Subjective Risk Perceptions and Peer Effects: Evidence from a Laboratory Experiment Using Cryptocurrency*

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Abstract

We design and implement a laboratory experiment that elicits random variation in subjective risk perceptions. We then examine how subjective risk perceptions influence investment decisions and the role that peers play in moderating this impact. Using asset names to create variation in subjective risk, we find that participants are much less likely to invest if an asset is referred to as cryptocurrency as opposed to stock or bond, despite identical objective risks in the experiment. Peer influence, however, entirely eliminates this crypto hesitancy. The results suggest that subjective risk perceptions impact investment decisions but are easily altered by peer influence.

Key Words: Subjective Risk Perceptions, Peer Effects, Cryptocurrency
JEL Codes: G11, G41, G50

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1 Introduction

Recent asset pricing research focuses on the importance of subjective beliefs (Giglio et al., 2021) and demonstrates that the assumption of rational expectations is not applicable in all contexts (Malmendier and Nagel, 2011; Adam et al., 2017). In this way, people's subjective beliefs do not just affect individual outcomes but can affect market-level outcomes as well (Shiller, 2014). These insights have led to the development of new asset pricing models with behavioral elements that seek to better understand the market impact of subjective beliefs (Adam and Nagel, 2023). They have also led to the creation of Social Finance, a new field within finance that analyzes the importance of social phenomena on market-level outcomes (Hirshleifer, 2015).

One form of subjective belief is subjective risk perception, which is related to variation in asset prices (i.e., the second moment). There is a growing recognition that subjective risk perceptions could be important drivers of asset prices (Brunnermeier et al., 2021; Nagel and Xu, 2023) and even aggregate economic activity (Pflueger et al., 2020). However, despite increasing interest in the topic, there remains limited empirical evidence documenting the impact of subjective risk perceptions and demonstrating the dynamics of subjective risk perceptions (Adam and Nagel, 2023).[1]

Due to their behavioral nature, subjective beliefs are closely related to the influence of peers. There is now a significant literature documenting the importance of peer effects on retail investment decisions (Duflo and Saez, 2003; Hong et al., 2004; Bursztyn et al., 2014; Ouimet and Tate, 2020).[2] One of the main mechanisms by which peers influence investment decisions is via information sharing (Bursztyn et al., 2014);[3] however, information learned from peers is not limited to objective information about the underlying distribution of investment returns. Recent research has stressed that peer effects can come from

[1] Lochstoer and Muir (2022) and Nagel and Xu (2023) are notable exceptions.

[2] There is also significant evidence that peers influence professional investors (Hong et al., 2005; Roider and Voskort, 2016; Kuchler et al., 2022) and corporate investments (Leary and Roberts, 2014).

[3] The other main mechanism by which peers can influence investment decisions is via a non-monetary utility gain from possessing an asset also held by a peer. This could arise because (i) individuals have preferences for relative consumption as in Abel (1990); or (ii) individuals receive social utility from holding the same asset as a peer similar to Shiller et al. (1984). There is extensive empirical evidence that supports both explanations, see Bursztyn et al. (2014); Hwang et al. (2019); and Schwerter (2024).

learned information about subjective sentiments and beliefs (Bailey et al., 2018; Kuchler and Stroebel, 2021).

In this paper, we design and implement a laboratory experiment to elicit random variation in subjective risk perceptions. We then evaluate how subjective risk perceptions affect participants' investment decisions and the role that peer effects play in moderating this effect. The experiment has participants play an investment game in which they are provided with eight dollars and given the opportunity to (i) invest in one of two different assets of varying risks/payouts or (ii) keep the eight dollars. While the assets in the experiment all have the same potential payouts and probabilities of payouts, i.e., objective risk, we randomly vary the asset name, calling it either a stock, bond, or cryptocurrency. Our hypothesis is that the randomly assigned asset name will create variation in subjective risk perceptions because the risk profiles of the named assets differ substantially outside of the experiment. This is especially true for cryptocurrency, where the standard deviation of returns is 10 times larger than the standard deviation for stocks (Liu and Tsyvinski, 2021) and the risk perception of cryptocurrency investors is high (Bhattacharjee et al., 2024).[4] Thus, relative differences in investment decisions associated with the asset's name identify the impact of subjective risk perception on investment decisions.

We then simulate a peer effect in the experiment by randomizing whether participants are provided with additional information (prior to making their investment choice) stating that most of their peers chose to invest in the riskier of the two investments. Thus, the peer influence is intended to induce investment and risk taking, regardless of the randomly assigned asset name. This element of the experimental design, however, also allows us to evaluate whether peer effects ease subjective risk, which is captured by relative differences in peer effects across asset name. If peer effects ease subjective risk perceptions, then the inducement to invest will be relatively larger when the asset is randomly referred to as a cryptocurrency, the asset name that elicits the greatest subjective risk.

Our empirical setting is well suited to test the theoretical underpinnings of subjective risk perceptions and peer effects. By using a laboratory experiment with random variation

[4]Our study of subjective risk perceptions and cryptocurrency investment contributes to earlier findings showing a strong relationship between cryptocurrency prices and investor optimism (Anamika et al., 2023).

in the asset name (stock, bond, or cryptocurrency), we hold the objective risk constant and isolate the subjective component of the investment decision. Therefore, our estimates capture the effect of the individual risk perceptions (Brunnermeier et al., 2021). Similarly, our laboratory setting helps assess the theory of peer effects by isolating how information about peers' choices influences the investment decision. Our estimates directly compare decisions with and without this treatment and contribute to the growing literature on peer effects in finance (Ahern et al., 2014).

We find that the randomly assigned asset name influences investment decisions, despite the same objective risks across all investments for each participant. When the asset is referred to as a cryptocurrency – as opposed to a stock or bond – participants are 10 percentage points less likely to invest in the asset, which we refer to as "crypto hesitancy." Additional results confirm that crypto hesitancy is associated with respondents who believe that cryptocurrency is much riskier than stocks or bonds. Thus, the elevated subjective risk perceptions associated with cryptocurrency have substantial impacts on investment decisions. We then examine how the randomly assigned peer influence alters crypto hesitancy. We find that peers are quite influential and simply stating to participants that most other students chose to invest in the riskiest option entirely eliminates crypto hesitancy. Thus, our results suggest that peer effects on subjective risk perceptions are large, significantly altering the investment decisions of participants. We find that peer effects are especially large on younger participants, those that score worse on the financial knowledge test, and those most likely to get their investment information from social media sources. In a follow-up online study on Prolific, we confirm our main results on a sample similar to our in-person study. However, we also extend our main analysis and decompose the peer influence into effects due to information versus social utility, the two primary causes of peer effects. Here, we find evidence to suggest that most of the peer effect is due to information. This may help explain why younger, less financially knowledgable investors are most affected by peer influence.

Our results offer important insights into the impact of subjective risk perceptions on investment decisions and the role peer effects play in altering the dynamics of subjective risk. In this way, our findings are applicable to a broad range of contexts where subjective risks

are high and "influencers" try to sway behavior. The analysis also sheds light on broader questions about "how financial ideas spread and evolve, and how social processes affect financial outcomes" (Hirshleifer, 2015),[5] including ways in which subjective information within peer groups can create feedback loops, thereby inducing herd behavior and leading to asset bubbles (Bikhchandani and Sharma, 2000). Our results suggest that younger and less-knowledgeable individuals are especially susceptible to these social forces.

2 Experimental Design

We design an experiment that brings about random variation in subjective risk perceptions and allows us to evaluate the impact of subjective risk on investment decisions. We then include a randomly assigned peer influence in the experiment to investigate how peer effects moderate this relationship between subjective risk and investment decisions.

The experiment works as follows. Each participant is provided with eight dollars and then asked if they would like to keep the money or invest in one of two risky assets.[6] The two assets include: Asset A, which respondents are told offers a 50/50 chance of a two-dollar gain or loss, and Asset B, which respondents are told offers a 50/50 chance of a four-dollar gain or loss.[7] Since Asset B has the potential for both larger gains and larger losses than Asset A, we refer to the Asset B as the "riskier asset." All participants are required to make an investment choice before completing a survey which asks them about their demographics, risk perceptions, trading experience, knowledge of financial markets, and sources of information regarding financial decision making. Once the survey is completed, participants find out the realization of their return if they chose to invest in either Asset A or Asset B. All participants are then paid based on their investment decision and the realization of their asset return if they chose to invest. A complete copy of the experiment is included in Appendix B.

[5] Hirshleifer (2020) and Kuchler and Stroebel (2021) also explore the burgeoning field of Social Finance.

[6] Technically, however, the money does not change hands until the completion of the experiment.

[7] Thus, Asset A pays out either \$6 or \$10 and Asset B pays out either \$4 or \$12, both with equal probability.

