Trading as Gambling: Social Investing and Financial Risks on the r/WallStreetBets subreddit

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Abstract

Financial trading has become commonplace, involving the purchase and sale of securities such as stocks and bonds. While HCI research has investigated people's financial literacy and decision-making and how to design for it, little is known as to how people form financial conversations on social media. To answer this question, we used a grounded theory approach to analyzing financial conversations in the YOLO ('you only live once') posts on the r/WallStreetBets subreddit (WSB), one of today's largest financial online communities. We describe how WSB's discursive culture portrays its gambling-like, high-risk trading by likening trading to gambling, celebrating it, and normalizing financial risk-taking. We discuss the rise of social investing, including how individual investors' affective relationships encourage their outsized risk-taking, as well as reflect on its looming financial risks, especially to already marginalized groups. Lastly, we propose implications for design and policymaking.

CCS Concepts

• **Human-centered computing → Empirical studies in HCI**.

Keywords

Financial HCI, Investment, Trading, Community of Practice

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1 Introduction

Finance plays an important role in contemporary life, as we constantly make decisions regarding how to acquire, manage, and spend money, and for what purposes. Limited financial understanding or subpar financial practices could jeopardize one's financial well-being and lead to more severe consequences such as failing to plan for retirement (e.g., [54, 67]) and incurring problematic debt [84, 106]. Human-computer interaction (HCI) researchers acknowledge that finance is a critical yet messy domain that drives technology use [81], but it remains a nascent area in HCI [84]. So far, much of financial HCI has focused on how people manage and track personal financial information such as income and spending (e.g., [14, 78, 81]), with only a few studies [29, 30, 64] starting to pay attention to financial investment and risk. Financial investment is the practice of committing money in hope of obtaining more money in return at a future time. More recently, many people have picked up this practice since the COVID-19 pandemic, when a significant portion of the population worked from home, cut many categories of consumer spending, yet received stimulus packages from the government [28]. In the meantime, = commission-free trading apps such as Robinhood, which touted "democratize finance for all" [118], emerged and attracted millions of new individual investors to the world of financial investment [117, 137].

Financial investment is inherently complex and highly professionalized, involving careful calculations of a myriad of factors such as risk, benefit, and timeframe [108]. However, individual investors often fail to manage financial risks properly, and their investment decision-making is "pervaded by behavioral biases" [97]. To make it worse, people commonly turn to social media platforms such as TikTok for financial information and advice [32], and the wide presence of information and conversations on social media about risky financial products such as cryptocurrencies [57] can negatively impact individual investors' financial literacy and decision-making. For example, about one fourth of American individual investors were convinced by social media and online forums to buy high-risk stocks such as GameStop ($GME) [145], and many influenced by social media lost significantly in their financial investment [26]. In other words, financial conversations on social media may introduce significant financial risks to numerous individual investors, and HCI researchers are well positioned to investigate how their social media use can impact their financial decision-making, and to derive design interventions that can help mitigate financial risks.

In addition, existing financial systems are dominated by powerful actors such as institutional investors [56], while individual investors are already in a disadvantaged position. Such power asymmetry is systemic, and leads to even more financial risks to disadvantaged groups (e.g., people with lower education or from lower socioeconomic class) [44, 87]. Relatedly, Sultana et al. [133] criticized how betting tools and technologies developed based on Western notions of statistical/economic rationality fail to connect to community and religious values of rural bettors in Bangladesh, reflecting how the betting industry marginalizes certain groups' values and practices related to financial rewards and risks. In this regard, our interest also aligns with a growing body of literature in HCI that raises critical questions around how end users, particularly those in marginalized positions, interact with existing systems and infrastructures inscribed with hegemonic values, and probe opportunities

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for design to challenge such hegemony and empower marginalized groups.

Taken together, it is of crucial importance for the HCI scholarship, particularly financial HCI, to understand financial conversations on social media and their associated financial risks. Specifically, how do individual investors form financial conversations on social media?

