al. 2016; Borgers and Pownall 2014; Gutsche et al. 2021), others suggest that they are preferred by the risk-averse (Faradynawati and Söderberg 2022; Lagerkvist et al. 2020), because they take into consideration climate-related risks. The evidence on the impact of temporal preferences on sustainable investments is instead less researched (Faradynawati and Söderberg 2022; Riedl and Smeets 2017). We chose to measure these two variables through an experimentally validated staircase method developed by Falk et al. (2023), consisting of five interdependent choices for each variable. Finally, the last aspect that we wanted to measure is investment experience (Mavlutova et al. 2021). We measured whether participants usually invest in the financial markets, and we further investigated their level of experience by adopting a measure of investment experience based on self-assessment (Bellofatto et al. 2018; Brooks et al. 2019).

Because the experiment simulates a financial advisory setting, and regulations like MiFID II require advisors to consider clients' sustainability preferences, we assessed participants' preferences by briefly defining sustainable products and asking if they wished to include sustainability criteria in their investments. As noted by the Sustainable Finance Observatory (2023), the EU lacks a standardized question for this purpose, as banks use varying approaches, though clients are typically asked whether they want to incorporate ESG factors. For consistency with our study, we align our measure of sustainability preferences with the most commonly used questions in real-world advisory practices.

Recognizing the role of advisors as both educators and influencers in the investment decision-making process, we asked participants whether they usually make investment decisions independently or with the support of a personal or family financial advisor. This distinction is relevant, as those who interact regularly with an advisor may be more informed about sustainable products. Nevertheless, as previously discussed, prior research has identified several potential asymmetries between advisors and clients in the context of sustainability-oriented recommendations (Paetzold et al. 2015; Strauß 2021; Valor et al. 2009).

Finally, we include a variable measuring participants' perception of whether SI can have a concrete impact on the environment and society. The literature highlights that a positive perception of the real-world impact of SI is one of the most significant determinants of sustainable choices among retail investors, as individuals are more likely to act on a social issue when they believe their behavior can help address it (Brodback et al. 2019; Nilsson 2008; Riedl and Smeets 2017; Wins and Zwergel 2016). Accordingly, we measured investors' *perceived impact of SI* using a Likert-scale metric adapted from Nilsson (2008).

3.2 | Video Treatment

Participants were randomly assigned by Qualtrics to either a treatment or control group.[4] Given the online nature of the experiment, a video intervention was employed to simulate a financial advisory session within an educational context. Given the experimental setting, we could not use a real financial advisor; hence, we used a video as the most useful tool for recreating this situation. Moreover, we were not interested in the interaction with the advisor per se but in the effect that the information provided by the investment professional could have

on the participants' investment decisions. Several strands of the empirical literature have shown that video tools can create a fertile opportunity for cognitive engagement (Kozma 1991), and video formats significantly affect behavioral change and knowledge acquisition (Heinberg et al. 2014). Informational videos, in particular, can affect subjects' awareness of certain topics and influence proenvironmental choices (Wathuge and Sedera 2025). Thus, we considered the video treatment an effective way to simulate the educational role of financial advisors.

The experimental design closely mirrored a real digital financial advisory process. In both conditions, the same male actor portrayed a financial advisor affiliated with a fictional international financial education committee. He delivered identical introductory content across five slides, covering key investment concepts (e.g., equity vs. bonds, risk–return trade-off, diversification, and investment horizon), accompanied by synchronized visuals. The only variation occurred in the final slide: In the treatment video, the advisor introduced sustainable investing, providing information based on the empirical evidence (Fulton et al. 2012; Giese et al. 2019; Gomez-Valencia et al. 2021; Kölbel et al. 2020; Reber et al. 2022; Ren et al. 2022; Xu et al. 2023) and encouraging the consideration of ESG criteria in the investment portfolio construction. The control video concluded with a legally dense and content-neutral explanation of the MiFID II regulatory framework. Both videos were of equal length, and participants were required to watch the full video. Our experimental design builds on a well-established methodological approach that employs informational and educational video interventions to study behavioral change in settings characterized by informational asymmetries and limited awareness. Prior studies have shown that video treatments are a reliable and scalable tool for influencing decision-making, improving comprehension, and reducing information gaps (Bschaden et al. 2020; Heinberg et al. 2014; Najafabadiha et al. 2025; Vu et al. 2020). By leveraging this approach, we ensured that the intervention was both realistic and consistent with empirical practices in the literature. For a comprehensive overview of the slides and the scripted narration delivered by the advisor, refer to Section B of Appendix S1.

To ensure treatment validity, a manipulation check followed the video in the treatment group. The aim was to verify that respondents in the treatment arm had fully understood the nudging part of the experiment.[5] Participants who failed ($n = 167$) were excluded, resulting in a final sample of 708. Additionally, participants rated the usefulness of the video content, allowing for further analysis of its perceived educational value and its influence on investment decisions.

3.3 | Investment Game

Our investment game follows an experimental protocol developed by Gajewski et al. (2022). The respondents were assigned the task of investing a hypothetical amount of 10,000 EUR in four different funds provided in the experiment: a bond fund, two equity funds, and a sustainable investment fund (see Section C of Appendix S1). The respondents could allocate funds as they preferred but had to invest the total amount allowed (the platform did not allow underinvestment or short positions).

A specific value of risk and return was assigned to each fund. In particular, the fund performance (in percentage) was illustrated as the last year's return, whereas the risk was assigned as a score varying from a 1 (*lowest risk*) to 7 (*highest risk*) scale, keeping constant the Sharpe ratio for each investment opportunity. Adapting the options provided by Gajewski et al. (2022), the investment game provided an equity fund *X* (risk: 3; 1-year net return: 6%), a bond fund (risk: 2; 1-year net return: 4%), an equity fund *Y* (risk: 5; 1-year net return: 10%), and a sustainable investment fund (risk: 5; 1-year net return: 10%). Thus, none of the investment alternatives dominated the others in terms of return/risk combination. Although the combination of these funds cannot represent an exhaustive summary of all the existing financial products, they can be used as a representative sample of the universe of investment funds, comprising a bond fund with low values of risk and return, a lower risk equity fund, a higher risk equity fund, and a sustainable investment fund, with the same characteristics as the higher risk equity fund.

It is worth noting that the equity fund *Y* and the sustainable investment fund have the same SR while also providing the same level of risk and return (risk: 5; 1-year net return: 10%). Hence, the only factor differentiating them is the (non)monetary reward in the case of the sustainable fund. Consequently, if the treatment is effective in raising awareness and mobilizing sustainability values, we should see an increased investment in the sustainable fund at the expense of the other funds, especially fund *Y*.

4 | Empirical Results

4.1 | Descriptive Statistics

Table 1 reports the details of descriptive statistics. We divided the sociodemographic and independent variables following the survey's question blocks. Table 2 shows the correlation matrix of the variables used in the analysis. It is worth noting that, similarly to Filippini et al. (2024), we do not find a strong positive correlation between financial literacy and self-reported SFK. This signals that these two indicators measure two distinct dimensions of knowledge.

To evaluate the effective randomization of the experiment, we conducted a *t* test on the two groups of participants in the treatment and control arms of the experiment. Table 3 displays the mean values for the whole sample and for the two groups, together with a test on the significance of their differences. Overall, the *t* tests show that the two groups did not significantly differ in terms of their sociodemographic variables, with very few exceptions. In general, these differences were no reason for concern to us since Qualtrics guaranteed the full randomization of the assignment.

Table 4 shows the results of the investment game and indicates, for the whole sample of participants, a dominant allocation in

TABLE 1 | Descriptive statistics.

		Variable	% on $N = 708$	Mean	St. dev.	Min	Max
Survey questionnaire	Sociodemographic characteristics	Age		44.223	11.517	21	55
		Gender Female	46.9%				
		France	27.8%				
		Germany	34.2%				
		Italy	22.3%				
		Spain	15.7%				
		Net monthly income (€/1.000)		2.369	1.160	1.000	5.000
		% Savings		15.551	6.325	10	30
		Overindebtedness		2.619	1.171	1	5
		Household members		2.585	1.165	1	6
		Household incomes		1.798	0.841	1	6
		Education		12.177	3.565	0	20
	Literacy and knowledge	Financial literacy		1.576	0.999	0	3
		Self-reported SFK		2.268	1.484	0	6
	Investors' profile	Investors in real-life	80.1%				
		Risk preferences		12.329	11.354	1	32
		Time preferences		18.001	11.187	1	32
		Experience		0.744	0.628	0	2
		Sustainability preferences		0.670	0.470	0	1
		Advisor dependence		1.593	1.025	0	3
		Perceived impact of SI		3.470	0.901	1	5
Video		Treatment	38.7%	0.387	0.487	0	1
Investment game	Investment funds	Equity fund *X*		33.398	19.947	0	100
		Bond fund		31.72	18.877	0	100
		Equity fund *Y*		16.934	14.868	0	100
		Sustainable fund		17.948	18.944	0	100
	Perception of the video	Advisor usefulness		3.487	0.962	1	5

Note: Sample of $N = 708$ participants. Questions (Qs) are reported in Section A of Appendix S1. Sociodemographic variables: age (Q1); gender (Q2); country (Q3); income (Q4); savings (Q5); debt (Q6); households (Q7); household incomes (Q8); and education (Q9). Literacy and knowledge: financial literacy (Q10–Q12) and self-reported SFK (Q13; Q14). Investment profile: risk preferences (Q15–Q19); time preferences (Q20–Q24); experience (Q25); sustainability preferences (Q26); advisor dependence (Q27); investors in real-life (Q28); and perceived impact of SI (Q29). Perception of the video: advisor usefulness (Q30).

fund *X* and bond fund, with a lower level of investment in fund *Y* and SI fund.

Table 5 compares the different investor profiles, showing the variables that best predict the allocation to each fund. *Age* does not have a significant effect on any of the funds except for a positive association with the SI fund. At the same time, *gender* shows a positive effect on the bond fund and a negative effect on the sustainable fund. The variable *country* has a clear impact on investment decisions, as German participants appear to significantly prefer the sustainable fund. Even if *income* is not significant, *savings* and *excessive debt* negatively impact the SI fund. *Household members* and *household incomes* do not appear to impact any funds. The level of *education* shows a negative effect on the investment in equity fund *X* and the bond fund, and a positive impact on equity fund *Y* and the SI fund.

Financial literacy has a negative relationship with the investment in equity fund *X* and a positive relationship with the allocation in the bond fund. It does not show any significant relationship with equity fund *Y* and the sustainable fund. *Self-reported SFK*, on the other hand, has a strong positive effect on the allocation to the sustainable fund and a negative relationship with the bond fund. Thus, although financial literacy levels do not appear to influence sustainable investment decisions,

TABLE 2 | Correlation matrix.