The experiment creates random variation in subjective risk perceptions by randomly varying the name we use to refer to the two assets in the investment game. The "Asset" is referred to as either a stock, a bond, or a cryptocurrency with equal probability. For example, one participant might be choosing between investing in "Stock A" or "Stock B" or keeping the eight dollars while another might be choosing between "Cryptocurrency A" or "Cryptocurrency B" or keeping the eight dollars. Notably, the asset name varies randomly between participants but is held constant within participant. While all Asset As (and similarly Asset Bs) have the same objective risk (i.e., Stock A and Cryptocurrency A have the same payouts and probabilities of payouts), the risk profiles of these assets differ substantially outside of the experiment. Thus, the randomly assigned asset name is hypothesized to induce variation in subjective risk perceptions. In particular, we expect that calling the asset a cryptocurrency is likely to induce the highest level of subjective risk given the difficulty associated with valuing the asset (Cong et al., 2021), the extremely high volatility associated with it (Borri, 2019; Liu and Tsyvinski, 2021), and its high level of perceived risks (Angerer et al., 2021). To the extent that the asset name does induce variation in subjective risk, different propensities to invest across randomly assigned asset names then reflect the impact of subjective risk perceptions on investment decisions.

The experiment also examines the impact of peer effects on subjective risk perceptions and investment decisions. To simulate a peer effect, we further randomize whether participants receive a peer influence in the investment game, which states that "[m]ost other [participants] bought Asset B" (the riskier asset).[8] This cue to invest, which participants were exposed to prior to making their investment choice, allows us to assess the overall peer effect in this context, i.e., whether this cue to invest increases investment in all assets. However, it also allows us to assess the peer effect on subjective risk perceptions, which would be the relative difference in the peer effect on the high-subjective risk asset (i.e., cryptocurrency) relative to the other assets.

In sum, participants in the experiment are randomized into one of six conditions with equal probability. These six conditions are based on a combination of the three randomly

[8]The peer influence treatment is associated with the higher risk asset, not a different asset name. In other words, a participant randomly assigned to "Stock" would receive the peer influence to invest in "Stock B."

assigned asset names (stock, bond, or cryptocurrency) and the two randomly assigned peer influence categories (peer influence to invest or no peer influence to invest). Therefore, the experiment has a 3x2 between-subjects design. We then ask participants, who have not been informed about the experimental design or the goal of the study, to make an investment choice and we evaluate how the randomization influences that decision. This unique experimental design allows us to evaluate the impact of subjective risk perceptions on investment decisions and the role that peer effects play in mitigating this effect. Moreover, the survey information that we collect after respondents make their investment choice allows us to disentangle whether the impact of the asset name truly reflects differences in risk perceptions. They also allow us to explore heterogeneity in these effects.

In a follow-up study, we extend the experimental design to disentangle the underlying causes of the peer effect. We do this by varying the social cue to invest. While all participants receiving the social cue continue to be told that "[m]ost other participants bought Asset B," half are also reminded of the objective risk, being told "as a reminder, this asset only increases in value half the time." This approach, which loosely follows the experimental design in Bursztyn et al. (2014), varies the extent to which the social cue contains informational content about the quality of the investment. Participants who are only told that "[m]ost other participants bought Asset B" could alter their investment choices because either (i) they think other participants have more information about the quality of the investment or (ii) they get utility by doing what others are doing. This means that a peer effect coming from this social cue to invest could be due to either "information" or "social utility." However, participants who are also reminded of the objective risk of the asset in the social cue will only be influenced by social cue if they get utility from following others (i.e. social utility). Thus, we randomize the social cue in this follow-up study and then compare the peer effects across these two designs. This allows us to better understand the importance of information and social utility.

3 Data and Empirical Approach

3.1 Data

The primary experiment was conducted over three days during the last week of classes during the spring quarter in 2023 (May 30, 2023 to June 1, 2023) at DePaul University's BETA Hub.[9] Students were solicited to participate in the study using a mix of flyers and daytime announcements in the Driehaus College of Business. Over that time, 551 students participated in the experiment.[10] However, in the analysis that follows we exclude the 14 participants who did not complete the survey, the four students who completed the survey in less than two minutes (the average participant otherwise took 16.7 minutes to complete the survey), and the five non-students who participated. This gives us an analytic sample of 528 student participants, who are overwhelmingly undergraduate students (97 percent) majoring in a business discipline (80 percent).

Table 1 presents summary statistics on the sample of participants. The summary statistics demonstrate that the randomization of treatments effectively assigned participants to separate groups. About a third of all participants were assigned to each of the three asset names and half of all participants received the social cue to invest (across all three asset types). Additionally, the sample characteristics are well balanced across asset names with similar demographics, similar financial knowledge,[11] similar asset risk perceptions, similar trading experience, and similar sources of investment information. The only characteristic that is statistically different (at the five percent level) across asset names is that those assigned stock as their asset name are a little younger than those assigned cryptocurrency. That said, in the empirical analysis that follows, we present estimates that include (and do not include) these additional covariates. Thus, we difference out any random variation in

[9]The Business Education in Technology and Analytics (BETA) Hub is in the Driehaus College of Business at DePaul University.

[10]The total number of participants, 551, was just short of the planned number of 600. However, the end of the quarter prevented us from reaching our target number of participants.

[11]Our first three financial knowledge questions come directly from Lusardi and Mitchell (2008) and have been used extensively in the financial literacy literature. The next three questions capture more advanced levels of financial knowledge questions and come from Ćumurović and Hyll (2019). Rieger (2020) uses the same set of six questions we use.

sample composition that is correlated with the randomly assigned asset (or social cue) and our outcomes, i.e., the investment decision.

The summary statistics also provide insights about subjective risk perceptions and investment decisions of the participants. Participants generally believe that cryptocurrency is the riskiest investment, with the average participant saying it is 40 percent riskier than stocks and more than 100 percent riskier than bonds. While the magnitudes of these differences in risk are much too low (Liu and Tsyvinski, 2021), the ordinal ranking of risk is correct. Participants also report having the least amount of trading experience with cryptocurrency, 51 percent report ever trading cryptocurrency versus 75 percent and 54 percent for stocks and bonds, respectively. This combination of high perceived risk and limited personal experience likely leads to elevated levels of subjective risk associated with cryptocurrency compared to either stocks or bonds. Indeed, the summary statistics show that participants were about six to seven percentage points less likely to invest in either asset (A or B) if they were randomly assigned cryptocurrency as the asset name.[12]

3.2 Empirical Approach

The empirical analysis is composed of two separate, but related, parts. The first part focuses on assessing the impact of subjective risk perceptions and the second part focuses on peer effects. In both parts, we use data collected from the experiment to provide new insights into the role of subjective beliefs on investment decisions (Giglio et al., 2021).

First, we examine how the randomly assigned asset name (stock, bond, or cryptocurrency) impacts investment choices. We hypothesize that, if subjective risk perceptions influence investment decisions, then we will observe some hesitancy to invest in assets with greater volatility in the real world, such as cryptocurrency. To evaluate this impact, we estimate:

$$Invest_i = \alpha_0 + \beta_1 Crypto_i + \beta_2 Stock_i + X_i'\gamma + \epsilon_i \quad (1)$$

[12]Those assigned cryptocurrency were 6.4 percent less likely to invest in either asset than those assigned stock and 6.9 percent less likely to invest than those assigned bonds. These differences are statistically different from each other at the 10 and 5 percent level, respectively.

where $Invest_i$ is a dummy variable for whether participant i invested in either asset (i.e., opted for Asset A or Asset B instead of simply keeping the eight dollars); $Crypto_i$ is a dummy variable for whether the participant was randomly assigned cryptocurrency as their asset name; $Stock_i$ is a dummy variable for whether the participant was randomly assigned stock as their asset name; and X_i is a vector of basic demographics, subjective assessments about the riskiness of different assets (stocks, bonds, and cryptocurrency), a participant's trading experience, and variables about where respondents obtain their information for investment decisions, including reliance on media sources.[13] Lastly, ϵ_i is the residual term that is uncorrelated with either $Crypto_i$ or $Stock_i$ due to the randomization of asset name. We estimate Equation 1 using both the linear probability model (LPM) and logistic regression.[14]

The key coefficients in Equation 1 are β_1 and β_2, which describe how the randomly assigned asset name affects investment decisions relative to being assigned "bond" as the asset name. Thus, if calling the asset "cryptocurrency" induces elevated levels of subjective risk and discourages investment (relative to bonds), then we would expect β_1 to be negative and statistically significant. Likewise, if calling the asset "stock" has a similar effect, we would expect β_2 to be negative and statistically significant. We then extend Equation 1 in three important ways. First, since we randomize whether individuals receive a social cue to invest and there may be differential effects by asset name, we also present estimates of Equation 1 when we limit the data to those that did not receive the social cue. Second, since subjective risk may influence whether individuals choose to invest in the riskier asset, we also present estimates of Equation 1 where we change the outcome to investing in the riskier asset, i.e., Asset B. Third, to help pin down whether our estimates are due to elevated levels of subjective risk when we refer to the asset as cryptocurrency, we re-estimate Equation 1 on

[13]The specific variables included in X_i are: age, age squared, an indicator for identifying as male, an indicator for being a graduate student, indicators for college major, scaled measures of an individual's trading experience with each of stocks, bonds, and cryptocurrency; scaled measures of an individual's perception of stock, bond, and cryptocurrency riskiness; and scaled measures of the extent to which respondents rely on investment information from a range of sources including financial experts, friends and family, personal research, trends in the media, and social media. These are all values taken directly from the survey participants took after making their asset choice and are listed in Table 1.