To address this research question, we turned to financial conversations in the r/WallStreetBets subreddit (WSB), one of today's largest online financial communities. Specifically, we focused on a specific category of posts, marked by the YOLO ('you only live once') flair, which are meant for WSB investors to share and discuss their high-risk financial trades. Through a grounded theory (GT) analysis [40], we identified an overarching notion of trading as gambling to characterize financial trading practices discussed in the YOLO posts. Such notion is sustained and reinforced through three interrelated activities. First, WSB investors are conscious of their gambling-like style when making financial trades, seeking sensations while ignoring risks. Second, WSB investors collectively celebrate such gambling-like style through various ways of supporting each other. Third, when their high-risk trading incurs substantial financial losses, WSB investors identify with each other in order to normalize their losses. Through these mutually reinforcing activities, WSB investors are able to sustain and promote their 'trading as gambling' ethos. Based on these findings, we further discuss how the /r/WallStreetBets subreddit represents an emergent form of social investing, in which WSB investors' affective relationships with others and their gambling-like trading practices are mutually constitutive. We reflect upon how the discursive culture of WSB is conditioned in a broader financial context, wherein millennials (people born between 1981 and 1996), the primary demographic of WSB [120], experience financial hardships [92], and individual investors are at a marginalized position in contemporary financial markets dominated by institutional investors [56]. We further discuss implications for design and policymaking to better protect individual investors and promote their financial literacy.

By exploring the WSB community through a GT approach, we contribute to HCI in several ways:

First, we contribute a novel case study on how individual investors form financial conversations on social media, extending the financial HCI literature that has primarily focused on financial management [14, 81] and financial literacy [136]. Specifically, we provide rich empirical evidence highlighting the importance of enhancing individual investors' financial literacy and raising their awareness of financial risks embedded in financial conversations on social media.

Second, our analysis of how WSB investors treat trading as gambling contributes to existing HCI literature on gambling[133, 144]. While prior work set out by considering gambling as their research focus, and their participants clearly participated in actual gambling activities such as sports betting [133], our study did not set out this way. Instead, we focused on people's financial conversations on social media. However, it was through our inductive analysis that we found how WSB investors' financial conversations collectively framed their trading as gambling, and subsequently how their financial trading exhibited gambling-like traits. Thus, our study extends existing HCI research on gambling by describing how gambling-like practices could also happen in other domains such as financial trading.

Third, our GT approach provides an explanatory framework which not only identifies the presence of social investing supported by social media, but also characterizes and explains such social investing practices that happen on social media.

Fourth, we detail financial risks inherent in financial conversations on social media, a form of risk that remains understudied in HCI. Thus, we extend existing HCI literature on privacy and security by highlighting the relationship between individual investors' financial security and their social media use.

2 Background

r/Wallstreetbets, commonly referred to as WSB, is a subreddit established in January 2012. While it is not the sole subreddit focused on investing and trading—with others like r/stocks, r/personalfinance, r/investing, and r/StockMarket—it is notably the largest, having over 14 million members as of this writing. Most of WSB members/investors are millennials [120]. From its inception, WSB has distinguished itself from other investing and trading subreddits. The founder of WSB, Jaime Rogozinski, established WSB with the intention of creating "an outlet for people to share high-risk investing or trading ideas" where "people could discuss the way to use the market in using more leverage and getting more action in less time" [120]. Unlike most online forums that emphasize a conservative approach and see the market as a means for steady, long-term wealth accumulation, Rogozinski imagined a space where participants would explore ways to maximize market leverage and achieve quicker results [120]. Compared to these other investing and trading subreddits, WSB is also "an irreplicable space" on Reddit with its unique "linguistic style," "headline-catching antics," and "vast reservoir of overzealous devotees" [24]. WSB's tagline is "if 4chan found a Bloomberg terminal." (4chan is a forum known for its anonymity and ephemerality, often dominated by playful sharing of images and links [17].)

On WSB, members share their massive wins and losses, trade ideas and so on. For example, members often share screenshots of their investment portfolio outcomes, revealing the negative consequences of risky bets. These are often both sympathized with and celebrated by other members, who refer to them as "loss porn" [139]. In 2020, Rogozinski released a book titled "WallStreetBets: How Boomers Made the World's Biggest Casino for Millennials" [120]. The book highlights the WSB' casino-like culture, where trading is approached with a casino-like mindset and members use crude humor to encourage one another's gambling behaviors with the stock market.

WSB has attracted considerable media, institutional and regulatory scrutiny due to its pivotal role in the GameStop ($GME) short squeeze and the subsequent trading surges centered on meme stocks [79]. In January 2021, WSB members rapidly bought GameStop stocks to drive up the price. They then also orchestrated short squeezes on other stocks such as AMC. Both GameStop and AMC had been targets of short-selling by major hedge funds. As a result of WSB members' collective actions, these short sellers experienced

significant financial losses. WSB's role in these events has subsequently been analyzed as a place that fosters a form of unified consumer resistance and a counter-hegemonic flash social movement against the global financial market [35, 79].