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
(1)	Age	1																	
(2)	Gender female	−0.15***	1																
(3)	Income	0.25***	−0.11**	1															
(4)	Savings	0.07	−0.06	0.32***	1														
(5)	Excessive debt	−0.13***	0.03	−0.07	−0.15***	1													
(6)	Household members	−0.24***	0.02	0.09*	0.08*	0.12**	1												
(7)	Household incomes	−0.17***	−0.09*	0.15***	0.11**	0.03	0.51***	1											
(8)	Education	0.30***	−0.10*	0.31***	0.19***	−0.13***	−0.06	0.02	1										
(9)	Financial literacy	0.25***	−0.15***	0.17***	0.11**	−0.22***	−0.13***	−0.03	0.28***	1									
(10)	Self-reported SFK	0.04	−0.11**	0.20***	0.22***	−0.01	0.03	−0.01	0.17***	0.10**	1								
(11)	Investor in real life	−0.01	−0.18***	0.20***	0.20***	0.01	0.09*	0.15***	0.05	0.04	0.20***	1							
(12)	Risk preferences	−0.18***	0.01	−0.11**	−0.04	0.14***	0.15***	0.16***	−0.28***	−0.22***	−0.06	0.23***	1						
(13)	Time preferences	0.16***	−0.15***	0.14***	0.09*	−0.12**	−0.12**	−0.03	0.18***	0.26***	0.12**	0.05	−0.22***	1					
(14)	Experience	0.07	−0.19***	0.25***	0.26***	−0.03	−0.01	0.06	0.22***	0.17***	0.40***	0.37***	−0.04	0.17***	1				
(15)	Sustainability preferences	0.01	−0.03	0.04	0.03	0.07	0.06	0.02	−0.04	−0.15***	0.06	0.06	0.12**	−0.03	−0.04	1			
(16)	Advisor reliance	−0.01	0	0.07	0.03	0.04	0.10*	0.03	−0.02	−0.12**	−0.04	0.52***	0.22***	−0.06	−0.03	0.05	1		
(17)	Perceived impact of SI	0.05	−0.03	0.14***	0.09*	0.07	−0.01	−0.05	0.12**	0.11**	0.15***	0.06	−0.10*	0.05	0.13***	0.09*	−0.05	1	
(18)	Advisor usefulness	0.07	−0.01	0.15***	0.11**	0.03	−0.02	−0.08*	0.15***	0.15***	0.13***	0.04	−0.15***	0.15***	0.13***	0	−0.08*	0.59***	1

*$p < 0.1$.
**$p < 0.05$.
***$p < 0.01$.

TABLE 3 | Test of randomization of treatment and control group by sociodemographic profile.

Variable	Sample	Treatment	Control	Difference	*p* value[a]
Age	44.223	45.109	43.664	1.446	0.104
Gender female	0.469	0.511	0.442	0.069*	0.075
Income	2.369	2.425	2.334	0.091	0.309
Savings	15.551	16.241	15.115	1.126**	0.021
Overindebtedness	2.619	2.657	2.594	0.062	0.490
Household	2.585	2.588	2.583	0.005	0.959
Household incomes	1.798	1.799	1.797	0.002	0.975
Education	12.177	12.781	11.795	0.986***	0.000

[a]Two sample *t* test with equal variances.
*The difference is significant at a 10% level of confidence.
**The difference is significant at a 5% level of confidence.
***The difference is significant at a 1% level of confidence.

TABLE 4 | Asset allocation among the four funds.

Statistic	*N*	Mean (%)	St. Dev.	Min (%)	Max (%)
Equity fund *X*	708	33.40	19.95	0	100
Bond fund	708	31.72	18.88	0	100
Equity fund *Y*	708	16.93	14.87	0	100
SI fund	708	17.95	18.94	0	100

knowledge specifically related to sustainable finance and ESG criteria is significantly associated with a higher allocation to the SI fund.

Concerning the investor profile, being *investors in real life* and the level of investment *experience* both have a negative impact on the sustainable fund and a positive effect on the equity fund X. *Risk preferences* show a positive effect on the investment in the equity fund *X* and a negative effect on the bond fund, coherently with the two products' characteristics. In contrast, *time preferences* do not show significant relationships. The table shows that *declared sustainability preferences* do not exhibit a significant association with allocations to the sustainable fund. Participants who reported having sustainability-oriented preferences did not invest more in the SI fund than those who did not, thereby indicating a discrepancy between stated preferences and the consequent investment decision. We also find that *advisor reliance* is not significantly associated with allocations to the SI fund, suggesting that investors who primarily rely on financial advisors for their investment decisions do not exhibit a greater inclination for sustainable products. On the other hand, we observe a strong negative association between *perceived impact of SI* and allocation to equity fund *X* and a positive association with investment in the sustainable fund, consistent with previous findings in the literature (Brodback et al. 2019; Nilsson 2008; Riedl and Smeets 2017). These results indicate that investors who perceive sustainable investments as capable of generating a positive real-world impact tend to allocate more to sustainable products.

4.2 | Influence of Financial Advisor's Suggestions on Sustainable Investments

To examine the influence of the financial advisor nudging intervention on participants' portfolio allocation in the sustainable fund, we estimated the following average treatment effect (ATE) regression model:

$$Y_i = \beta_0 + \beta_1\, TREATMENT_i + \beta_2\, \boldsymbol{C_i} + \varepsilon_i. \quad (1)$$

where the dependent variable Y_i is the percentage of the portfolio that the investor i allocated to the SI fund. The dummy variable $TREATMENT_i$ takes the value of 1 if participant i is assigned to the treatment group and 0 if the participant is assigned to the control group. In addition, we present a model specification that includes a vector with sociodemographic controls C_i

Table 6 reports the ATE results. In model specification (1), the treatment displays a positive and statistically significant effect on the share invested in the SI fund ($p < 0.05$). On average, participants in the treatment group allocated 3.509 percentage points more to the sustainable fund relative to those in the control group. Model specification (2) shows that the magnitude and significance of the treatment effect remain stable when sociodemographic characteristics are included as controls.

This confirms our first research hypothesis (Hypothesis 1): The advisor intervention regarding sustainable investments significantly nudged investors toward the sustainable option. This result corroborates the idea that the information provided by financial advisors can effectively nudge their clients' sustainable choices, orient private capital flows toward sustainable products, and become a strong lever for developing the demand for ESG investments.

TABLE 5 | Predictors of investments in the four funds.

	Dependent variable			
	Equity fund *X*	**Bond fund**	**Equity fund *Y***	**SI fund**
Age	−0.062	−0.080	0.031	0.111*
	(0.070)	(0.070)	(0.055)	(0.067)
Gender female	0.738	2.826*	−0.836	−2.728*
	(1.492)	(1.489)	(1.181)	(1.428)
Country_Germany	−4.485**	−4.629**	3.150**	5.963***
	(1.834)	(1.830)	(1.451)	(1.754)
Country_Italy	−1.245	−0.970	0.389	1.826
	(2.133)	(2.129)	(1.688)	(2.041)
Country_Spain	−0.602	−1.046	0.761	0.887
	(2.307)	(2.303)	(1.826)	(2.208)
Income	−0.196	−0.133	−0.389	0.718
	(0.728)	(0.727)	(0.576)	(0.697)
Savings	0.188	0.092	0.038	−0.319***
	(0.124)	(0.124)	(0.098)	(0.118)
Excessive debt	0.960	−0.212	0.604	−1.352**
	(0.639)	(0.638)	(0.506)	(0.612)
Household members	0.549	−0.856	0.607	−0.300
	(0.753)	(0.751)	(0.596)	(0.720)
Household incomes	0.492	−1.219	0.160	0.566
	(1.012)	(1.010)	(0.801)	(0.969)
Education	−0.620***	−0.490**	0.717***	0.393*
	(0.231)	(0.231)	(0.183)	(0.221)
Financial literacy	−1.461*	1.421*	−0.571	0.610
	(0.803)	(0.801)	(0.635)	(0.768)
Self-reported SFK	−0.554	−1.006*	−0.098	1.658***
	(0.534)	(0.533)	(0.422)	(0.511)
Investor in real life	7.988***	−1.640	−1.122	−5.226**
	(2.436)	(2.431)	(1.928)	(2.331)
Risk preferences	0.222***	−0.165**	0.039	−0.095
	(0.070)	(0.070)	(0.056)	(0.067)
Time preferences	−0.012	0.056	−0.011	−0.034
	(0.067)	(0.067)	(0.053)	(0.065)
Experience	2.560*	1.563	−1.309	−2.814**
	(1.377)	(1.375)	(1.090)	(1.318)
Sustainability preferences	0.738	1.408	−0.345	−1.801
	(1.541)	(1.538)	(1.219)	(1.474)

(Continues)

TABLE 5 | (Continued)

	Dependent variable			
	Equity fund *X*	**Bond fund**	**Equity fund *Y***	**SI fund**
Advisor reliance	−1.078	1.373	0.331	−0.626
	(1.168)	(1.166)	(0.925)	(1.118)
Perceived impact of SI	−2.795***	−0.122	0.156	2.760***
	(0.812)	(0.811)	(0.643)	(0.777)
Constant	40.758***	45.297***	4.952	8.993
	(5.904)	(5.893)	(4.672)	(5.649)
Observations	708	708	708	708
R^2	0.148	0.052	0.039	0.135
Adjusted R^2	0.123	0.024	0.011	0.110
Residual std. error (df = 687)	18.683	18.647	14.783	17.875
F statistic (df = 20; 687)	5.945***	1.876**	1.405	5.352***

*$p < 0.1$.
**$p < 0.05$.
***$p < 0.01$.

However, the primary aim of our study is not merely to demonstrate this overall average treatment effect, but to uncover *how* and *for whom* advisor-provided sustainability information influences sustainable investment decisions, underlying the mechanisms that drive such investment choices within a realistic advisory context. To address this, we examined how the treatment interacts with participants' initial levels of financial literacy and self-reported SFK by estimating the following conditional average treatment effect (CATE) regression models:

$$Y_i = \beta_0 + \beta_1\ TREATMENT_i + \beta_2\ Financial\ Literacy_i + \beta_3\ \left(TREATMENT_i \times Financial\ Literacy_i\right) + \beta_4\ \boldsymbol{C_i} + \varepsilon_i \quad (2)$$

$$Y_i = \beta_0 + \beta_1\ TREATMENT_i + \beta_2\ Self-reported\ SFK_i + \beta_3\ \left(TREATMENT_i \times Self-reported\ SFK_i\right) + \beta_4\ \boldsymbol{C_i} + \varepsilon_i \quad (3)$$

Table 7 reports empirical results. Model specification (1) shows that financial literacy does not exhibit any direct significant effect on the allocation to the sustainable fund, consistent with the findings presented earlier. However, the advisor treatment significantly interacts with higher levels of financial literacy ($p < 0.05$), leading to a greater percentage allocated to the sustainable fund among more financially literate participants. This interaction effect remains robust when sociodemographic controls are included in model specification (2). Thus, although financial literacy does not directly influence sustainable investment choices, the informational nudge delivered by the advisor becomes more effective as financial literacy increases. Model specification (3) reveals a direct positive effect of self-reported SFK on the allocation to the sustainable fund but no significant interaction with the advisor treatment. This result is mirrored in model specification (4), where control variables are added.

Overall, the significant interaction between financial literacy and the advisor treatment indicates that, although financial literacy alone does not increase sustainable investments, financially literate participants are better equipped to comprehend and act upon the advisor's information on sustainable products. Financial literacy therefore appears to function as a facilitating condition that enhances the *processing* of advisory educational interventions, rather than serving as an *independent driver* of sustainable investment decisions. Conversely, the direct and significant positive effect of self-reported SFK, combined with the absence of an interaction effect, suggests that participants with greater knowledge of sustainable finance and ESG criteria invest more in sustainable funds *irrespective* of the advisor's intervention. Their preexisting expertise likely rendered the informational nudge redundant.

To improve clarity, Figures 1 and 2 show the CATE regressions with participants' levels of financial literacy and self-reported SFK in graphical terms. The two lines represent the predicted values for the two groups (treatment and control), whereas the areas around the lines represent the confidence intervals. There is a statistically significant difference between the two groups only when the two areas are not overlapping.

Figure 1 shows that at low levels of financial literacy, the treatment has no significant effect on sustainable investing whereas the effect becomes substantially stronger as literacy increases. The steeper slope for treated participants at higher literacy levels supports Hypothesis 1a and indicates that low financial literacy acts as a key informational barrier limiting the effectiveness of advisors' nudges. Figure 2 shows a strong direct positive effect of self-reported SFK on sustainable allocations in both groups. The interaction with the treatment is not significant at any level of SFK, contradicting Hypothesis 1b. This suggests that the advisory intervention is largely redundant for investors with higher SFK, who are already informed and inclined to invest sustainably. This finding highlights that self-reported SFK serves as a key direct driver of sustainable

TABLE 6 | Average treatment effect.