[14]While the LPM and logistic regression often produce similar marginal effects, logistic regression may make more sense in this context. The overall investment probabilities in our experiment are close to one and the curvature of the logistic cumulative distribution function becomes more non-linear as one approaches probabilities close to zero or one.

subsamples of the data based on the participants' stated beliefs about the relative riskiness of cryptocurrency vis-à-vis stocks and bonds. If the changes in investment behavior are indeed due to differences in subjective risk, then the effect should be most evident on the sample of participants who describe cryptocurrency as riskier than both stocks and bonds. Thus, this subsample analysis tests whether subjective risk perceptions are driving our results.

In the second part of the empirical analysis, we examine how the randomly assigned social cue to invest impacts investment choices. To capture the overall peer effect on investment decisions, we estimate:

$$Invest_i = \alpha_0 + \beta_1 SocialCue_i + X_i'\gamma + \epsilon_i \tag{2}$$

where all variables are as described in Equation 1, except that we instead include $SocialCue_i$ in place of the randomly assigned asset names. $SocialCue_i$ is an indicator variable for whether participant i is randomly assigned the social cue to invest, which states "[m]ost other [participants] bought Asset B" just prior to when participants make their investment choice. Thus, the β_1 coefficient in Equation 2 is the overall peer effect associated with the social cue (across all asset names).

We then extend Equation 2 to examine how peer effects influence investment decisions via their impact on subjective risk perceptions. We hypothesize that, if peer effects alter subjective risk perceptions, then this social cue to invest should weaken the relationship between asset names and investment decisions. As such, this effect would be captured by the relative difference in the peer effect for cryptocurrency, the high subjective risk asset. Thus, the expression becomes:

$$Invest_i = \alpha_0 + \beta_1 Crypto_i + \beta_2 (Crypto_i * SocialCue_i) + \beta_3 SocialCue_i + X_i'\gamma + \epsilon_i \tag{3}$$

where all variables are as previously described. In this expression, β_2 is the key coefficient and describes the relative difference in the peer effect for a participant randomly assigned cryptocurrency as their asset name. In this expression, β_1 also has meaning describing the effect of elevated subjective risk perceptions on investment decisions for those that did not

receive the social cue. Thus, $\beta_1 + \beta_2$ is the effect of elevated subjective risk perceptions on investment decisions for those that did receive the social cue.[15] We also estimate and report results from the fully-specified model, which includes $Stock_i$ and $Stock_i * SocialCue_i$ as additional explanatory variables in Equation 3.

As with Equation 1, we estimate Equation 2 and Equation 3 using both the linear probability model and logistic regression.[16] We also estimate expressions using a dummy variable for investing in the riskier asset ("Asset B") as the outcome. Lastly, we explore heterogeneity in the impact of peers on subjective risk perceptions by re-estimating Equation 3 on different subsamples of the analytic data including splitting the data by objective financial knowledge, age, and where participants report getting their investment information. This subsample analysis allows us to assess whether certain populations are more or less likely to be influenced by peers.

4 Results

The discussion of our empirical results is broken up into three main subsections: the impact of subjective risk perceptions on investment decisions, the impact of peer effects on subjective risk perceptions and investment decisions, and the heterogeneity of results across participant subsamples. We finish by discussing our follow-up study that further explores the potential causes of the peer effects we observe.

4.1 Impact of Subjective Risk Perceptions on Investment Decisions

The estimated marginal effects of the randomly assigned asset name (stock, bond, or cryptocurrency) on investment decisions are presented in Table 2. Columns (a)-(c) present estimates using the linear probability model while columns (d)-(f) present estimates using

[15] β_3 also has meaning. It's the average peer effect for participants randomly assigned stock or bond as the asset name.

[16] Earlier work suggests that estimating interaction terms in nonlinear models such as a logistic regression could be problematic (Ai and Norton, 2003). More recent work has shown that this is not a serious concern (Moffitt et al., 2020).

logistic regression. Generally speaking, the results are quite consistent regardless of which model is used or if additional covariates, i.e., X_i from Equation 1, are included in the specification or not. The estimates show that participants are no more or less likely to invest in either asset (Asset A or Asset B) if the asset is referred to as a stock as opposed to being called a bond. However, participants are about seven percentage points less likely to invest in either asset if it is referred to as a cryptocurrency compared to being called a bond (see Panel A Model 2). This hesitancy to invest in either asset (A or B) if the asset is called cryptocurrency ("crypto hesitancy") is even more pronounced if we limit the sample to those that did not receive a social cue to invest, with participants about 10 percentage points less likely to invest in either asset if it was referred to as a cryptocurrency (see Panel A Model 3). These estimates show that even though all participants face the same choices in terms of potential payoffs and probabilities of payouts (i.e., objective risk), calling the asset a cryptocurrency makes participants less likely to invest.

4.1.1 Is it Truly Subjective Risk Perceptions?

Do our results truly measure subjective risk perceptions? To test whether crypto hesitancy is due to elevated levels of subjective risk perceptions, we re-estimate Equation (1) on subsamples of the data, where we partition the analytic sample based on participants' stated beliefs about the riskiness of different assets.[17] If the hesitancy to invest when the asset is referred to as cryptocurrency is due to elevated levels of subjective risk perceptions, then we would expect that these effects would be most evident on individuals that report that cryptocurrency is riskier than both stocks and bonds. Moreover, the effects should not (at all) be evident on individuals that think stocks or bonds are riskier than cryptocurrency. This is precisely what we find.

As we show in Table 3, crypto hesitancy is directly related to the elevated risk perceptions associated with cryptocurrency. When we partition the sample by those that report crypto

[17]We asked all participants to rate the extent to which you find investing in stocks, bonds, and cryptocurrency more or less risky on a 0 to 100 scale, where 0 is "not at all risky" and 100 is "extremely risky." Importantly, all participants were asked about all assets regardless of their randomly assigned asset and this question was asked after they made their investment decision but before they found out the result of their decision.

is riskier than both stocks and bonds (N=399) and those that report that either stocks or bonds are riskier than crypto (N=129), crypto hesitancy is only evident among those that report cryptocurrency is the riskiest asset (of the three) with an estimated marginal effect of -0.07 (0.03), see column (b), compared to -0.02 (0.06) when we estimate Equation 1 on the sample that reports stocks or bonds are riskier than cryptocurrency, see column (c).[18] Moreover, crypto hesitancy jumps to -0.10 (0.04) if we further limit the sample to those who report cryptocurrency is (at least) 50 percent riskier than both stocks and bonds, see column (d), and this effect grows to -0.23 (0.09) if we removes those individuals that did not receive the social cue to invest. Thus, the crypto hesitancy we estimate is driven by individuals who think cryptocurrency is a much riskier asset. These results suggests that perceived riskiness associated with cryptocurrency is driving our results and, therefore subjective risk perceptions are an important determinant of investment decisions.

Despite the strong effect on overall investment decisions, we do not find that subjective risk perceptions affect the decision to invest in the riskier asset (see Panel B in Table 2), even though the estimated marginal effects are negative when we limit the sample to those that report cryptocurrency is riskier than stocks and bonds (see Panel B of Table 3). Therefore, subjective risk perceptions appear to alter the investment decisions of more risk averse investors (choosing between not investing and investing in the less risky asset, i.e. Asset A), but not risk seeking investors (choosing between Asset A and Asset B).

4.2 Impact of Peer Effects on Subjective Risk Perceptions

The impact of peers on investment decisions is presented in Tables 4 and 5, which show the estimated marginal effects from logistic regressions. Table 4 presents the impact of receiving a social cue to invest on overall investment decisions. Table 5 presents the impact on relative investment decisions, estimating the relative peer effect on participants randomly assigned cryptocurrency as the asset name relative to participants randomly assigned either stock or bond as the asset name. In this way, these results speak to whether peers can

[18]Standard errors are in parentheses.

ease heightened levels of subjective risk (associated with cryptocurrency) and encourage investment.