3 Related Work

Our work speaks to several strands of literature in HCI, gambling, business, and finance. First, gambling, as a popular human activity, has been studied in HCI in various scenarios. Existing work on gambling, particularly its applications in HCI, provides basic frameworks for understanding human behavior and experience as people engage in gambling-like practices. Second, we review extant research on finance and trading to provide an overview of basic knowledge and vocabulary for the rest of the paper. Third, we review studies of how social media impacts financial trading, mostly from the fields of business and finance, which are empirically relevant but conceptually different from our research focus.

3.1 Gambling and HCI

Gambling, according to United States National Research Council [42], is: "...wagering money or other belongings on chance activities or events with random or uncertain outcomes." Most academic definitions of gambling include three fundamental components [141]: 1) placing a wager on an event using money or tangible assets; 2) the intent behind the wager being to increase the amount of money or assets at stake by correctly predicting the outcome of the event; 3) and the eventual result of the event remaining unpredictable. The first element, wagering (also known as betting), is summarized by Williams et al. [141] as staking money or something of material value on the outcome of an uncertain event against someone who holds a differing opinion about that outcome. The potential for winning (or the fear of losing) elicits heightened emotions and encourages individuals to participate. HCI researchers, in several studies, have explored and proposed responsible gambling tools (e.g., limit-setting tools, pop-up messages, and personalized feedback) as potential solutions for wagering and fostering responsible gambling [9, 10, 63]. Beyond cash wagering, it is common to wager virtual items [89]. Specifically, wagering on cosmetic items has played a significant role in the evolution of video game-related gambling [93].

The second element, reward, inherently involves risk and is closely tied to the notion of wagering. Players weigh the potential rewards of their bets against the associated risks [112]. The higher the odds against a particular outcome, the greater the potential reward [119]. This inherent risk, juxtaposed with the possibility of a reward, establishes a psychological dynamic where individuals are willing to chance a loss for the potential of a larger gain. Social studies within the HCI realm have shown how cultural dynamics [133] or online communities, like gambling-centric subreddits on Reddit [72, 80], play roles in influencing decision-making and emotional responses when taking significant risks for potentially large rewards. The randomness of rewards in non-gambling settings, such as loot boxes in video games, has garnered significant attention due to concerns tied to problematic microtransactions [114]. While some loot boxes are free, others require a fee to be opened. This combination of paid access and the chance-based distribution of rewards, or 'prizes,' has led to allegations that loot boxes constitute a form of gambling [93].

The third element, chance and uncertainty, at the heart is intertwined with the item of skill [38, 50]. This ranges from pure chance games like dice to skill-impact ones like poker and sports betting [62]. Dreef and his colleagues [50] developed a method using intricate equations to distinguish between gambling games based on the skill and luck required. This topic also opens up the concept of transparency and persuasion in design [144]. For example, HCI scholars have proposed design guidelines for trading applications, such as Robinhood and Public, to encourage healthy investing behaviors [30]. How much chance, skill, or control involved within a practice brings us deeper into the psychological aspect of the illusion of control [96]. Including but not limited to interface design impact [96], immersion [71], and streakiness [85].

These characteristics interact with each other in complex ways and are further influenced by psychological, social, and cultural factors that determine an individual's relationship with gambling. Psychology literature extensively delves into the motives behind gambling behaviors [61, 62]. One of the primary motivations identified is sensation-seeking, where individuals are driven by the thrill and excitement inherent to games of chance [20]. Gambling also provides a psychological escape as a coping mechanism for many, allowing a temporary detachment from life's overwhelming pressures [146]. Scholars also showed how the euphoria of winning not only offers financial rewards but also serves as a potent self-validation, boosting one's self-esteem [123]. Conversely, some individuals turn to gambling as a means to compensate for feelings of inadequacy or failures elsewhere in their lives [100]. Recreational gambling, when practiced responsibly, can offer several benefits. It can serve as a source of entertainment and a means of socializing, particularly among older individuals who might be motivated to gamble due to boredom or ample free time [47]. In relation to this, social scientists have examined the prevalence and socio-demographic correlates of both recreational gambling and problem gambling [140]. Further highlighting the social aspect of gambling, the vast online community "TwoPlusTwo" existed primarily for poker enthusiasts to exchange strategies and theories [128].