	Dependent variable: % invested in the SI fund	
	(1)	(2)
Treatment	3.509**	3.567**
	(1.457)	(1.443)
Age		0.116*
		(0.068)
Gender Female		−2.254
		(1.420)
Country_ Germany		7.112***
		(1.772)
Country_ Italy		2.603
		(2.076)
Country_ Spain		1.419
		(2.260)
Income		0.779
		(0.695)
Savings		−0.364***
		(0.118)
Excessive debt		−1.435**
		(0.611)
Household members		−0.241
		(0.732)
Household incomes		−0.318
		(0.974)
Education		0.530**
		(0.217)
Constant	16.590***	11.587**
	(0.906)	(4.956)
Observations	708	708
R^2	0.008	0.083
Adjusted R^2	0.007	0.067
Residual std. error	18.880 (df = 706)	18.299 (df = 695)
F statistic	5.801** (df = 1; 706)	5.225*** (df = 12; 695)

*$p < 0.1$.
**$p < 0.05$.
***$p < 0.01$.

investing, whereas financial literacy—although not exerting a direct effect—provides the conceptual foundation required to fully understand and utilize the sustainability information offered by financial advisors.

Table 8 and Figure 3 report the results of the CATE studying the interaction between the experimental treatment and the preferences for sustainable investments as declared by participants, according to the following regression model:

$$Y_i = \beta_0 + \beta_1\, TREATMENT_i + \beta_2\, Sust.Preferences_i + \beta_3\left(TREATMENT_i \times Sust.Preferences_i\right) + \beta_4\, \boldsymbol{C_i} + \varepsilon_i \quad (4)$$

The interaction is statistically nonsignificant on average, as it is also evident from the overlapping confidence intervals in Figure 3. Hence, we cannot confirm Hypothesis 2. This result may partly reflect the limited sample size. It also suggests that, although the advisor's informational nudge addressed awareness and informed attitudes in line with Pilaj's (2017) 5A model, it did not significantly affect investors' motivations on average. This indicates that sustainability preferences may be primarily values-driven rather than responsive to additional financial information (Starks 2023), implying that different nudges may be needed to target ethical motivations.

4.3 | Perception of the Financial Advisor Video

To offer an additional perspective on the effectiveness of the treatment video, we examined the role of participants' perceived usefulness of the financial advisor video. Given that the nudging intervention constitutes an information treatment delivered through an educational format, it is essential to analyze how participants evaluated the intervention and how this perception influenced their decision-making. We therefore estimated the following:

$$Y_i = \beta_0 + \beta_1\, TREATMENT_i + \beta_2\, Advisor\ Usefulness_i + \beta_3\left(TREATMENT_i \times Advisor\ Usefulness_i\right) + \beta_4\, \boldsymbol{C_i} + \varepsilon_i \quad (5)$$

Table 9 presents the output of the regression model, whereas Figure 4 illustrates these findings graphically. Both model specifications (1) and (2) of the table indicate that participants who rated the video as more useful allocated a greater proportion of their investment to the sustainable fund, irrespective of their experimental group assignment. Notably, the results also reveal a positive interaction between the treatment condition and perceived usefulness: participants in the treatment group who found the video useful allocated an even higher percentage to the sustainable fund compared to their counterparts in the control group. These findings suggest that the effectiveness of the nudging intervention operated largely through participants' perceptions of the quality and relevance of the information conveyed.

4.4 | Heterogeneity of the Experimental Treatment: Quantile Treatment Effects

To comprehensively assess the impact of the experimental advisor treatment, we move beyond our analysis and study the full distributional impact using quantile treatment effects (QTEs). This allows for a robust determination of whether the treatment's effect is uniform or heterogeneous across the entire conditional distribution of the outcome variable, that is, the percentage invested in the SI fund.

TABLE 7 | Conditional average treatment effect on financial literacy and self-reported SFK.

	Dependent variable: % invested in the sustainable fund			
	(1)	(2)	(3)	(4)
Treatment	−1.485	−0.870	4.601*	4.843*
	(2.711)	(2.682)	(2.687)	(2.639)
Financial literacy	1.410	−0.011		
	(0.893)	(0.928)		
Treatment × financial literacy	3.092**	2.793**		
	(1.449)	(1.421)		
Self-reported SFK			1.433**	1.483**
			(0.603)	(0.614)
Treatment × self-reported SFK			−0.532	−0.565
			(0.986)	(0.965)
Age		0.102		0.126*
		(0.068)		(0.068)
Gender female		−1.946		−1.931
		(1.425)		(1.420)
Country_Germany		6.717***		7.092***
		(1.780)		(1.766)
Country_Italy		2.466		2.208
		(2.074)		(2.074)
Country_Spain		1.205		1.333
		(2.255)		(2.258)
Income		0.725		0.536
		(0.694)		(0.698)
Savings		−0.359***		−0.416***
		(0.118)		(0.120)
Excessive debt		−1.326**		−1.505**
		(0.618)		(0.610)
Household		−0.219		−0.297
		(0.732)		(0.730)
Household incomes		−0.262		−0.121
		(0.972)		(0.973)
Education		0.478**		0.459**
		(0.220)		(0.218)
Constant	14.387***	12.507**	13.397***	9.979**
	(1.658)	(5.044)	(1.619)	(4.996)
Observations	708	708	708	708
R^2	0.033	0.090	0.018	0.092
Adjusted R^2	0.029	0.072	0.014	0.074

(Continues)

TABLE 7 | (Continued)

	Dependent variable: % invested in the sustainable fund			
	(1)	(2)	(3)	(4)
Residual std. error	18.669 (df = 704)	18.249 (df = 693)	18.814 (df = 704)	18.232 (df = 693)
F statistic	8.001*** (df = 3; 704)	4.918*** (df = 14; 693)	4.274*** (df = 3; 704)	5.019*** (df = 14; 693)

*$p < 0.1$.
**$p < 0.05$.
***$p < 0.01$.

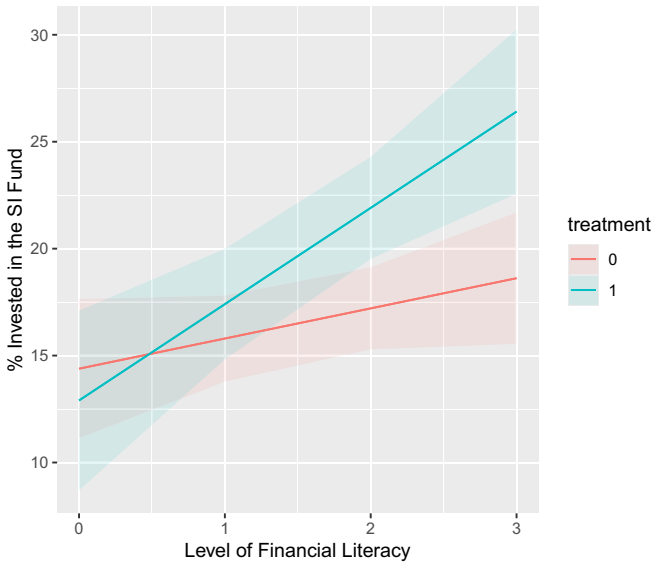

FIGURE 1 | CATE plot: financial literacy.

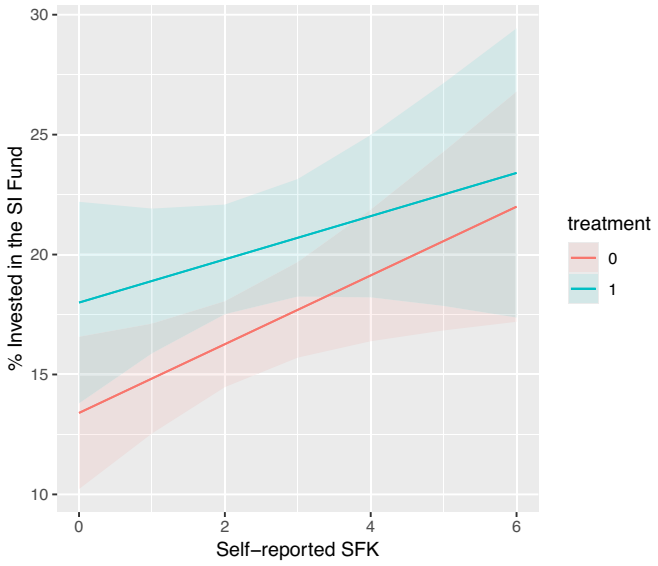

FIGURE 2 | CATE plot: self-reported SFK.

Figure 5, which presents the QTE regression, illustrates that the experimental treatment did not affect all respondents uniformly. The solid red line depicts the coefficient representing the treatment effect of an average increase of 5.509 percentage points in the SI fund, as reported in the ATE regression in Table 6, with its 95% confidence interval shown by the dashed red lines. The black line displays the estimated treatment effect across quantiles of the distribution of the percentage invested in the SI fund (with the black dots marking the decile-specific estimates), and the corresponding gray areas denote the confidence intervals. The treatment can be considered statistically significant at a given quantile when the associated confidence interval does not include zero. As shown, the treatment effect is significantly weaker at the lower quantiles of the distribution (approximately between the 0.2 and 0.4 quantiles), becomes nonsignificant around the median, and increases substantially at the 0.8 quantile. This pattern indicates that the treatment had the strongest impact on respondents who allocated relatively higher proportions of their portfolio to the sustainable fund compared to the control group. Furthermore, the results reveal a clear upward trend in the magnitude of the treatment effect: Its influence strengthens as we move from the lower to the higher quantiles of the distribution, becoming particularly pronounced for allocations above the median.

In addition, we implemented conditional quantile treatment effects (CQTE) regressions to further analyze in detail the interaction effects observed in the previous section. The CQTE provides the most granular insight into the mechanism of the treatment effect. It helps pinpoint how an individual's preexisting attributes (e.g., financial literacy, self-reported SFK, and sustainability preferences) interact with the treatment to produce different outcomes across the distribution. Unlike the standard QTE, which compares unconditional quantile differences, the CQTE is explicitly designed to model and estimate how the treatment effect varies based on individuals' specific characteristics.

Figure 6 represents the CQTE by financial literacy levels. As we can see, respondents with a high level of financial literacy (participants who scored above the average to the financial literacy questions) have a coefficient and 95% confidence interval that stays above the zero line for most of the distribution of the percentage invested in the SI fund, unlike respondents with low financial literacy. Moreover, higher levels of financial literacy seem to have a stronger interaction with the treatment, confirming the findings from the CATE regression in Table 7 and Figure 1. On the other hand, the interaction between the self-reported SFK and the treatment is nonsignificant at all the deciles of the dependent variable's distribution, as illustrated in Figure 7, indicating the inefficacy of the informational treatment on investors that were already knowledgeable regarding sustainable finance across all the SI fund distribution.

Finally, Figure 8 reports the results of the quantile treatment effect regressions conditional on participants' declared sustainability preferences. Although the average estimates in the

TABLE 8 | Conditional average treatment effect on sustainability preferences.

	Dependent variable: % invested in the sustainable fund	
	(1)	(2)
Treatment	1.400	1.263
	(2.487)	(2.442)
Sustainability preferences	−3.121	−2.587
	(1.982)	(1.939)
Treatment × sustainability preferences	2.985	3.374
	(3.074)	(3.011)
Age		0.118*
		(0.068)
Gender female		−2.373*
		(1.423)
Country_Germany		7.179***
		(1.777)
Country_Italy		2.624
		(2.076)
Country_Spain		1.554
		(2.264)
Income		0.753
		(0.696)
Savings		−0.352***
		(0.119)
Excessive debt		−1.384**
		(0.613)
Household		−0.238
		(0.732)
Household incomes		−0.269
		(0.976)
Education		0.526**
		(0.217)
Constant	18.783***	13.004**
	(1.662)	(5.069)
Observations	708	708
R^2	0.012	0.085
Adjusted R^2	0.007	0.067
Residual std. error	18.873 (df = 704)	18.300 (df = 693)
F statistic	2.762** (df = 3; 704)	4.614*** (df = 14; 693)

*$p < 0.1$.
**$p < 0.05$.
***$p < 0.01$.