The estimates in Table 4 show that being told that "[m]ost other [participants] bought Asset B," i.e., the riskier of the asset choices, does not increase the likelihood that participants invested in either asset (Asset A or B) or specifically the riskier asset (Asset B). This is not entirely surprising as the "investment" choices in the investment game are really gambles and there is more limited evidence that peers influence risk aversion (Ahern et al., 2014). Additionally, peer effects tend to be larger when the peer is more financially sophisticated and recipient is a less financially sophisticated (Bursztyn et al., 2014). In our application, the peer is the "average participant" and thus, there could be substantial heterogeneity across the sample depending upon their relative view of their own sophistication relative to the average student.

We do, however, find evidence that there are relative differences in peer effects across asset names with peers having a relatively larger impact on participants assigned cryptocurrency as their asset name compared to those assigned stock or bond. As we show in column (a) of Table 5, being randomly assigned cryptocurrency as an asset leads to an 11 percentage point reduction in investing in either asset (relative to being assigned a stock or a bond). However, the peer effect for participants who are randomly assigned cryptocurrency is nine percentage points. This means that the presentation of this social cue to invest entirely eliminates crypto hesitancy with the combined effect of being assigned cryptocurrency and receiving the peer influence falling to a statistically insignificant two percentage point reduction in the likelihood of investing. As we show in Appendix Table A1, we find almost identical results in the fully-specified model, albeit with slightly larger standard errors.

The estimates imply that peer effects are quite influential and appear to ease investor concerns when they have high levels of subjective risk. In this instance, a simple peer encouragement to invest entirely eliminates crypto hesitancy. Thus, our results point to important ways in which subjective information within peer groups can create feedback loops, which induce herd behavior and potentially lead to irrational asset bubbles. That said, we cannot entirely rule out that peer effects could be larger for cryptocurrency in

general, and not that peer effects are large on subjective risk perceptions.[19] Indeed, there is evidence that herding behavior may be particularly pronounced in cryptocurrency markets (Youssef, 2022; Gurdgiev and O'Loughlin, 2020).

4.3 Heterogeneity of Results across the Sample

We also explore heterogeneity in our estimated impacts of subjective risk perceptions on investment decisions and the impact that peers play in easing subjective risks. Specifically, we partition the analytic sample by survey covariates and re-estimate Equation 3 on the different subsamples. We split the sample by (i) whether a participant scored at or above the median on the financial knowledge test; (ii) whether a participant's age is above median or not; and (iii) whether a participant's use of social media to make investment decisions is above median or not.[20] These estimates are presented in Table 5, columns (b)-(g).[21]

Interestingly, we find no measurable variation in crypto hesitancy across these different subsamples. This is evidenced by consistent coefficients on being assigned cryptocurrency as a factor in the decision to invest, which all hover around -0.11.[22] However, we uncover substantial heterogeneity in the ability of peer influences to ease crypto hesitancy across the sample. Notably, older individuals that have a more fundamental understanding of basic financial principles and who are less likely to rely on social media (and other media sources) to help make financial decisions are much less likely to be influenced by peers. Indeed, we find essentially no peer effects for these groups, which is evidenced by a small and statistically insignificant coefficient on the SocialCue-X-Crypto variable in columns (b),

[19] Peer effects may be larger for cryptocurrency because: (a) crypto is a new asset and information about objective risk is more limited (Liu et al., 2022); (b) cryptocurrency is a highly volatile asset with a tight-knit community of dedicated supporters (Almeida and Gonçalves, 2023) and hence the social utility associated with crypto could be large; or (c) crypto is a currency and thus, derives most of its value from network effects (Cong et al., 2021; Biais et al., 2023).

[20] The extent to which a participant uses social media to make investment decisions comes from two variables in the survey, which ask respondents about (i) how often they use popular trends in news/media to make financial decisions and (ii) how often they use social media to make financial decisions. Both questions were on a one-to-five scale with one meaning "do not rely at all" and five meaning "rely on considerably." The median value associated with the sum of these two variables is five.

[21] In results not shown, we also explored heterogeneity in effects by gender, subjective financial knowledge, and trading experience. We find no material differences across these groups.

[22] A potential exception is when the sample is split by use of social media to make investment decisions. Therein, all of the measurable crypto hesitancy comes from those that rely more heavily on social media.

(d), and (f). On the other hand, we find that younger individuals that have less financial knowledge and who rely on social media for their financial information are much more likely to be influenced by peers. For each of these subgroups, crypto hesitancy disappears with peer influence, such that both younger and less-knowledgable investors are now more-likely to invest in cryptocurrency (although the combined effects are not statistically different than zero). Thus, our estimates imply that less-knowledgable and younger investors are more impressionable and susceptible to peer influence when their subjective risk perceptions otherwise would have prevented them from taking risks.

4.4 Underlying Cause of the Peer Effect

As previously discussed, the social cue to invest in our main study could influence participants either because of "information" or "social utility." In other words, participants may be impacted by the social cue because they think their peers know more about the investment than they do (information) or they prefer to do the same thing as others (social utility).[23] To disentangle the underlying cause of the observed peer effect, we extend our experimental design in a small follow-up study using participants on Prolific.[24] The extension is very similar to our main study, except that we vary the social cue to invest.[25] All participants (that receive a social cue to invest) continue to be told that "[m]ost other participants bought Asset B." However, half that receive a social cue to invest are also reminded of the objective risk, which is that the asset only appreciates in value half the time. Peer effects from the new social cue should have no informational content and thus, only influence behavior via social utility. In this way, we explore the cause of the peer effect by examining the difference in the peer effects that emerge when receive the two different social cues.

[23]See Bursztyn et al. (2014) for a more detailed explanation of these different explanations.

[24]The study was conducted on 3/4/25 and 3/5/25 with the goal to survey 300 respondents. We ended up with 301 respondents, but dropped three surveys because of missing data on educational attainment and asset riskiness. Summary statistics of the sample are presented in Appendix Table A2.

[25]Three other small differences in studies are that (i) the average payout was reduced to \$2 as opposed to \$8 (although Asset A continued to be associated with a 25% adjustment in value and Asset B is associated with a 50% adjustment); (ii) we limited ourselves to two asset names cryptocurrency and bonds, which kept our reference group constant; and (iii) the study was conducted online instead of in-person, which increased the range of demographics that we sampled both in terms of age and education.

Estimates of Equation (1) using the Prolific sample and an extended version of Equation (3), i.e. extended to include the two peer effects, are presented in Table 6. Overall, we continue to find evidence of crypto hesitancy, with the overall sample seven percentage points less likely to invest in either asset if it is referred to as a cryptocurrency. That said, this effect is not statistically significant at conventional levels. However, we find strong evidence of crypto hesitancy when we focus on the sample from Prolific that is most similar to our sample of college-students, i.e. those without a college degree. This sample is 19 percentage points less likely to invest in either asset if it is referred to as a cryptocurrency. Interestingly, we again see that peers are quite influential on this sample. Simply telling respondents that most other participants opted to invest in Asset B (SocialCue1) entirely eliminates crypto hesitancy. This is evidenced by the sum of the coeficient on cryptocurrency and the coefficient on SocialCue1-X-Crypto. On the other hand, the second social cue has no impact on crytpo hesitancy with an estimated coefficient of 0.01 (0.20). These results imply that the peer effect we estimate is driven primarily by informational content and not social utility. When faced with a difficult decision of whether to invest or not, younger and less knowledgable investors will look to their peers for information about what to do.

In this follow-up study, we find no evidence of crypto hesitancy among the college educated sample. That said, we cannot distinguish between whether this sample is not affected by subjective risk perceptions or the experiment does not effectively pique their subjective risk. The latter is possible since the experiment clearly states objective probabilities associated with appreciation and depreciation and the higher-educated sample may be more equipped to assess these probabilities separate from the name of the asset. Importantly, the peer effect also does not influence the investment decisions of higher educated workers regardless of the peer effect we use. Therefore, as in main study, we find that more knowledgable individuals are less influenced by peers.

5 Conclusion

In this paper, we analyze how subjective risk perceptions alter investment decisions and the role that peer effects play in moderating this effect. To isolate the impact of subjective risk

perceptions, we design a simple experiment that randomizes an asset's name to create variation in subjective risk, even when the objective risk associated with each asset is identical across all participants. We then examine how changes in the randomized asset name alters investment decisions overall as well as with peer influence. Our results demonstrate that subjective risk perceptions have substantial impacts on investment decisions. However, we also find that subjective risk perceptions and their impact on investment decisions are easily altered by peer influence. In our study, a simple peer encouragement to invest eliminates all crypto hesitancy. The effects are especially pronounced on younger participants with less financial knowledge who tend to rely heavily on social media to help with financial decisions. In a follow-up study, we find that the peer influence results from information effects, suggesting that younger and less informed investors look to peers to learn about investment opportunities.