While some researchers and policymakers advocate for gambling and tend to focus on the positive reasons for gambling, applying recreational reasoning [41], the majority of studies highlight the negative side of gambling and its consequences. Gambling becomes a problem when gamblers lose control and cause harm to themselves, their families, friends, or society [52, 103]. The American Psychiatric Association [4] defines pathological gambling as "persistent and recurrent maladaptive gambling behavior that disrupts personal, family, and vocational pursuits." Based on DSM-5 handbook [4], some of its diagnostic criteria for gambling disorder include increasing bet amounts, feeling restless when attempting to quit, lying about gambling activities, and jeopardizing relationships or employment due to gambling. In an empirical study [104], the researchers revealed that gender plays a significant role in how gambling issues develop and progress, emphasizing the importance of considering gender-specific approaches when designing treatment and intervention strategies. Not only is gender an important factor, but age can also play a significant role. A systematic review of empirical studies [134] focusing on gambling behaviors among

older adults revealed that gambling can have unique impacts on this age group. This underscores the need for age-specific interventions and considerations when addressing gambling issues in geriatric populations. It has also been shown that the proportion of young people displaying problematic levels of gambling remains very stable from adolescence to adulthood [129]. Griffiths [60] argues that while an individual's biological predisposition, psychological constitution, and social environment contribute to the urge to gamble, technology and its advancements are also key contributory factors. Many HCI studies have contributed to reducing pathological gambling by proposing, studying, or testing computer-delivered interventions, also known as responsible gambling tools [10, 99]. They also raise awareness about grey patterns [29, 125] and the emergence of gamblification, especially in video games [94].

Notably, Sultana et al. [133] conducted a ten-month ethnographic study of the social and cultural facets of online betting practices among rural Bangladeshi people. They reported how the bettors engaged in three forms, including looking for partners to bet at tea-stalls, inviting participants over the phone or messenger, and betting at someone's home; how the bettors stressed collaborative and collective values when setting up rules and protocols, such as forming groups only within their trusted networks and maintaining harmony among the bettors; how the bettors used tools and technologies for information gathering and record keeping; how the bettors considered many factors in their betting decisions such as economic optimization, cultural values, viewing risk-taking as courage, fear of missing out, relationships with expert bettors, and special emotional and sentimental considerations; as well as how the bettors considered moral obligations, religious faiths, and local laws when using their economic profits. Taken together, Sultana et al. reflected critically upon how existing online betting technologies and other data-driven systems developed in Western contexts are often based on scientific and economic rationality and stress 'objective' reasoning, which do not match the values of rural bettors in Bangladesh who often use faith, hunch, and cultural norms in their betting decisions.

In sum, there is a nascent body of HCI literature on gambling practices. As HCI researchers start to carve out the research space around the intersection of gambling, people, and technology, much more research can be done to understand both gambling and gambling-like behaviors such as high-risk financial trading, and in various social and cultural contexts. Our study contributes to this line of research by describing how the WSB community view their financial trading as akin to gambling, and how the discursive culture within the online community presents a distinctive casino-like cultural context.

3.2 Finance and Trading

In contemporary society, individuals and institutions constantly make financial decisions as to how they obtain and spend money to achieve desired goals. The HCI community values the significance of financial management, and has explored various related topics such as the implications of digitalization of financial transactions [78, 86], design for third-party access to financial data to help those who experience financial hardship or other life challenges [14], technology-mediated financial inclusion [101], personal finances [90], family finances [138], and financial harm in intimate partner violence [16].

In this context, financial investment, an important facet of financial decision-making, is to commit money to achieve later benefits, such as putting money in a savings account to obtain interest, purchasing governmental bonds, investing in financial products such as stocks and cryptocurrencies, and purchasing real estate. Financial investment is a nascent field in HCI, with only a few design studies aimed at helping people better manage financial risks, develop healthy investing habit, and make informed decisions about long-term investment goals (e.g., [29, 30, 64]).

Financial investment always involves certain risks [108]. For example, banks that individuals save money with could default, and the value of financial products such as stocks could decline significantly over a short period of time. Thus, financial investment requires systematic and careful evaluations of various financial considerations such as risk-return tradeoff, time horizon of investment, liquidity, and volatility, and has become a complex and highly professionalized endeavor [59]. As such, today's financial markets are dominated by institutional investors such as investment banks, hedge funds, and mutual funds [56]. Financial markets are also open to individual investors. Individual investor, also known as retail investor, refers to "a non-professional investor who buys and sells securities or funds that contain a basket of securities such as mutual funds and exchange traded funds (ETFs)" [69]. This paper focuses on individual investors, rather than institutional investors.

In recent years, the Internet and financial services have greatly facilitated individual investors' access to financial markets. Financial technology (Fintech) apps such as Robinhood and Webull allow their users to open a brokerage account and invest with a few dollars and charge no commission fee [70]. (Notably, Robinhood has been heavily criticized for its deceptive and manipulative business tactics and interface design that lure young investors into irresponsible or compulsive investing [77, 116].) In addition, the pandemic has also contributed to the boom in the number of individual investors, as non-essential workers spent less money in other consumer spending categories such as purchasing and traveling, and the U.S. individual investors obtained a significant increase in cash in their hands due to the stimulus packages [28].