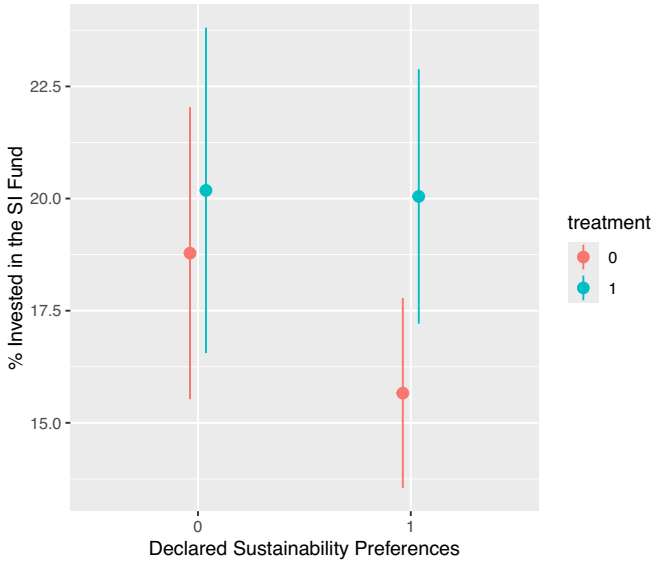

FIGURE 3 | CATE plot: sustainability preferences.

previous CATE analysis (Table 8 Figure 3) indicated that sustainability preferences did not significantly interact with the treatment, the CQTE analysis reveals that positive sustainability preferences do, in fact, significantly amplify the effect of the informational intervention at the upper quantiles of the distribution of SI fund allocations (from the 0.60 quantile onward), as indicated by the 95% confidence intervals clearly separated from zero. In contrast, for respondents with negative sustainability preferences, the coefficients and confidence intervals remain centered around zero across all quantiles. A closer examination of the mechanism underlying the advisor intervention for participants with positive stated sustainability preferences uncovers an important insight: Although the treatment did not differentially affect investors with positive versus negative sustainability preferences *on average*—as previously shown in the CATE analysis—the treatment effect becomes significantly positive for higher levels of SI fund allocation when assessed across the distribution. Therefore, although we cannot fully confirm Hypothesis 2, the quantile-specific evidence suggests that the financial advisor's informational treatment delivered was able to positively interact with investors' initial sustainability-oriented motivations.

4.5 | Model With Mediation and Moderation Effects

To better understand the mechanisms driving investment in the SI fund, we conducted additional analyses jointly examining the mediation and moderation processes associated with investors' key characteristics—financial literacy, self-reported SFK, and sustainability preferences. Although earlier analyses focused on their direct effects and moderating interactions with the informational nudge, we extend this framework by estimating a model that simultaneously captures both mediation and moderation, allowing for a more comprehensive assessment of how these characteristics influence SI choices. As previously shown in Table 5, the *perceived impact of SI* is directly associated with SI fund allocation. We therefore hypothesize that it also mediates the effects of financial literacy, SFK, and sustainability preferences on sustainable investment behavior. This is theoretically plausible because these traits are unlikely to translate into action unless investors believe SI generates meaningful real-world outcomes. Including this mediator also allows us to test whether the treatment interaction—previously observed through CATE and CQTE analyses—remains once a mediation pathway is accounted for.

To test this integrated mechanism, we used the PROCESS macro (Hayes 2017), following prior studies (Daniel et al. 2023; Hasford et al. 2022; Roy and Das 2022; Shin et al. 2023). For each independent variable (financial literacy, self-reported SFK, and sustainability preferences), we estimated a model including (i) a direct effect on SI allocation, (ii) an indirect effect through *perceived impact of SI*, and (iii) a moderated interaction with the treatment, using bootstrapped 95% confidence intervals. The full regression outputs from PROCESS analyses are reported in Section D of Appendix .

Figure 9 reports the results of the first model with financial literacy as the independent variable. Financial literacy has a positive effect on *perceived impact of SI* ($\beta = 0.10$, $p < 0.01$), which in turn significantly increases SI fund allocation ($\beta = 2.69$, $p < 0.01$), yielding a positive and statistically significant indirect effect (see Table D.1 in Appendix S1 for the precise estimates). This clarifies why financial literacy shows no significant direct effect on SI allocation: Its influence operates indirectly through investors' beliefs about the real-world effectiveness of sustainable investing. Financial literacy becomes behaviorally relevant only insofar, as it strengthens perceived impact, which then motivates higher SI investment. On the moderation side, the advisor treatment significantly interacts with higher financial literacy, confirming previous results ($\beta = 3.02$, $p < 0.05$). Overall, financial literacy affects SI choices through two channels: an *indirect channel* via perceived impact and a *moderated channel* by enhancing responsiveness to the advisor's informational nudge.

Figure 10 presents the results with self-reported SFK as the independent variable. SFK positively affects perceived SI impact ($\beta = 0.09$, $p < 0.01$), which in turn increases SI fund allocation ($\beta = 2.79$, $p < 0.01$), yielding a positive and significant indirect effect (see Table D.2 in Appendix S1 for the precise estimates). Unlike financial literacy, SFK also has a significant direct effect on SI allocation ($\beta = 1.23$, $p < 0.05$), indicating that investors with greater sustainable finance knowledge allocate more to the SI fund even beyond the mediated channel. The advisor treatment does not significantly interact with SFK, consistent with prior analyses. Overall, SFK influences SI choices through (i) an *indirect channel*, whereby more knowledgeable investors develop stronger perceptions of SI's real-world impact, which then increases their SI allocation, and (ii) a *direct channel*, whereby preexisting sustainable finance knowledge independently increases SI investment.

Figure 11 presents the results with declared sustainability preferences as the independent variable. Although sustainability preferences show a weak negative direct association with SI fund allocation ($\beta = -3.79$, $p < 0.10$), they significantly increase *perceived SI impact* ($\beta = 0.16$, $p < 0.05$), which in turn raises SI allocation ($\beta = 3.14$, $p < 0.01$). This yields a positive

TABLE 9 | Conditional average treatment effect on perceived advisor usefulness.

	Dependent variable: % invested in the sustainable fund	
	(1)	(2)
Treatment	−6.504	−6.935
	(5.632)	(5.502)
Advisor usefulness	2.112**	1.747**
	(0.889)	(0.885)
Treatment × advisor usefulness	2.796*	2.969**
	(1.553)	(1.512)
Age		0.117*
		(0.067)
Gender female		−2.168
		(1.405)
Country_Germany		6.674***
		(1.758)
Country_Italy		2.303
		(2.058)
Country_Spain		0.933
		(2.237)
Income		0.526
		(0.691)
Savings		−0.394***
		(0.117)
Excessive debt		−1.576***
		(0.606)
Household members		−0.266
		(0.724)
Household incomes		0.005
		(0.969)
Education		0.459**
		(0.216)
Constant	9.280***	7.461
	(3.203)	(5.498)
Observations	708	708
R^2	0.036	0.106
Adjusted R^2	0.032	0.088
Residual std. error	18.637 (df = 704)	18.093 (df = 693)
F statistic	8.822*** (df = 3; 704)	5.863*** (df = 14; 693)

*$p < 0.1$.
**$p < 0.05$.
***$p < 0.01$.

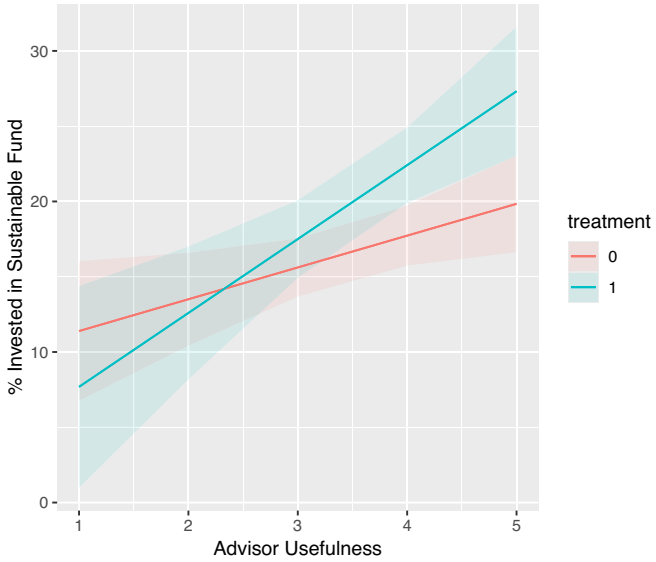

FIGURE 4 | CATE plot: perceived advisor usefulness.

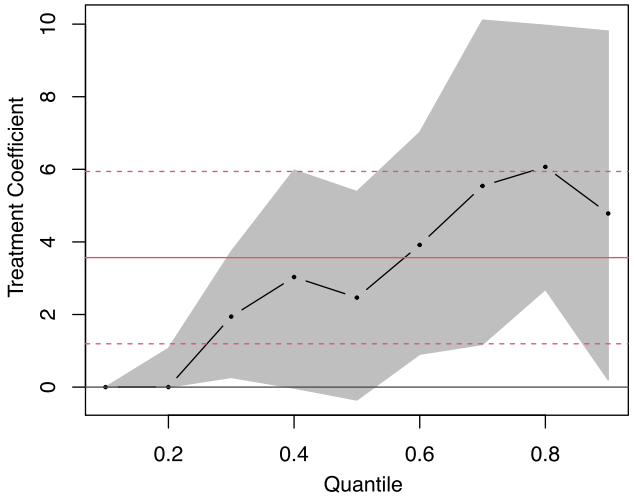

FIGURE 5 | Quantile treatment effect: treatment effect across quantiles.

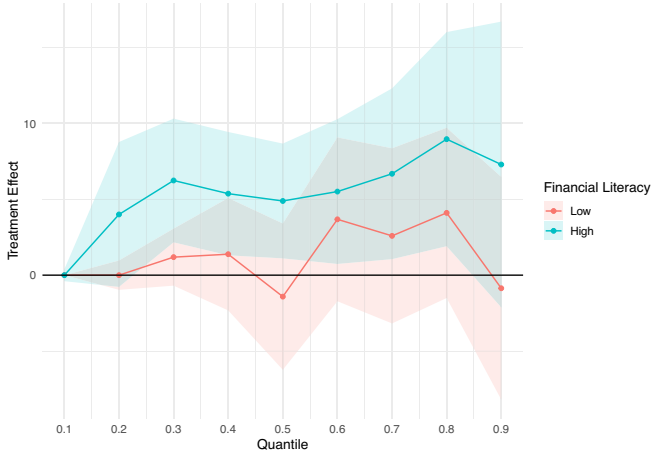

FIGURE 6 | Conditional quantile treatment effect by financial literacy level.

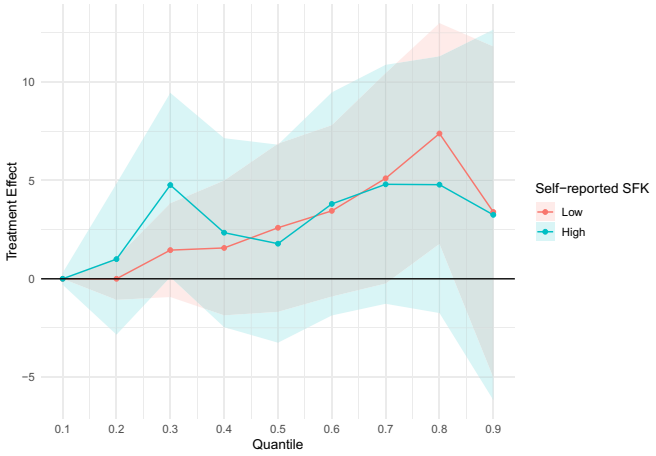

FIGURE 7 | Conditional quantile treatment effect by self-reported SFK level.