Our findings are applicable to a range of contexts where subjective risks are high and "influencers" try to sway behavior. The most direct application is to investment in cryptocurrency and other new investments. Our findings suggest that advertisements from celebrities like Tom Brady or Kim Kardashian may have been highly effective at inducing investment, especially from younger and less savvy investors. However, the results also have implications for evaluating and responding to other risks (where subjective beliefs can differ substantially from objective realities) such as public health risks like Covid-19 and environmental risks like climate change. In all of these instances, our results suggest that less-knowledgeable and younger individuals who tend to crowdsource information, as opposed to seeking out experts, are most susceptible to peer influence. Future work should examine if and how the government can moderate the role of subjective beliefs and social influences in retail investment decisions.

This study contributes to several growing and important literatures in behavioral asset pricing. First, we document the importance of subjective risk perceptions and highlight peers as an important dynamic (Adam and Nagel, 2023). Second, we demonstrate the importance of peer effects in a relatively new context including from learned information about subjective sentiments and beliefs (Bailey et al., 2018; Kuchler and Stroebel, 2021). In

this way, we offer new insights into how social phenomena can affect market-level outcome (Hirshleifer, 2015, 2020).

References

Abel, Andrew B, "Asset Prices Under Habit Formation And Catching Up With The," *The American Economic Review*, 1990, *80* (2), 38–42.

Adam, Klaus, Albert Marcet, and Johannes Beutel, "Stock price booms and expected capital gains," *American Economic Review*, 2017, *107* (8), 2352–2408.

_ **and Stefan Nagel**, "Expectations data in asset pricing," in "Handbook of Economic Expectations," Elsevier, 2023, pp. 477–506.

Ahern, Kenneth R, Ran Duchin, and Tyler Shumway, "Peer effects in risk aversion and trust," *The Review of Financial Studies*, 2014, *27* (11), 3213–3240.

Ai, Chunrong and Edward C Norton, "Interaction terms in logit and probit models," *Economics letters*, 2003, *80* (1), 123–129.

Almeida, José and Tiago Cruz Gonçalves, "A systematic literature review of investor behavior in the cryptocurrency markets," *Journal of Behavioral and Experimental Finance*, 2023, p. 100785.

Anamika, Madhumita Chakraborty, and Sowmya Subramaniam, "Does sentiment impact cryptocurrency?," *Journal of Behavioral Finance*, 2023, *24* (2), 202–218.

Angerer, Martin, Christian Hugo Hoffmann, Florian Neitzert, and Sascha Kraus, "Objective and subjective risks of investing into cryptocurrencies," *Finance Research Letters*, 2021, *40*, 101737.

Bailey, Michael, Ruiqing Cao, Theresa Kuchler, and Johannes Stroebel, "The economic effects of social networks: Evidence from the housing market," *Journal of Political Economy*, 2018, *126* (6), 2224–2276.

Bhattacharjee, Jayashree, Lata Pandey, Ranjit Singh, and H Kent Baker, "Factors affecting the risk perceptions of cryptocurrency investors," *Journal of Behavioral Finance*, 2024, pp. 1–13.

Biais, Bruno, Christophe Bisiere, Matthieu Bouvard, Catherine Casamatta, and Albert J Menkveld, "Equilibrium bitcoin pricing," *The Journal of Finance*, 2023, *78* (2), 967–1014.

Bikhchandani, Sushil and Sunil Sharma, "Herd behavior in financial markets," *IMF Staff papers*, 2000, *47* (3), 279–310.

Borri, Nicola, "Conditional tail-risk in cryptocurrency markets," *Journal of Empirical Finance*, 2019, *50*, 1–19.

Brunnermeier, Markus, Emmanuel Farhi, Ralph SJ Koijen, Arvind Krishnamurthy, Sydney C Ludvigson, Hanno Lustig, Stefan Nagel, and Monika Piazzesi, "Perspectives on the future of asset pricing," *The Review of Financial Studies*, 2021, *34* (4), 2126–2160.

Bursztyn, Leonardo, Florian Ederer, Bruno Ferman, and Noam Yuchtman, "Understanding mechanisms underlying peer effects: Evidence from a field experiment on financial decisions," *Econometrica*, 2014, *82* (4), 1273–1301.

Cong, Lin William, Ye Li, and Neng Wang, "Tokenomics: Dynamic adoption and valuation," *The Review of Financial Studies*, 2021, *34* (3), 1105–1155.

Ćumurović, Aida and Walter Hyll, "Financial literacy and self-employment," *Journal of Consumer Affairs*, 2019, *53* (2), 455–487.

Duflo, Esther and Emmanuel Saez, "The role of information and social interactions in retirement plan decisions: Evidence from a randomized experiment," *The Quarterly Journal of Economics*, 2003, *118* (3), 815–842.

Giglio, Stefano, Matteo Maggiori, Johannes Stroebel, and Stephen Utkus, "Five facts about beliefs and portfolios," *American Economic Review*, 2021, *111* (5), 1481–1522.

Gurdgiev, Constantin and Daniel O'Loughlin, "Herding and anchoring in cryptocurrency markets: Investor reaction to fear and uncertainty," *Journal of Behavioral and Experimental Finance*, 2020, *25*, 100271.

Hirshleifer, David, "Behavioral finance," *Annual Review of Financial Economics*, 2015, *7*, 133–159.

_ , "Presidential address: Social transmission bias in economics and finance," *The Journal of Finance*, 2020, *75* (4), 1779–1831.

Hong, Harrison, Jeffrey D Kubik, and Jeremy C Stein, "Social interaction and stock-market participation," *The Journal of Finance*, 2004, *59* (1), 137–163.

_ , _ , and _ , "Thy neighbor's portfolio: Word-of-mouth effects in the holdings and trades of money managers," *The Journal of Finance*, 2005, *60* (6), 2801–2824.

Hwang, Byoung-Hyoun, José María Liberti, and Jason Sturgess, "Information sharing and spillovers: Evidence from financial analysts," *Management Science*, 2019, *65* (8), 3624–3636.

Kuchler, Theresa and Johannes Stroebel, "Social finance," *Annual Review of Financial Economics*, 2021, *13*, 37–55.

_ , Yan Li, Lin Peng, Johannes Stroebel, and Dexin Zhou, "Social proximity to capital: Implications for investors and firms," *The Review of Financial Studies*, 2022, *35* (6), 2743–2789.

Leary, Mark T and Michael R Roberts, "Do peer firms affect corporate financial policy?," *The Journal of Finance*, 2014, *69* (1), 139–178.

Liu, Yukun, Aleh Tsyvinski, and Xi Wu, "Common risk factors in cryptocurrency," *The Journal of Finance*, 2022, *77* (2), 1133–1177.

_ **and** _ , "Risks and returns of cryptocurrency," *The Review of Financial Studies*, 2021, *34* (6), 2689–2727.

Lochstoer, Lars A and Tyler Muir, "Volatility expectations and returns," *The Journal of Finance*, 2022, *77* (2), 1055–1096.

Lusardi, Annamaria and Olivia S Mitchell, "Planning and financial literacy: How do women fare?," *American Economic Review*, 2008, *98* (2), 413–417.

Malmendier, Ulrike and Stefan Nagel, "Depression babies: Do macroeconomic experiences affect risk taking?," *The Quarterly Journal of Economics*, 2011, *126* (1), 373–416.

Moffitt, Robert A, Brian J Phelan, and Anne E Winkler, "Welfare rules, incentives, and family structure," *Journal of Human Resources*, 2020, *55* (1), 1–42.

Nagel, Stefan and Zhengyang Xu, "Dynamics of subjective risk premia," *Journal of Financial Economics*, 2023, *150* (2), 103713.

Ouimet, Paige and Geoffrey Tate, "Learning from coworkers: Peer effects on individual investment decisions," *The Journal of Finance*, 2020, *75* (1), 133–172.

Pflueger, Carolin, Emil Siriwardane, and Adi Sunderam, "Financial market risk perceptions and the macroeconomy," *The Quarterly Journal of Economics*, 2020, *135* (3), 1443–1491.

Rieger, Marc Oliver, "How to measure financial literacy?," *Journal of Risk and Financial Management*, 2020, *13* (12), 324.

Roider, Andreas and Andrea Voskort, "Reputational herding in financial markets: A laboratory experiment," *Journal of Behavioral Finance*, 2016, *17* (3), 244–266.

Schwerter, Frederik, "Social reference points and risk taking," *Management Science*, 2024, *70* (1), 616–632.

Shiller, Robert J, "Speculative asset prices," *American Economic Review*, 2014, *104* (6), 1486–1517.

_ **, Stanley Fischer, and Benjamin M Friedman**, "Stock prices and social dynamics," *Brookings papers on economic activity*, 1984, *1984* (2), 457–510.

Youssef, Mouna, "What drives herding behavior in the cryptocurrency market?," *Journal of Behavioral Finance*, 2022, *23* (2), 230–239.