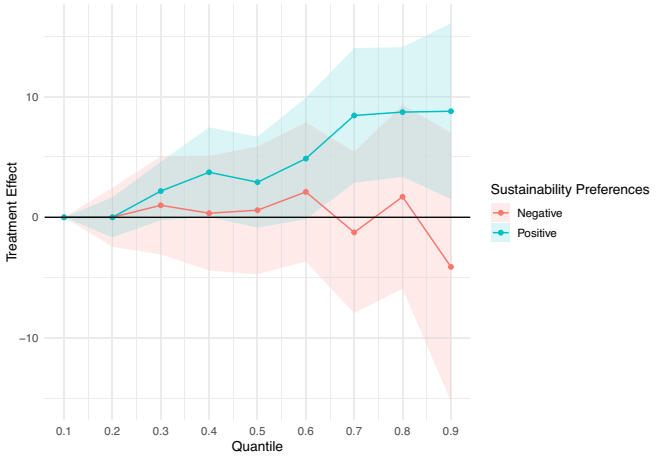

FIGURE 8 | Conditional quantile treatment effect by sustainability preferences.

and significant indirect effect (see Table D.3 in Appendix S1 for the precise estimates), indicating that sustainability preferences influence investment behavior primarily through perceived impact. Thus, stated preferences alone do not directly translate into higher SI investment but become behaviorally relevant when they strengthen beliefs about SI's real-world benefits. As in the previous CATE model, the advisor treatment does not significantly moderate this relationship on average. Overall, sustainability preferences affect SI choices mainly through an *indirect pathway*: Investors who express stronger sustainability preferences allocate more to the SI fund on average only insofar as those preferences enhance their positive perception of SI impact.

4.6 | Substitution Effects Between Funds

Our findings provide evidence that the group of respondents who received the treatment significantly increased their investment in the SI fund. Nevertheless, we still need to clarify which funds they divested from to be able to invest in the sustainable fund. The question is particularly relevant given that all the

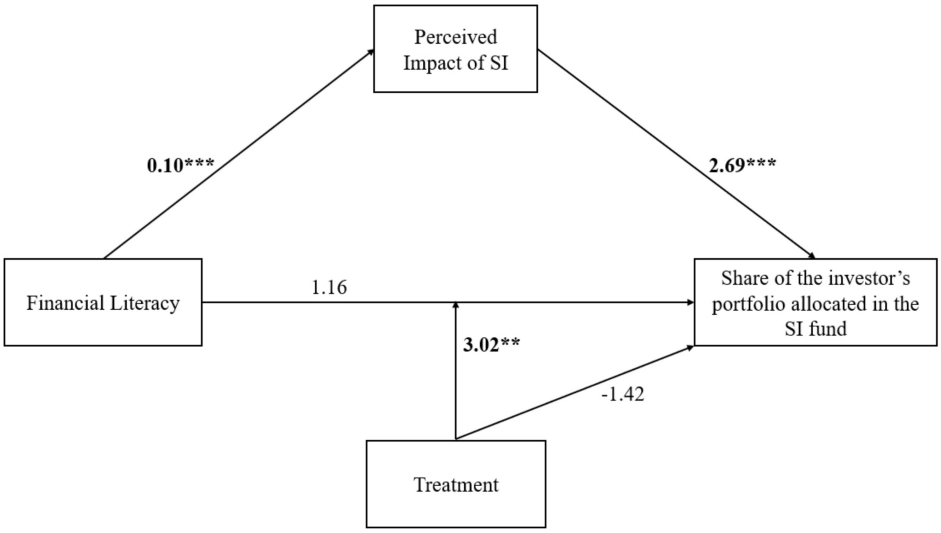

FIGURE 9 | Conceptual model of mediation and moderation effects on financial literacy.

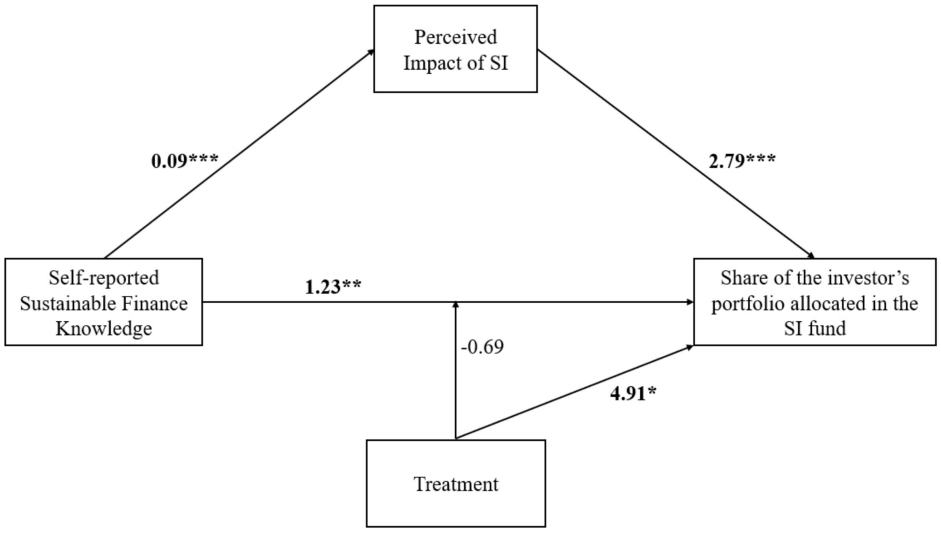

FIGURE 10 | Conceptual model of mediation and moderation effects on self-reported SFK.

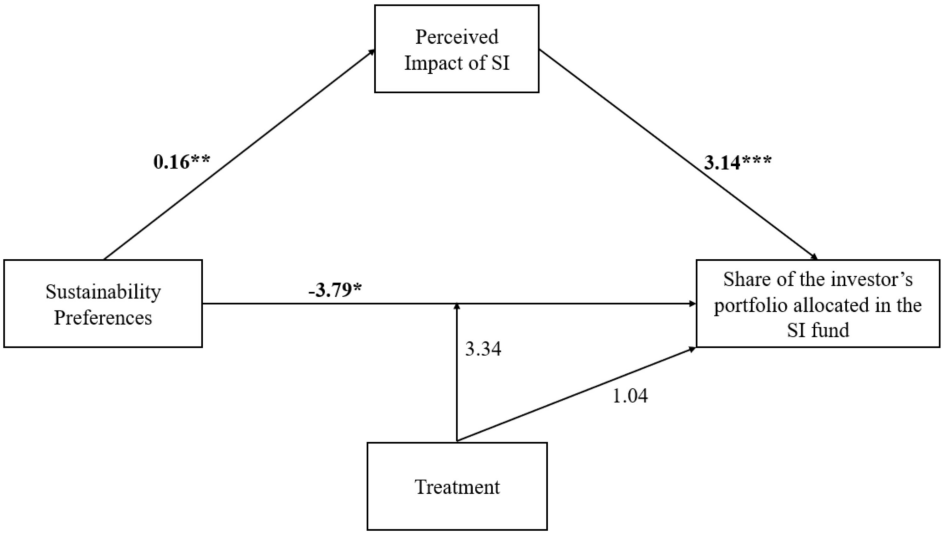

FIGURE 11 | Conceptual model of mediation and moderation effects on sustainability preferences.

funds had the same SR. Table 10 shows the mean percentages allocated to each fund for the treatment group and the control group, offering an overview of these trade-offs.

As we can see, in the treated group, respondents divested more from equity fund *X* and the bond fund to allocate more resources to the SI fund. In the control group, by contrast, respondents invested a higher percentage in equity fund *X* and the bond fund, dedicating the remainder of the portfolio to equity fund *Y* and the sustainable fund in nearly identical proportions. The correlation matrix with significance levels for all four investment funds confirms this evidence (Table 11).

These results substantiate the effectiveness of the informational nudge, as the treated participants shifted their allocations from lower risk investments to the SI fund. Moreover, in the treated group, we observed a shift from equity fund *Y* to the SI fund. This finding is particularly interesting given that the two funds have the same Sharpe ratio but differing ESG features: The SI fund is the only one that provides the nonmonetary rewards described by the financial advisor intervention.

TABLE 10 | Average investment portfolio.

Treatment group					
Statistic	***N***	**Mean (%)**	**St. dev.**	**Min (%)**	**Max (%)**
Equity fund *X*	274	31.81	19.04	0	100
Bond fund	274	30.69	17.84	0	100
Equity fund *Y*	274	17.39	13.86	0	80
SI fund	274	20.10	19.58	0	100
Control group					
Statistic	***N***	**Mean (%)**	**St. dev.**	**Min (%)**	**Max (%)**
Equity fund *X*	434	34.40	20.46	0	100
Bond fund	434	32.37	19.49	0	100
Equity fund *Y*	434	16.64	15.48	0	100
SI fund	434	16.59	18.42	0	100

TABLE 11 | Correlation matrix among investment funds.

Treatment group				
	Equity fund *X*	**Bond fund**	**Equity fund *Y***	**SI fund**
Equity fund *X*	1.00			
Bond fund	−0.12*	1.00		
Equity fund *Y*	−0.36***	−0.44***	1.00	
SI fund	−0.61***	−0.48***	0.05	1.00
Control group				
	Equity fund *X*	**Bond fund**	**Equity fund *Y***	**SI fund**
Equity fund *X*	1.00			
Bond fund	−0.16***	1.00		
Equity fund *Y*	−0.46***	−0.46***	1.00	
SI fund	−0.55***	−0.49***	0.16**	1.00

5 | Discussion and Implications

Most retail investors rely on financial advisory services rather than investing autonomously, underscoring the central role advisors play in directing private capital within financial markets. Despite this, the literature on sustainable investment preferences has largely overlooked the influence of financial advisors. This study is, to our knowledge, the first to adopt an experimental approach to examine how advisor-provided information on sustainable products affects client decisions, specifically whether it can nudge investors toward sustainable investment choices. Moreover, it is the first to uncover in detail *how* these informational nudges operate within the financial advisory context and *which* mechanisms and dynamics underpin investors' responses.

Our main hypothesis (Hypothesis 1) posited that financial advisors can influence sustainable investment decisions through informational nudges—a hypothesis confirmed by our experimental findings. The results suggest that advisors function not only as market intermediaries but also as behavioral enablers, promoting awareness of ESG criteria and encouraging informed investment decisions. In this capacity, they can help overcome common behavioral barriers identified in the literature, such as information overload, limited salience of sustainable options, and low investor attention (Gajewski et al. 2024; Pilaj 2017).

We also tested two subhypotheses, Hypotheses 1a and 1b. Hypothesis 1a explored whether the treatment's effectiveness varied by levels of financial competences. Although financial literacy alone did not significantly influence sustainable investment choices—consistent with some previous evidence (D'hondt et al. 2022; Gutsche et al. 2021; Rossi et al. 2019)—we observed a significant interaction effect. We argue that this interaction is effective because investors with high financial literacy are more receptive to the information provided by financial advisors and face lower information costs, implying a higher consideration of the advisors' recommendations on SI.

Hypothesis 1b examined the interaction between the treatment and self-reported SFK. First, we observe a significant and positive association between self-reported SFK and a higher allocation to the SI fund. This finding aligns with those of Filippini et al. (2024) and Kurowski et al. (2025), as we likewise identify a direct and significant effect of knowledge dimensions focused explicitly on sustainable finance, whereas general financial literacy does not exert such a direct influence. Additionally, in contrast to Hypothesis 1a, SFK did not interact with the treatment. This suggests that participants who report a higher SFK were already familiar with the information provided in the advisor's message, limiting the additional impact of the nudging treatment. This confirms

the important role that specific knowledge of sustainable finance and ESG criteria plays in directly influencing retail flows toward sustainable investments, representing a specific dimension of knowledge that is distinct from classical financial literacy.