Table 1: Summary Statistics on Student Respondents

	Full Sample	Randomized Asset Assignment		
		Stocks	Bonds	Crypto
	(a)	(b)	(c)	(d)
Demographics				
Age	20.9	20.6	21.0	21.2
Male	0.49	0.52	0.44	0.52
Graduate Student	0.03	0.03	0.02	0.03
Accounting/MIS Major	0.21	0.21	0.23	0.19
Econ/Finance Major	0.31	0.33	0.28	0.33
Marketing/Management Major	0.20	0.18	0.24	0.19
Non-Business Major	0.27	0.29	0.24	0.29
Financial Risk Taking Philosophy (0 to 4 scale)	2.18	2.25	2.15	2.14
Financial Knowledge				
Objective Financial Knowledge (0 to 6 scale)	4.37	4.44	4.31	4.36
Subjective Financial Knowledge (0 to 6 scale)	2.93	2.97	2.89	2.93
Asset Risk Perceptions				
Investing in Stocks is Risky (0 to 100 scale)	52.8	53.1	52.8	52.6
Investing in Bonds is Risky (0 to 100 scale)	31.2	30.6	31.7	31.5
Investing in Crypto is Risky (0 to 100 scale)	72.9	73.3	74.6	70.9
Trading Experience				
Stock Trading Experience (0 to 6 scale)	2.03	2.16	1.89	2.03
Bond Trading Experience (0 to 6 scale)	1.23	1.32	1.17	1.19
Crypto Trading Experience (0 to 6 scale)	1.32	1.38	1.30	1.27
Source of Investment Information				
Financial Experts (0 to 4 scale)	2.78	2.84	2.78	2.74
Friends and Family (0 to 4 scale)	2.07	2.03	2.16	2.02
Personal Research (0 to 4 scale)	2.96	3.02	3.03	2.82
Trends in Media (0 to 4 scale)	1.76	1.76	1.78	1.74
Social Media (0 to 4 scale)	1.12	1.16	1.06	1.14
Experimental Random Assignment				
Stock	0.34	1.00	0.00	0.00
Bond	0.33	0.00	1.00	0.00
Cryptocurrency	0.33	0.00	0.00	1.00
Social Cue to Invest	0.50	0.51	0.51	0.49
Experimental Choice				
Invest in Either Asset	0.90	0.92	0.93	0.86
Invest in Riskier Asset	0.40	0.41	0.40	0.39
N	528	177	176	175

Notes: The sample excludes the 14 respondents that did not complete the survey, the four respondents that somehow completed the survey in less than two minutes, and the five respondents that were not currently students. This gives us a sample of 528 student respondents that were randomized across the three asset classes and whether they were given a social cue to invest or not. All data collected between May 30 and June 1 of 2023.

Table 2: Impact of Asset Name on Investment Decisions

	Linear Probability Model Estimates			**Logistic Regression Marginal Effects**		
	Model 1	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**
	(a)	(b)	(c)	(d)	(e)	(f)
Panel A: Invest in Either Asset						
Stock	-0.01	-0.01	0.01	-0.01	-0.01	0.00
	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)	(0.05)
Crypto	-0.07**	-0.07**	-0.11**	-0.06**	-0.07**	-0.10**
	(0.03)	(0.03)	(0.04)	(0.03)	(0.03)	(0.05)
Panel B: Invest in Riskier Asset						
Stock	0.01	0.01	0.05	0.01	0.01	0.05
	(0.05)	(0.05)	(0.08)	(0.05)	(0.05)	(0.08)
Crypto	-0.01	-0.01	0.04	-0.01	-0.01	0.04
	(0.05)	(0.05)	(0.08)	(0.05)	(0.05)	(0.07)
N	528	528	263	528	528	263
Covariates Included	No	Yes	Yes	No	Yes	Yes
Limit Sample to No Social Cue	No	No	Yes	No	No	Yes

Notes: This table presents estimates of the impact of a randomly assigned asset name on investment decisions using different estimation techniques (linear probability model vs. logistic regressions) where we both control and do not control for other collected covariates. Panel A presents estimates when "any investment" is the outcome variable and Panel B presents estimates when "invest in the riskier asset" is the outcome. All coefficients represent marginal effects of investing in the randomly assigned asset relative to investment decisions for those randomly assigned bonds. Standard errors are included in parentheses below the marginal effects. The other covariates included in Model 2 and 3 are a quadratic in age; indicators for identifying as male and reporting being a graduate student; stock, bond, and cryptocurrency trading experience; perceptions of stock, bond, and cryptocurrency riskiness; college major dummies; and sources relied upon for financial information. Model 3 is limited to individuals that did not receive the social cue to invest. * $p<0.1$; ** $p<0.05$; and *** $p<0.01$.

Table 3: Impact of Asset Name on Investment Decisions by Asset Risk Assessment

		Subjective Risk Assessment			
		Sample Split 1		Sample Split 2	
	Full Sample	**Crypto Riskiest Asset**	**Stocks or Bonds Riskiest Asset**	**Crypto 50 percent Riskier than Stocks & Bonds**	**Crypto not 50 percent Riskier than Stocks & Bonds**
	(a)	(b)	(c)	(d)	(e)
Panel A: Invest in Either Asset					
Crypto	-0.06**	-0.07**	-0.02	-0.10**	-0.04
	(0.03)	(0.03)	(0.06)	(0.04)	(0.03)
Panel B: Invest in Riskier Asset					
Crypto	-0.01	-0.07	0.09	-0.11	0.04
	(0.05)	(0.05)	(0.08)	(0.07)	(0.06)
N	528	399	129	205	323

Notes: This table presents estimates of the effects of being randomly assigned cryptocurrency as the asset name on investment decisions (relative to being assigned stocks or bonds) for the full sample and then for subsamples of the analytic data based on revealed beliefs about the riskiness of different asset types. Panel A presents estimates when "any investment" is the outcome variable and Panel B presents estimates when "invest in the riskier asset" is the outcome. Sample Split 1 breaks up the analytic sample by whether the respondent reports that cryptocurrency is riskier than both stocks and bonds (column b) or not (column c). Sample Split 2 breaks up the analytic sample by whether the respondent reports that cryptocurrency is at least 50 percent riskier than both stocks and bonds (column d) or not (columns e). All coefficients are marginal effects from logistic regression estimates that include other covariates, which are listed in Table 2. Standard errors are included in parentheses below the marginal effects. * p<0.1; ** p<0.05; and *** p<0.01.

Table 4: Impact of Social Cue to Invest on Overall Investment Decision

		Limit Sample by Randomized Asset Name		
	Full Sample	**Stock**	**Bond**	**Crypto**
	(a)	(b)	(c)	(d)
Panel A: Invest in Either Asset				
Social Cue to Invest	-0.04	-0.05	-0.05	0.00
	(0.03)	(0.04)	(0.05)	(0.05)
Panel B: Invest in Riskier Asset				
Social Cue to Invest	-0.08*	-0.06	-0.05	-0.11
	(0.04)	(0.07)	(0.08)	(0.07)
N	528	177	176	175

Notes: This table presents estimates of the effects of randomly assigned social cues to invest on investment decisions for the full sample and then for each of the randomly assigned asset names. Panel A presents estimates when "any investment" is the outcome variable and Panel B presents estimates when "invest in the riskier asset" is the outcome. All coefficients are marginal effects from logistic regression estimates that include other covariates, which are listed in Table 2. Standard errors are included in parentheses below the marginal effects. * p<0.1; ** p<0.05; and *** p<0.01.

Table 5: Impact of Social Cue to Invest on Relative Investment Decisions

		Financial Knowledge		**Age**		**Reliance on Social Media as Source of Investment Information**	
	Full Sample	High	Low	Older	Younger	Low	High
	(a)	(b)	(c)	(d)	(e)	(f)	(g)
Panel A: Invest in Either Asset							
Cryptocurrency	-0.11***	-0.12**	-0.11**	-0.10	-0.12**	-0.08	-0.19**
	(0.04)	(0.05)	(0.06)	(0.06)	(0.05)	(0.05)	(0.08)
SocialCue-X-Crypto	0.09*	0.04	0.20**	0.00	0.17**	0.02	0.20**
	(0.05)	(0.07)	(0.08)	(0.08)	(0.07)	(0.06)	(0.10)
Panel B: Invest in Riskier Asset							
Cryptocurrency	0.01	-0.13	0.14*	0.08	-0.02	-0.03	0.08
	(0.06)	(0.09)	(0.09)	(0.09)	(0.08)	(0.08)	(0.10)
SocialCue-X-Crypto	-0.05	0.06	-0.17	-0.23*	0.05	0.00	-0.13
	(0.09)	(0.13)	(0.13)	(0.12)	(0.12)	(0.11)	(0.14)
N	528	278	250	243	285	336	192

Notes: This table presents marginal effects of (i) the impact of a randomly assigned asset name on investment decisions and (ii) the relative impact of the social cue to invest for individuals assigned cryptocurrency on investment decisions. The marginal effects are computed from logistic regression model estimates that also includes other covariates listed in Table 2. Standard errors are included in parentheses below the marginal effects. Panel A presents estimates when "any investment" is the outcome variable and Panel B presents estimates when "invest in the riskier asset" is the outcome. The full sample estimates are presented in column (a) whereas columns (b)-(g) include splits sample estimates to highlight heterogeneity in these effects across the analytic sample. "High" financial knowledge respondents answered five or six of the financial knowledge questions correctly while "Low" answered fewer correctly. See Appendix A for the specific questions, which come from Reiger (2020). "Older" respondents were older than 20 years old while "Younger" were 20 or younger. Lastly, the variable used to split the sample by the extent to which they use social media as a source of investment information comes from two variables in the survey which ask respondents about how often they use popular trends in news/media to make financial decisions and how often they use social media to make financial decisions. Both questions were on a 0-to-4 scale with zero meaning "do not rely at all" and four meaning "rely on considerably." Respondents with the sum of the two less than or equal to three, are deemed "Low" and above three are "High." * $p<0.1$; ** $p<0.05$; and *** $p<0.01$.