These findings contribute to a more nuanced understanding of the relationship between investor financial education and sustainable investing. Although prior research offers mixed evidence regarding the role of financial literacy in ESG investment decisions (Lanciano et al. 2024), our results clarify that financial literacy does not exert a direct effect. However, the significant interaction with the treatment indicates that it functions as a crucial baseline competence. It does not inherently motivate sustainable investing, but it enables individuals to effectively incorporate sustainability information into their investment decisions when such information is provided. In contrast, self-reported SFK emerges as a distinct and independent dimension of knowledge, with a significant direct positive effect on ESG investment choices. This distinction underscores the dual importance of financial advisors as informational nudges and of targeted policy interventions aimed at enhancing both financial literacy and SFK to strengthen retail engagement with sustainable financial products.

Regarding Hypothesis 2, our analysis indicates that the financial advisor's intervention did not, on average the allocation in the sustainable fund among participants who had previously expressed a sustainability preference, leading to the rejection of Hypothesis 2. This outcome suggests that such preferences may be primarily *values*-driven—aligned with ethical or environmental convictions—rather than responsive to additional financial information (Starks 2023).

To comprehensively evaluate the impact of the advisor treatment on participants' investment decisions, we examined its distributional effects using QTE and CQTE analyses. These methods provide deeper insight into the mechanisms underlying sustainable choices in our experiment. The QTE results reveal a clear upward trend in the treatment effect: Its influence becomes stronger as we move from the lower to the higher quantiles of the distribution. Thus, the intervention had the greatest impact on respondents who allocated relatively larger portions of their portfolio to the sustainable fund. The CQTE analyses for financial literacy and self-reported SFK confirm earlier findings, showing that the interactive effects between the treatment and these knowledge dimensions substantially hold across the full distribution of SI fund allocations. The CQTE results for declared sustainability preferences reveal an additional insight. Although the treatment did not differentially affect investors with positive versus negative sustainability preferences *on average*, its effect becomes significantly positive at higher levels of SI fund allocation when assessed across the distribution. Accordingly, even though Hypothesis 2 cannot be fully accepted, the findings show that the advisor intervention effectively aligned stated preferences with the consequent investment allocation at higher percentages of the SI fund, acting on participants' ethical *values*.

Our additional mediation–moderation analysis provides deeper insight into how investors' characteristics translate into SI behavior and how advisor-provided information shapes these processes. Across all models, *perceived impact of SI* emerges as a crucial factor: Financial literacy, self-reported SFK, and sustainability preferences influence SI allocations partly by strengthening investors' belief that sustainable products generate meaningful real-world effects. For financial literacy, this explains the absence of a direct effect in earlier models: Its influence operates primarily through perceived impact, while also enhancing investors' responsiveness to the advisor's informational nudge. Self-reported SFK, by contrast, exerts both a direct and an indirect effect, indicating that knowledgeable investors allocate more to sustainable products regardless of treatment, with perceived impact further reinforcing this tendency. Finally, sustainability preferences translate into higher SI allocations only when they increase perceived impact, clarifying why stated intentions alone often fail to drive sustainable investments on average.

5.1 | Implications

From an academic standpoint, this research contributes to the literature by demonstrating that financial advisory services, including online and robo-advisory services, can significantly influence investor decisions in a more sustainable direction. The literature on nudging sustainable investment choices has reached some development; however, to our knowledge, this is the first study that investigates the dynamics of sustainable investing in a financial advisory setting through a randomized controlled trial. Our results offer new insights into how financial advisors—either in person or as an online service—can elicit a sustainable response from investors, and how their educational interventions interact with preexisting investors' characteristics. For this reason, we also provide an innovative insight into the relationship between financial literacy, self-reported SFK, declared sustainable preferences, and sustainable investing by considering the external intervention of an investment professional.

Concerning policy implications, many governments have implemented comprehensive regulations regarding financial advising, primarily to ensure investment suitability and protect retail investors from unknown risks. In some jurisdictions, such regulations also aim to promote sustainable finance. Within the EU context, for example, Commission Delegated Regulation (EU) 2017/565—amended by Regulation (EU) 2021/1253—requires financial advisors to assess clients' sustainability preferences during the suitability process. Against this regulatory backdrop, our findings underscore the pivotal role of financial advisors, whether human or digital, in encouraging sustainable investment at scale. However, the current regulatory requirements for advisor disclosures in the EU on sustainable investing remain insufficient. Our experimental evidence demonstrates that advisors only succeed in nudging clients toward sustainable investments when they provide substantive, informative content that goes beyond baseline legal obligations. This limitation becomes even more pronounced when considering the United States, where no comparable regulation exists requiring financial advisors to assess or provide information about clients' sustainability preferences. As a result, US advisors are under no obligation to introduce ESG investment options or raise awareness of sustainable finance, leaving the responsibility entirely to the investor.

A key practical implication of our findings is that the effectiveness of informational nudges in real advisory settings depends critically on advisors' own knowledge of sustainable finance and ESG criteria. In our experiment, the message was delivered through a standardized, high-quality video, whereas real-world advisors vary widely in their understanding of ESG concepts and regulations. Advisors who lack this knowledge may struggle to communicate sustainability information clearly or credibly, limiting the impact of similar interventions outside the laboratory. This underscores the need for targeted capacity-building within the advisory profession. Strengthening training requirements, updating certification standards, and integrating sustainability content into professional development would help ensure that advisors can effectively guide clients through sustainable decisions. Enhancing advisors' competence is therefore essential for translating these experimental insights into meaningful real-world improvements in sustainable investment uptake.

Moreover, our results indicate that higher levels of financial literacy had a positive interaction with the treatment, leading to higher investments in the sustainable fund. Our interpretation of this finding is that the less financially educated tend to face higher information costs and are therefore less likely to incorporate this information and advisors' recommendations into their investment decision. On the other hand, self-reported SFK is directly and positively related to higher sustainable investments. This evidence has a strong meaning in terms of policy implications, as efforts aimed at increasing the general level of financial literacy, and the knowledge of sustainable finance in the population, can have a significant impact on the demand of ESG products. Initiatives like the 2020 Capital Markets Union's action plan adopted by the EU Commission or the Financial Literacy and Education Commission (FLEC), coordinated by the US Treasury, are already set in this direction. However, these programs on financial education could be scaled further, more systematically harmonized, and introduced earlier in the educational pipeline to maximize long-term impact, whereas they would also need to implement the focus on raising consumers' specific awareness of sustainable investing.

Additional efforts could focus on strengthening regulation—through industry standards or government frameworks—to reduce uncertainty around sustainable financial products. Our findings show that the perceived impact of SI is a key driver of investor behavior, directly increasing SI allocation and mediating the effects of financial literacy, self-reported SFK, and sustainability preferences. Investors are more likely to act when they believe their investments generate tangible societal benefits. Accordingly, regulatory initiatives should promote clear and comparable sustainability information. Standardized sustainability ratings or labels could reduce greenwashing risks and information barriers, enabling even less literate investors to better assess real-world impacts and fostering broader demand for sustainable financial products.

6 | Conclusions

This study employed an experimental design to examine the influence of professional information and recommendations on promoting sustainable investment choices. Addressing a gap in the literature, we investigated the role of financial advisors in shaping investor behavior within a simulated advisory context. The results supported two of our four hypotheses: (i) the advisor's intervention significantly increased SI fund allocation, and (ii) the treatment effect was moderated by participants' financial literacy levels. In contrast, we found no significant interaction between the treatment and participants' self-reported SFK, but we found an interaction with declared sustainable preferences only for higher SI fund allocations.

We acknowledge several limitations inherent in our study. First, the treatment consisted of a video-based advisory session that, although closely resembling web-based or robo-advisory services, differs from traditional in-person financial advice. This format was chosen due to insurmountable regulatory, organizational, and ethical constraints that prevent the implementation of large-scale randomized field experiments involving real financial advisors and clients. Despite this limitation, video-based interventions have been shown to be effective tools for behavioral change and financial education (Heinberg et al. 2014; Wathuge and Sedera 2025), supporting the validity of our approach.

Second, the use of an investment game simulates but does not replicate real financial decision-making with actual monetary consequences. As such, social desirability bias may have influenced participants' reported preferences for sustainable investing (Apostolakis et al. 2018). Nonetheless, the experimental protocol follows established literature (Gajewski et al. 2022), and hypothetical investment scenarios are widely accepted in behavioral finance research (Pasewark and Riley 2010; Riedl and Smeets 2017; Stuart et al. 2021). Importantly, the average SI fund allocation in our experiment (17.95%) aligns with real-world investment patterns reported by Morgan Stanley (2024) for the same period, suggesting that our participants did not significantly overstate their ESG preferences. Furthermore, several studies have found that social desirability bias is significantly reduced in anonymous, computerized surveys, leading participants to make choices that more truthfully reflect real-world behaviors (Gnambs and Kaspar 2015; Joinson 1999).

Third, our measurement of sustainability preferences mirrors how real financial advisors assess them under MIFID II regulations, thus adopting a practitioner-oriented perspective. Although alternative approaches, such as discrete choice experiments, have been successfully employed in academic literature (Gutsche and Ziegler 2019; Lagerkvist et al. 2020), our method was selected for two reasons: (1) sustainability preferences serve as an independent variable in our analysis, and (2) our objective was to replicate a realistic financial advisory process as closely as possible.

A final limitation concerns the use of a manipulation check administered only to participants in the treatment group. Because the manipulation check was designed to verify that respondents in the treatment arm had fully understood the nudging part of the experiment, it was not applicable to the control group, where no mention of ESG or SI was made. This disparity may have introduced a modest difference in sample selection across conditions. As such, we cannot fully rule out the possibility of a small selection bias.

Looking forward, this research opens avenues for deeper inquiry. Future studies could explore the differential impacts of advisor framing, the role of trust in robo-advisors versus human advisors, or the long-term behavioral effect of repeated sustainability prompts in sustainable investments' decisions. There is also reason to investigate how sustainable investing is understood and enacted across different cultural and regulatory contexts. Ultimately, if sustainable finance is to become a mainstream and widely adopted practice, then the human elements—education, communication, trust, and values—must be placed at the center of the conversation, and future research could also address which specific motivational pathway (*value* or *values*) mainly influences households' sustainable investment decisions. Financial advisors, as key intermediaries, are uniquely positioned to act not only as information providers but also as facilitators of a broader cultural shift toward sustainable investing.

Author Contributions

All listed authors meet the criteria for authorship as defined in the journal's Authorship Policy. All authors have equally contributed to the design, data collection, data analysis and writing of this work.

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Ethics Statement

This study involved human participants in the form of a survey experiment, where the experiment consisted of a simple information treatment. All procedures performed were in accordance with the ethical standards of Copenhagen Business School, which financed the study.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

All data collected were handled confidentially and anonymously, following the European General Data Protection Regulation (GDPR). Participants were informed of their right to withdraw from the study at any time. The full dataset is available at: https://osf.io/ngdfp/overview. The R script is available at: https://github.com/manciti/Nudging-ESG-investments.

Endnotes

[1] We quote several studies conducted for the European context by the EU Commission: European Commission—Directorate-General for Financial Stability, Financial Services and Capital Markets Union (2018). Study on the Distribution Systems of Retail Investment Products across the European Union. Accessed in May 2024, available at: https://finance.ec.europa.eu/publications/study-distribution-systems-retail-investment-products_en. European Commission (2022). Report on the current framework for qualification of financial advisors in the EU and assessment of possible ways forward. Available at https://finance.ec.europa.eu/system/files/2022-07/220630-report-qualification-financial-advisors-framework_en.pdf.

[2] European Commission (2022b). Flash Eurobarometer 509—Retail financial services and products. Available at https://europa.eu/eurobarometer/surveys/detail/2666.

[3] The preregistration was submitted on December 21, 2023, before we sent the survey to the participants (https://osf.io/ngdfp/overview). The preregistration link is available from the authors upon request.

[4] Link to the treatment group video: https://www.youtube.com/watch?v=UrcnFiAtirg.

Link to the control group video: https://www.youtube.com/watch?v=M3oJPIGXYyg.

[5] The manipulation check question was "Regarding the video you just watched, which one of the following statements is true? (a) The advisor explained that sustainable investments always offer greater financial returns compared with non-sustainable investments; (b) The advisor explained that sustainable investments can offer advantages in terms of positive impact on the society, risk management and long-term stability; (c) The advisor explained that sustainable investments must be preferred by investors with a short-term investment horizon."

References

Anderson, A., and D. T. Robinson. 2022. "Financial Literacy in the Age of Green Investment." *Review of Finance* 26, no. 6: 1551–1584. https://doi.org/10.1093/rof/rfab031.

Apostolakis, G., F. Kraanen, and G. van Dijk. 2016. "Examining Pension Beneficiaries' Willingness to Pay for a Socially Responsible and Impact Investment Portfolio: A Case Study in the Dutch Healthcare Sector." *Journal of Behavioral and Experimental Finance* 11: 27–43. https://doi.org/10.1016/j.jbef.2016.06.001.

Apostolakis, G., G. van Dijk, R. J. Blomme, F. Kraanen, and A. P. Papadopoulos. 2018. "Predicting Pension Beneficiaries' Behaviour When Offered a Socially Responsible and Impact Investment Portfolio." *Journal of Sustainable Finance & Investment* 8, no. 3: 213–241. https://doi.org/10.1080/20430795.2018.1429148.

Aristei, D., and M. Gallo. 2021. "Financial Knowledge, Confidence, and Sustainable Financial Behavior." *Sustainability* 13, no. 19: Articolo 19. https://doi.org/10.3390/su131910926.

Barr, M. S., S. Mullainathan, and E. Shafir. 2008. "Behaviorally Informed Financial Services Regulation." https://repository.law.umich.edu/other/29/.

Bellofatto, A., C. D'Hondt, and R. de Winne. 2018. "Subjective Financial Literacy and Retail Investors' Behavior." *Journal of Banking & Finance* 92: 168–181. https://doi.org/10.1016/j.jbankfin.2018.05.004.

Bonnefon, J.-F., A. Landier, P. Sastry, and D. Thesmar. 2025. "The Moral Preferences of Investors: Experimental Evidence." *Journal of Financial Economics* 163: 103955.

Borgers, A. C. T., and R. A. J. Pownall. 2014. "Attitudes Towards Socially and Environmentally Responsible Investment." *Journal of Behavioral and Experimental Finance* 1: 27–44. https://doi.org/10.1016/j.jbef.2014.01.005.

Brodback, D., N. Guenster, and D. Mezger. 2019. "Altruism and Egoism in Investment Decisions." *Review of Financial Economics* 37, no. 1: 118–148. https://doi.org/10.1002/rfe.1053.

Brooks, C., I. Sangiorgi, C. Hillenbrand, and K. Money. 2019. "Experience Wears the Trousers: Exploring Gender and Attitude to Financial Risk." *Journal of Economic Behavior & Organization* 163: 483–515. https://doi.org/10.1016/j.jebo.2019.04.026.

Bschaden, A., E. Mandarano, and N. Stroebele-Benschop. 2020. "Effects of a Documentary on Consumer Perception of the Environmental Impact of Meat Consumption." *British Food Journal* 123, no. 1: 177–189.

Carlsson Hauff, J. 2022. "The Impact of Knowledge on Labeling Schemes Promoting Sustainable Investing." *Business Strategy and the Environment* 31, no. 7: 2839–2853. https://doi.org/10.1002/bse.3050.

Christiansen, C., T. Jansson, M. Kallestrup-Lamb, and V. Noren. 2023. "Households' Investments in Socially Responsible Mutual Funds." *Quarterly Review of Economics and Finance* 87: 46–67. https://doi.org/10.1016/j.qref.2022.11.005.

Cucinelli, D., and M. G. Soana. 2023. "Investor Preferences, Financial Literacy and Intermediary Choice Towards Sustainability." *Research in International Business and Finance* 66: 102027. https://doi.org/10.1016/j.ribaf.2023.102027.

Cunha, F. A. F. D. S., E. Meira, and R. J. Orsato. 2021. "Sustainable Finance and Investment: Review and Research Agenda." *Business Strategy and the Environment* 30, no. 8: 3821–3838. https://doi.org/10.1002/bse.2842.

Daniel, C., E. Gentina, and T. Kaur. 2023. "Mindfulness and Green Purchase Intention: A Mediated Moderation Model Uncovering the Role of Ethical Self-Identity." *Ecological Economics* 209: 107810.

D'hondt, C., M. Merli, and T. Roger. 2022. "What Drives Retail Portfolio Exposure to ESG Factors?" *Finance Research Letters* 46: 102470.

Dolan, P., M. Hallsworth, D. Halpern, D. King, R. Metcalfe, and I. Vlaev. 2012. "Influencing Behaviour: The Mindspace Way." *Journal of Economic Psychology* 33, no. 1: 264–277. https://doi.org/10.1016/j.joep.2011.10.009.

Duclos, R. 2015. "The Psychology of Investment Behavior: (De)biasing Financial Decision-Making One Graph at a Time." *Journal of Consumer Psychology* 25, no. 2: 317–325.

Edufin. 2023. "Rapporto Edufin 2023." Educazione Finanziaria: Iniziamo dalla Scuola. https://www.comitatoeducazionefinanziaria.gov.it/notizia-dettaglio/Rapporto-Edufin-2023.-Educazione-finanziaria-iniziamo-dalla-scuola-00001/.

ESMA. 2023. "Progress Report on Greenwashing." https://www.esma.europa.eu/sites/default/files/2023-06/ESMA30-1668416927-2498_Progress_Report_ESMA_response_to_COM_RfI_on_greenwashing_risks.pdf.

Falk, A., A. Becker, T. Dohmen, D. Huffman, and U. Sunde. 2023. "The Preference Survey Module: A Validated Instrument for Measuring Risk, Time, and Social Preferences." *Management Science* 69, no. 4: 1935–1950. https://doi.org/10.1287/mnsc.2022.4455.

Faradynawati, I. A. A., and I.-L. Söderberg. 2022. "Sustainable Investment Preferences Among Robo-Advisor Clients." *Sustainability* 14, no. 19: Articolo 19. https://doi.org/10.3390/su141912636.

Filippini, M., M. Leippold, and T. Wekhof. 2024. "Sustainable Finance Literacy and the Determinants of Sustainable Investing." *Journal of Banking & Finance* 163: 107167. https://doi.org/10.1016/j.jbankfin.2024.107167.

Fulton, M., B. Kahn, and C. Sharples. 2012. "Sustainable Investing: Establishing Long-Term Value and Performance." Available at SSRN 2222740. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2222740.

Gajewski, J.-F., M. Heimann, and L. Meunier. 2022. "Nudges in SRI: The Power of the Default Option." *Journal of Business Ethics* 177, no. 3: 547–566. https://doi.org/10.1007/s10551-020-04731-x.

Gajewski, J.-F., M. Heimann, L. Meunier, and S. Ohadi. 2024. "Nudges for Responsible Finance? A Survey of Interventions Targeted at Financial Decision Making." *Corporate Social Responsibility and Environmental Management* 31, no. 2: 1203–1219. https://doi.org/10.1002/csr.2625.

Gennaioli, N., A. Shleifer, and R. Vishny. 2015. "Money Doctors." *Journal of Finance* 70, no. 1: 91–114. https://doi.org/10.1111/jofi.12188.

Giese, G., L.-E. Lee, D. Melas, Z. Nagy, and L. Nishikawa. 2019. "Foundations of ESG Investing: How ESG Affects Equity Valuation, Risk, and Performance." *Journal of Portfolio Management* 45, no. 5: 69–83. https://doi.org/10.3905/jpm.2019.45.5.069.

Gnambs, T., and K. Kaspar. 2015. "Disclosure of Sensitive Behaviors Across Self-Administered Survey Modes: A Meta-Analysis." *Behavior Research Methods* 47, no. 4: 1237–1259. https://doi.org/10.3758/s13428-014-0533-4.

Gomez-Valencia, M., M. A. Gonzalez-Perez, and A. M. Gomez-Trujillo. 2021. "The "Six Ws" of Sustainable Development Risks." *Business Strategy and the Environment* 30, no. 7: 3131–3144. https://doi.org/10.1002/bse.2794.

GSIA. 2021. "Global Sustainable Investment Review 2020." https://www.gsi-alliance.org/wp-content/uploads/2021/08/GSIR-20201.pdf.

GSIA. 2023. "Global Sustainable Investment Review 2022." https://www.gsi-alliance.org/wp-content/uploads/2023/12/GSIA-Report-2022.pdf.

Gutsche, G., M. Nakai, and T. H. Arimura. 2021. "Revisiting the Determinants of Individual Sustainable Investment—The Case of Japan." *Journal of Behavioral and Experimental Finance* 30: 100497. https://doi.org/10.1016/j.jbef.2021.100497.

Gutsche, G., and A. Ziegler. 2019. "Which Private Investors Are Willing to Pay for Sustainable Investments? Empirical Evidence From Stated Choice Experiments." *Journal of Banking & Finance* 102: 193–214. https://doi.org/10.1016/j.jbankfin.2019.03.007.

Gutsche, G., and B. Zwergel. 2020. "Investment Barriers and Labeling Schemes for Socially Responsible Investments." *Schmalenbach Business Review* 72, no. 2: 111–157. https://doi.org/10.1007/s41464-020-00085-z.

Hackethal, A., M. Haliassos, and T. Jappelli. 2012. "Financial Advisors: A Case of Babysitters?" *Journal of Banking & Finance* 36, no. 2: 509–524. https://doi.org/10.1016/j.jbankfin.2011.08.008.

Hafenstein, A., and A. Bassen. 2016. "Influences for Using Sustainability Information in the Investment Decision-Making of Non-Professional Investors." *Journal of Sustainable Finance & Investment* 6, no. 3: 186–210. https://doi.org/10.1080/20430795.2016.1203598.

Hasford, J., B. Kidwell, D. M. Hardesty, and A. Farmer. 2022. "Your Cheatin' Heart: How Emotional Intelligence and Selfishness Impact the Incidence of Consumer Fraud." *Journal of Consumer Research* 49, no. 1: 112–131. https://doi.org/10.1093/jcr/ucab047.

Hayes, A. F. 2017. "Introduction to Mediation, Moderation, and Conditional Process Analysis." In *A Regression-Based Approach*, 2nd ed. Guilford Publications.

Heinberg, A., A. Hung, A. Kapteyn, A. Lusardi, A. S. Samek, and J. Yoong. 2014. "Five Steps to Planning Success: Experimental Evidence From US Households." *Oxford Review of Economic Policy* 30, no. 4: 697–724.

Heinemann, K., B. Zwergel, S. Gold, S. Seuring, and C. Klein. 2018. "Exploring the Supply-Demand-Discrepancy of Sustainable Financial Products in Germany From a Financial Advisor's Point of View." *Sustainability* 10, no. 4: 944. https://doi.org/10.3390/su10040944.

Hoechle, D., S. Ruenzi, N. Schaub, and M. Schmid. 2017. "The Impact of Financial Advice on Trade Performance and Behavioral Biases." *Review of Finance* 21, no. 2: 871–910.

Inderst, R., and M. Ottaviani. 2012. "How (Not) to Pay for Advice: A Framework for Consumer Financial Protection." *Journal of Financial Economics* 105, no. 2: 393–411. https://doi.org/10.1016/j.jfineco.2012.01.006.

Invesco. 2021. "What Investors Want." https://www.invesco.com/content/dam/invesco/uk/en/pdf/Client-consumer-study.pdf.