Table 6: Disentangling the Causes of a Peer Effect on Crypto Hesitancy

	Full Sample	**Non-College Educated Sample**		**College Educated Sample**	
	Model 1	**Model 1**	**Model 2**	**Model 1**	**Model 2**
	(a)	(b)	(c)	(d)	(e)
Cryptocurrency	-0.07	-0.19***	-0.34**	0.01	0.08
	(0.05)	(0.07)	(0.17)	(0.08)	(0.12)
SocialCue1-X-Crypto			0.39*		-0.16
			(0.21)		(0.18)
SocialCue2-X-Crypto			0.01		-0.05
			(0.20)		(0.18)
N	298	129		169	

Notes: This table presents marginal effects from logistic regressions of (i) the impact of a randomly assigned asset name on investment decisions and (ii) the relative impact of the social cue to invest for individuals assigned cryptocurrency on investment decisions. The data for this analysis were collected in a follow up study conducted on 3/4/25 and 3/5/25 using the Prolific platform. The experimental design is very similar to the main experimental design, except that we include two peer effects. The first social cue to invest ("SocialCue1") is identical to the social cue used in the in-person study. The second social cue to invest ("SocialCue2") is identical except that we restate the odds of appreciation. The implication is that SocialCue2 removes the informational content of the first social cue and thus, a peer effect resulting from it would simply reflect the impact of social utility. Standard errors are included in parentheses below the marginal effects. * $p<0.1$; ** $p<0.05$; and *** $p<0.01$.

ONLINE APPENDIX A: Additional Tables

Table A1: Impact of Social Cue to Invest on Relative Investment Decisions in Fully-Specified Model

		Financial Knowledge		**Age**		**Reliance on Social Media as Source of Investment Information**	
	Full Sample	High	Low	Older	Younger	Low	High
	(a)	(b)	(c)	(d)	(e)	(f)	(g)
Cryptocurrency	-0.11**	-0.10*	-0.16*	-0.07	-0.08*	-0.07	-0.27*
	(0.05)	(0.06)	(0.08)	(0.07)	(0.05)	(0.05)	(0.16)
SocialCue-X-Crypto	0.08	0.01	0.23**	-0.04	0.15*	-0.03	0.29*
	(0.07)	(0.09)	(0.11)	(0.10)	(0.08)	(0.08)	(0.17)
N	528	278	250	243	285	336	192

Notes: This table presents marginal effects of (i) the impact of a randomly assigned asset name on investment decisions and (ii) the relative impact of the social cue to invest for individuals assigned cryptocurrency on investment decisions from a fully specified model that also includes an indicator for being assigned stock as one's asset and including an interaction of being assigned stock as one's asset and receiving a social cue to invest. The marginal effects are computed from logistic regression model estimates that also includes other covariates listed in Table 2. Standard errors are included in parentheses below the marginal effects. Outcome is "any investment." The full sample estimates are presented in column (a) whereas columns (b)-(g) include splits sample estimates to highlight heterogeneity in these effects across the analytic sample. See Table 5 for a definition of these different subgroups. * p<0.1; ** p<0.05; and *** p<0.01.

Table A2: Summary Statistics on Prolific Respondents

		Asset Assignment		Education	
	Full Sample	**Bond**	**Crypto**	**No College Degree**	**College Degree**
	(a)	(b)	(c)	(d)	(e)
Demographics					
Age	38.6	38.2	39.0	38.2	39.0
Male	0.35	0.35	0.36	0.34	0.36
College Degree	0.57	0.51	0.63	0.00	1.00
Financial Knowledge					
Obj. Financial Knowledge	4.58	4.64	4.52	4.22	4.85
Subj. Financial Knowledge	2.93	3.02	2.83	2.66	3.13
Asset Risk Perceptions					
Investing in Stocks	62.0	32.5	36.1	37.9	31.6
Investing in Bonds	34.3	61.0	63.0	62.6	61.5
Investing in Crypto	78.4	80.8	75.9	79.3	77.7
Source of Investment Information					
Financial Experts (0 to 4 scale)	2.25	2.23	2.27	2.12	2.35
Friends and Family (0 to 4 scale)	1.83	1.76	1.90	1.77	1.88
Personal Research (0 to 4 scale)	2.89	2.85	2.92	2.89	2.88
Trends in Media (0 to 4 scale)	1.49	1.42	1.56	1.38	1.57
Social Media (0 to 4 scale)	1.04	1.05	1.03	0.95	1.11
Experimental Assignment					
Bond	0.50	1.00	0.00	0.57	0.45
Crypto	0.50	0.00	1.00	0.43	0.55
No Social Cue to Invest	0.33	0.33	0.34	0.27	0.38
Social Cue 1	0.34	0.34	0.34	0.37	0.31
Social Cue 2	0.33	0.33	0.33	0.36	0.31
Experimental Decision					
Invest in Either Asset	0.67	0.69	0.65	0.71	0.64
Invest in Risky Asset	0.36	0.37	0.35	0.38	0.34
N	298	150	148	129	169

Notes: The sample excludes the 2 respondents that did include their age and the 1 respondent that did not answer the questions about asset risk perceptions. All observations were collected on the Prolific platform on 3/4/25 and 3/5/25. This gives us a sample of 298 respondents that span a broader demographic sample than our study of college students in the main analysis. This study extends the main analysis by randomizing two social cues to invest. Social Cue 1 is identical to the original study. Social Cue 2 is similar to the cue in the original study, but respondents are reminded that the likelihood of appreciation on that asset remains 50 percent. This second social cue will only alter investment decisions if social utility is important.

ONLINE APPENDIX B: The Experiment

All participants completed a consent form and read the following instructions:

> Thanks for agreeing to complete this survey!
>
> On the page that follows, you will be presented with a scenario. Read the instructions carefully and respond accordingly. There are no right or wrong answers - we are simply interested in your personal preference and choice.
>
> When you are ready to begin, please click the arrow below.

Participants were then randomized to one of six conditions in a 3 (Asset: Stock v. Bond v. Cryptocurrency) x 2 (Social Information: Present v. Absent) between-subjects design. The instructions were identical for each condition with the appropriate asset type and social information appearing in the bracketed areas below:

> You have the opportunity to invest in a **[asset]**. We are giving you $8 to invest, and you can either a) keep the $8 and not invest, or b) choose one of two **[assets]** that have the potential to earn different returns (see chart below).

	Potential Payoff	
	If [Asset] Goes Up…	**If [Asset] Goes Down...**
Buy [Asset] A	$10	$6
Buy [Asset] B	$12	$4

> **[Most other students have bought Asset B.]** Think about your preference and select the option below that best reflects your preference. You will actually receive money based on your choice. Once you complete the survey, you will find out your actual payoff.
>
> ___ Invest nothing and keep the $8
>
> ___ Purchase [Asset] A with a 50/50 chance of ending up with $10 or $6
>
> ___ Purchase [Asset] B with a 50/50 chance of ending up with $12 or $4

Following this choice, all participants were directed to complete questions from the Financial Literacy scale (Rieger 2020) presented in random order:

1. In general, buying a single share of stock is safer than buying an stock mutual fund.
    a) True
    b) False

2. You have $100 in your savings account with 2% interest per year. How much will you have after 5 years if you let your money grow?
    a) Less than $110
    b) Exactly $110
    c) More than $110

3. Your savings account earns 1% interest per year, and inflation amounts to 2% per year. How much can you buy after one year with the money in your savings account?
    a) More than today
    b) The same as today
    c) Less than today

4. Which investment normally has the largest fluctuations?
    a) Savings account
    b) Bonds
    c) Stocks

5. Which of the following statements best describes the main task of the stock market?
    a) The stock market predicts stock profits
    b) The stock market leads to an increase in stock prices
    c) The stock market brings together potential buyers and sellers
    d) None of the three statements

6. Which of the following statements is correct?
    a) Once you have invested in a mutual fund, you cannot withdraw the money in the first year
    b) Mutual funds can invest in several assets (e.g., stocks and bonds)
    c) Mutual funds pay a guaranteed return, which depends on the past performance
    d) None of the three statements

Following the Financial Literacy scale, all participants were asked to completed demographic questions and questions pertaining to subjective financial literacy, financial education and experience, and risk perceptions including the following:

1. Are you:
    a. Male
    b. Female
    c. Non-binary
    d. Open response: _____
    e. Prefer not to share

2. How old are you?
    Age in Years (sliding scale from 18 to 100)

3. I am currently (check all that apply):
    a. A part-time student
    b. A full-time student
    c. Working part-time
    d. Working full-time
    e. Not working and not a student

4. Please indicate your highest completed educational degree:
    a. No degree
    b. High school / GED
    c. Associate's Degree / 2-year program
    d. Undergraduate Degree / 4-year program
    e. Graduate school / Master's program
    f. Ph.D.

5. True or False: You have work experience in finance
    a. True
    b. False

6. Select your majors from the list provided below (check all that apply):
    a. Accounting
    b. Business Administration
    c. Economics
    d. Finance
    e. Hospitality
    f. Management & Entrepreneurship
    g. Management Information Systems
    h. Marketing
    i. Real Estate
    j. Other (please indicate in the box below): _____

7. Please rate your financial knowledge using the scale below:
    7-pt. scale (1 = Very low, 7 = Very high)

8. How much experience do you have with bonds and investing in bonds?
    7-pt. scale (1 = None, 7 = Extremely experienced)

9. How much experience do you have with stocks and investing in the stock market?
    7-pt. scale (1 = None, 7 = Extremely experienced)

10. How much experience do you have with cryptocurrency and purchasing digital currencies?
    7-pt. scale (1 = None, 7 = Extremely experienced)

11. For each of the options below, please rate the extent to which you find them more/less risky: (sliding scale: 0 = not at all risky, 100 = extremely risky)
    a. Investing in bonds
    b. Investing in the stock market
    c. Investing in cryptocurrency

Next, all participants completed a question pertaining to sources for financial information and their personal willingness to take financial risks:

People rely on different sources to make financial decisions. Below, please look at each of the following potential sources of information and indicate the extent to which you rely (or do not rely) on this information to make financial decisions:
(5-pt. scale: 1 = Do not rely on at all, 5 = Rely on considerably)

a) Financial experts
b) Family/friends
c) Personal research
d) Popular trends in the news/media
e) Social media

People vary in the extent to which they are willing to take financial risks. Read each of the following options below and select which one best describes you:

a) Conservative: I am willing to accept the lowest return potential in exchange for the lowest potential fluctuation in the value of my investment even if it may not keep pace with inflation.
b) Moderately Conservative: I am willing to accept a relatively low return potential in exchange for relatively low fluctuation in the value of my investment.
c) Moderate: I am willing to accept a moderate return potential in exchange for some fluctuation in the value of my investment
d) Moderately Aggressive: I am seeking a relatively high return potential and am willing to accept a relatively high fluctuation and potentially substantial loss in the value of my investment.
e) Aggressive: I am seeking the highest return potential and am willing to accept the highest fluctuation and could lose most or all the value in my investment.

All participants were then instructed to click the arrow on the screen to learn their payout. Participants' payouts were randomly determined based on the option they chose earlier in the study. All participants were thanked, debriefed, and paid the amount displayed on their screen.

ONLINE APPENDIX C: Follow-up Study on Prolific

All participants completed a consent form and read the following instructions:

> Thanks for agreeing to complete this survey!
>
> On the page that follows, you will be presented with a scenario. Read the instructions carefully and respond accordingly. There are no right or wrong answers - we are simply interested in your personal preference and choice.
>
> When you are ready to begin, please click the arrow below.

*Participants were then randomized to one of six conditions in a 2 (**Asset:** Bond v. Cryptocurrency) x 3 (**Social Information:** Absent v. Peer Effect-General v. Peer Effect-Social Utility) between-subjects design. The instructions were identical for each condition with the appropriate asset type and social information appearing in the bracketed areas below:*

> You have the opportunity to invest in a [**asset**]. We are giving you $2 to invest, which includes the one dollar you received on Prolific for completing the task. You can either a) keep the $2 and not invest, or b) choose one of two [**assets**] that have the potential to earn different returns (see chart below).

	Potential Payoff	
	If [Asset] Goes Up...	If [Asset] Goes Down...
Buy [Asset] A	$2.50	$1.50
Buy [Asset] B	$3.00	$1.00

> [**In the Social Information Absent condition, participants read…**]
>
> Think about your preference and select the option below that best reflects your preference. You will actually receive money based on your choice. Once you complete the survey, you will find out your actual payoff.
>
> [**In the Peer Effect-General condition, participants read…**]

Most other participants bought [**Asset**] B. Think about your preference and select the option below that best reflects your preference. You will actually receive money based on your choice. Once you complete the survey, you will find out your actual payoff.

[**In the Peer Effect-Social Utility Condition, participants read…**]

Most other participants bought [**Asset**] B, but, as a reminder, this [asset] only increases in value half the time. Think about your preference and select the option below that best reflects your preference. You will actually receive money based on your choice. Once you complete the survey, you will find out your actual payoff.

___ Invest nothing and keep the $2

___ Purchase [Asset] A with a 50/50 chance of ending up with $2.50 or $1.50

___ Purchase [Asset] B with a 50/50 chance of ending up with $3.00 or $1.00

Following this choice, all participants were directed to complete questions from the Financial Literacy scale (Rieger 2020) presented in random order:

1. In general, buying a single share of stock is safer than buying an equity fund.
    a) True
    b) False

2. You have $100 in your savings account with 2% interest per year. How much will you have after 5 years if you let your money grow?
    a) Less than $110
    b) Exactly $110
    c) More than $110

3. Your savings account earns 1% interest per year, and inflation amounts to 2% per year. How much can you buy after one year with the money in your savings account?
    a) More than today
    b) The same as today
    c) Less than today

4. Which investment normally has the largest fluctuations?
    a) Savings account
    b) Bonds

c) Stocks

5. Which of the following statements best describes the main task of the stock market?
   a) The stock market predicts stock profits
   b) The stock market leads to an increase in stock prices
   c) The stock market brings together potential buyers and sellers
   d) None of the three statements

6. Which of the following statements is correct?
   a) Once you have invested in a mutual fund, you cannot withdraw the money in the first year
   b) Investment funds can invest in several assets (e.g., shares and bonds)
   c) Investment funds pay a guaranteed return, which depends on the past performance
   d) None of the three statements

Following the Financial Literacy scale, all participants were asked to completed demographic questions and questions pertaining to subjective financial literacy, financial education and experience, and risk perceptions including the following:

1. Are you:
   a. Male
   b. Female
   c. Non-binary
   d. Open response: _____
   e. Prefer not to share

2. How old are you?
   Age in Years (sliding scale from 18 to 100)

3. I am currently (check all that apply):
   a. A part-time student
   b. A full-time student
   c. Working part-time
   d. Working full-time
   e. Not working and not a student

4. Please indicate your highest completed educational degree:
   a. No degree
   b. High school / GED
   c. Associate's Degree / 2-year program
   d. Undergraduate Degree / 4-year program
   e. Graduate school / Master's program
   f. Ph.D.

5. For each of the options below, please rate the extent to which you find them more/less risky: (sliding scale: 0 = not at all risky, 100 = extremely risky)
    a. Investing in bonds
    b. Investing in the stock market
    c. Investing in cryptocurrency

Next, all participants completed a question pertaining to sources for financial information and their personal willingness to take financial risks:

People rely on different sources to make financial decisions. Below, please look at each of the following potential sources of information and indicate the extent to which you rely (or do not rely) on this information to make financial decisions:
(5-pt. scale: 1 = Do not rely on at all, 5 = Rely on considerably)

a) Financial experts
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e) Social media

People vary in the extent to which they are willing to take financial risks. Read each of the following options below and select which one best describes you:

a) Conservative: I am willing to accept the lowest return potential in exchange for the lowest potential fluctuation in the value of my investment even if it may not keep pace with inflation.
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c) Moderate: I am willing to accept a moderate return potential in exchange for some fluctuation in the value of my investment
d) Moderately Aggressive: I am seeking a relatively high return potential and am willing to accept a relatively high fluctuation and potentially substantial loss in the value of my investment.
e) Aggressive: I am seeking the highest return potential and am willing to accept the highest fluctuation and could lose most or all the value in my investment.

All participants were then instructed to click the arrow on the screen to learn their payout. Participants' payouts were randomly determined based on the option they chose earlier in the study. All participants were thanked, debriefed, and paid the amount displayed on their screen.