Joinson, A. 1999. "Social Desirability, Anonymity, and Internet-Based Questionnaires." *Behavior Research Methods, Instruments, & Computers* 31, no. 3: 433–438. https://doi.org/10.3758/BF03200723.

Jonwall, R., S. Gupta, and S. Pahuja. 2023. "A Comparison of Investment Behavior, Attitudes, and Demographics of Socially Responsible and Conventional Investors in India." *Social Responsibility Journal* 19, no. 6: 1123–1141. https://doi.org/10.1108/SRJ-08-2021-0358.

Junkus, J. C., and T. C. Berry. 2010. "The Demographic Profile of Socially Responsible Investors." *Managerial Finance* 36, no. 6: 474–481. https://doi.org/10.1108/03074351011042955.

Kölbel, J. F., F. Heeb, F. Paetzold, and T. Busch. 2020. "Can Sustainable Investing Save the World? Reviewing the Mechanisms of Investor Impact." *Organization & Environment* 33, no. 4: 554–574. https://doi.org/10.1177/1086026620919202.

Kozma, R. B. 1991. "Learning With Media." *Review of Educational Research* 61, no. 2: 179–211. https://doi.org/10.3102/00346543061002179.

Kurowski, Ł., J. Rutecka-Góra, and P. Smaga. 2025. "Promoting Environmentally and Socially Responsible Investing: Interplay Between Climate and Financial Literacy." *Climate Policy*: 1–16. https://doi.org/10.1080/14693062.2025.2511261.

Lagerkvist, C. J., A. K. Edenbrandt, I. Tibbelin, and Y. Wahlstedt. 2020. "Preferences for Sustainable and Responsible Equity Funds—A Choice Experiment With Swedish Private Investors." *Journal of Behavioral and Experimental Finance* 28: 100406. https://doi.org/10.1016/j.jbef.2020.100406.

Lanciano, E., D. Previati, O. Ricci, and G. Santilli. 2024. "Financial Literacy and Sustainable Finance Decisions Among Italian Households." *Journal of Economics and Business* 134: 106220. https://doi.org/10.1016/j.jeconbus.2024.106220.

Laudi, M., P. Smeets, and U. Weitzel. 2022. "Do Financial Advisors Charge Sustainable Investors a Premium?" Available at SSRN 3887716. https://papers.ssrn.com/sol3/Delivery.cfm?abstractid=3887716.

Linciano, N., P. Soccorso, J. Capobianco, and M. Caratelli. 2020. "Financial Advisor-Investor Relationship. Mirroring Survey on Sustainability and Investments-2020." Mirroring Survey on Sustainability and Investments-2020 (December 14, 2020). CONSOB Statistics and analyses. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3752806.

Lusardi, A., and O. S. Mitchell. 2008. "Planning and Financial Literacy: How Do Women Fare?" *American Economic Review* 98, no. 2: 413–417. https://doi.org/10.1257/aer.98.2.413.

Lusardi, A., and O. S. Mitchell. 2011. "Financial Literacy Around the World: An Overview." *Journal of Pension Economics & Finance* 10, no. 4: 497–508.

Mavlutova, I., A. Fomins, A. Spilbergs, D. Atstaja, and J. Brizga. 2021. "Opportunities to Increase Financial Well-Being by Investing in Environmental, Social and Governance With Respect to Improving Financial Literacy Under Covid-19: The Case of Latvia." *Sustainability* 14, no. 1: 339.

Meunier, L., and S. Richit. 2024. "Testing Four Nudges in Socially Responsible Investments: Default Winner by Inertia." *Business Ethics, the Environment & Responsibility* 33, no. 3: 392–415. https://doi.org/10.1111/beer.12612.

Mitchell, O. S., and A. Lusardi. 2015. "Financial Literacy and Economic Outcomes: Evidence and Policy Implications." *Journal of Retirement* 3, no. 1: 107–114. https://doi.org/10.3905/jor.2015.3.1.107.

Morgan Stanley. 2024. "Sustainable Signals: Understanding Individual Investors' Interests and Priorities." https://www.morganstanley.com/content/dam/msdotcom/en/assets/pdfs/MSInstituteforSustainableInvesting-SustainableSignals-Individuals-2024.pdf.

Mullainathan, S., M. Noeth, and A. Schoar. 2012. "The Market for Financial Advice: An Audit Study." National Bureau of Economic Research https://www.nber.org/papers/w17929.

Najafabadiha, A., Y. Wang, A. Gholizadeh, E. Javanmardi, and H. Zameer. 2025. "Fostering Consumer Engagement in Online Shopping: Assessment of Environmental Video Messages in Driving Purchase Intentions Toward Green Products." *Journal of Environmental Management* 373: 123637.

Nilsson, J. 2008. "Investment With a Conscience: Examining the Impact of Pro-Social Attitudes and Perceived Financial Performance on Socially Responsible Investment Behavior." *Journal of Business Ethics* 83, no. 2: 307–325. https://doi.org/10.1007/s10551-007-9621-z.

OECD. 2020. "OECD/INFE 2020 International Survey of Adult Financial Literacy." https://doi.org/10.1787/145f5607-en.

Paetzold, F., T. Busch, and M. Chesney. 2015. "More Than Money: Exploring the Role of Investment Advisors for Sustainable Investing." *Annals in Social Responsibility* 1, no. 1: 195–223.

Pasewark, W. R., and M. E. Riley. 2010. "It's a Matter of Principle: The Role of Personal Values in Investment Decisions." *Journal of Business Ethics* 93, no. 2: 237–253. https://doi.org/10.1007/s10551-009-0218-6.

Pasquino, M., and C. Lucarelli. 2025. "Socially Responsible Investments Inside Out: A New Conceptual Framework for Investigating Retail Investor Preferences." *International Journal of Bank Marketing* 43, no. 3: 449–475. https://doi.org/10.1108/IJBM-02-2024-0077.

Pástor, L., R. F. Stambaugh, and L. A. Taylor. 2021. "Sustainable Investing in Equilibrium." *Journal of Financial Economics* 142, no. 2: 550–571.

Pedersen, L. H., S. Fitzgibbons, and L. Pomorski. 2021. "Responsible Investing: The ESG-Efficient Frontier." *Journal of Financial Economics* 142, no. 2: 572–597. https://doi.org/10.1016/j.jfineco.2020.11.001.

Pérez-Gladish, B., K. Benson, and R. Faff. 2012. "Profiling Socially Responsible Investors: Australian Evidence." *Australian Journal of Management* 37, no. 2: 189–209. https://doi.org/10.1177/0312896211429158.

Phillips, S. D., and B. Johnson. 2021. "Inching to Impact: The Demand Side of Social Impact Investing." *Journal of Business Ethics* 168, no. 3: 615–629. https://doi.org/10.1007/s10551-019-04241-5.

Pilaj, H. 2017. "The Choice Architecture of Sustainable and Responsible Investment: Nudging Investors Toward Ethical Decision-Making." *Journal of Business Ethics* 140, no. 4: 743–753. https://doi.org/10.1007/s10551-015-2877-9.

Reber, B., A. Gold, and S. Gold. 2022. "ESG Disclosure and Idiosyncratic Risk in Initial Public Offerings." *Journal of Business Ethics* 179, no. 3: 867–886. https://doi.org/10.1007/s10551-021-04847-8.

Ren, S., Y. Hao, and H. Wu. 2022. "How Does Green Investment Affect Environmental Pollution? Evidence From China." *Environmental and Resource Economics* 81, no. 1: 25–51. https://doi.org/10.1007/s10640-021-00615-4.

Riedl, A., and P. Smeets. 2017. "Why Do Investors Hold Socially Responsible Mutual Funds?" *Journal of Finance* 72, no. 6: 2505–2550. https://doi.org/10.1111/jofi.12547.

Rossi, M., D. Sansone, A. van Soest, and C. Torricelli. 2019. "Household Preferences for Socially Responsible Investments." *Journal of Banking & Finance* 105: 107–120. https://doi.org/10.1016/j.jbankfin.2019.05.018.

Roy, R., and G. Das. 2022. "The Role of Contextual Factors in Increasing Pay-What-You-Want Payments: Evidence From Field Experiments." *Journal of Business Research* 139: 1540–1552. https://doi.org/10.1016/j.jbusres.2021.10.073.

Shin, H. W., A. Fan, and H. Tang. 2023. "Choosing Green P2P Accommodations: For the Earth or for Me?" *International Journal of Hospitality Management* 114: 103553. https://doi.org/10.1016/j.ijhm.2023.103553.

Starks, L. T. 2023. "Presidential Address: Sustainable Finance and ESG Issues—*Value* Versus *Values*." *Journal of Finance* 78, no. 4: 1837–1872. https://doi.org/10.1111/jofi.13255.

Strauß, N. 2021. "Communicating Sustainable Responsible Investments as Financial Advisors: Engaging Private Investors With Strategic Communication." *Sustainability* 13, no. 6: 3161.

Stuart, A. C., J. C. Bedard, and C. E. Clark. 2021. "Corporate Social Responsibility Disclosures and Investor Judgments in Difficult Times: The Role of Ethical Culture and Assurance." *Journal of Business Ethics* 171, no. 3: 565–582.

Sustainable Finance Observatory. 2023. "Assessing Client Sustainability Preferences ... Lost in the Maze? https://sustainablefinanceobservatory.org/resource/assessing-client-sustainability-preferenceslost-in-the-maze/.

Tan, C. 2022. "Private Investments, Public Goods: Regulating Markets for Sustainable Development." *European Business Organization Law Review* 23, no. 1: 241–271. https://doi.org/10.1007/s40804-021-00236-w.

Thaler, R. H., and C. R. Sunstein. 2009. *Nudge: Improving Decisions About Health, Wealth and Happiness* (revised edition, new international edition). Penguin Books.

Tohar, G., and S. Akron. 2025. "Financial Literacy Cognitions and Optimal Financial Behavior." *Finance Research Letters* 83: 107455.

Tversky, A., and D. Kahneman. 1974. "Judgment Under Uncertainty: Heuristics and Biases." *Science* 185, no. 4157: 1124–1131. https://doi.org/10.1126/science.185.4157.1124.

Tversky, A., and D. Kahneman. 1981. "The Framing of Decisions and the Psychology of Choice." *Science* 211, no. 4481: 453–458. https://doi.org/10.1126/science.7455683.

Valor, C., M. De La Cuesta, and B. Fernandez. 2009. "Understanding Demand for Retail Socially Responsible Investments: A Survey of Individual Investors and Financial Consultants." *Corporate Social Responsibility and Environmental Management* 16, no. 1: 1–14. https://doi.org/10.1002/csr.172.

Vu, H. T., D. Tran, D. Goto, and K. Kawata. 2020. "Does Experience Sharing Affect Farmers' Pro-Environmental Behavior? A Randomized Controlled Trial in Vietnam." *World Development* 136: 105062.

Wathuge, A., and D. Sedera. 2025. "Exploring Strategies to Mitigate Internet's Environmental Damage: An Investigation of Intrinsic, Extrinsic, and Price-Based Strategies." *Business Strategy and the Environment* 34, no. 1: 483–496. https://doi.org/10.1002/bse.4000.

Wins, A., and B. Zwergel. 2016. "Comparing Those Who Do, Might and Will Not Invest in Sustainable Funds: A Survey Among German Retail Fund Investors." *Business Research* 9, no. 1: 51–99. https://doi.org/10.1007/s40685-016-0031-x.

Xu, K., P. Zhao, and Y. Gao. 2023. "The Impact of Green Finance on Industrial Pollution Emissions: Empirical Evidence From Economic and Environmental Perspectives." *Environmental Science and Pollution Research* 30, no. 43: 98417–98439. https://doi.org/10.1007/s11356-023-29230-0.

Supporting Information

Additional supporting information can be found online in the Supporting Information section. **Appendix S1:** Supporting Information.