Individual investors' financial investments could be divided into two main categories: long-term holding and short-term trading. Long-term holding is a more conventional investment style, where an individual investor buys and holds a stock for an extended period of time, while short-term trading describes how people buy and sell more frequently, such as multiple times in a day [6]. (For example, the Internal Revenue Service (IRS) in the U.S. uses one year as a delimiter between short-term and long-term for tax purposes.) Specifically, some individual investors are active in trading financial instruments such as stocks, options, and speculative products such as cryptocurrencies [13, 107]. Individual investors tend to underperform the market [1], and underperform significantly if they trade frequently [13, 107]. In other words, the majority of individual investors are at a disadvantage when they trade frequently in financial markets.

[1]The market usually refers to the Standard & Poor's 500 Index, which is considered as " one of the best gauges of prominent American equities' performance, and by extension, that of the stock market overall" [82]

Extensive business and finance research suggests that frequent trading and gambling are closely related [6, 13]. Just like gambling, frequent trading involves a substantial amount of luck or chance and inconsistent returns [7, 8, 12]. What's more, certain financial products have lottery-like characteristics, such as high skewness, volatility, limited dividend payout, a lower share price, and low average returns [30,94,134], which are likened to lottery [48] or sports betting [43, 110]. These characteristics are particularly attractive to individual investors with a gambling propensity, who tend to overvalue low-probability, extreme returns in lottery-like stocks [15, 74].

Similar to how gambling could provide entertainment benefits, trading as a form of gambling could satisfy individual investors' sensation-seeking motive [95] and thus provide entertainment value for some individual investors [87]. For example, Gao and Lin' experimental study [55] demonstrated that Taiwanese individual investors treat trading as gambling to seek fun and excitement. Cox et al.'s survey of Dutch individual investors [44] found that 44.7% traded for fun and 13.4% traded for a small chance of becoming rich.

However, treating trading as gambling could also become problematic or compulsive for certain investors [44]. Arthur et al. found that high-risk stock traders are more likely to be problem gamblers [6]. Individual investors seek clinical treatment for an addiction to trading across the world [58, 59, 127]. Compulsive traders are more likely to invest in derivatives and leveraged financial products, which typically are highly skewed and provide levered payoffs with significantly high risks [44]. The sentiment of "Fear of Missing Out" (FOMO) has been identified as a significant risk factor in high-risk financial trading [46].

3.3 Social Media and Trading

Social media has created a new group of self-directed online traders and shaped their trading behaviors [19]. Research on social media and financial and trading (e.g., [18, 25, 27, 75, 111]) has predominantly explored the effects of social media on financial markets. One major strand of such research focused on modeling social media sentiment to predict financial markets (e.g., [65, 75]). Another main strand of such research has focused on the market implications of investment recommendations on social media, yielding mixed findings. Some research views the collective investor opinions on social media as a form of "wisdom of crowds," arguing that these opinions can predict future stock returns and earnings [31]. On the contrary, other studies, such as the one by Stephan and Nitzsch [130], advise caution. They contend that aggregated recommendations from social media offer no tangible investment value, and adhering to them could adversely impact investment performance. When narrowing the focus to WSB's investment recommendations, the results remain varied. Some findings, for example, suggest that the due diligence (DD) reports on WSB lead to positive returns, implying a level of expertise among WSB posters and users [25]. In another study, the buy and sell recommendations on WSB, as well as the platform's most popular stocks from January 2019 to April 2021, were analyzed to construct a WSB portfolio. The assessment revealed that this portfolio outperformed the S&P 500 [27]. In contrast, Chacon et al. [28] analyzed buy and sell submissions from WSB spanning its inception in 2012 to the first quarter of 2021 when the GameStop event occurred. After formulating a daily portfolio based on these suggestions and testing various portfolio strategies, they found no evidence supporting a profitable trading approach.

WSB, one of the most popular investing and trading focused subreddit, has attracted a lot of attention. Research has delved into the phenomenon of social contagion on WSB, where a set of initial investors attacked larger group of enthusiastic followers. The dynamic led to sentiments about future stock performance spreading among individuals [142]. WSB is found to be able to influence the stock market visibly. For instance, the popularity of a stock could impact the stock market liquidity [37]. In addition, many studies have focused on the GameStop saga. Much research has established the correlations between discussions on social media platforms (e.g., WSB, Twitter, StockTwits) and various market indicators during the saga, including the price surges of meme stocks, volatility, bid-ask spreads, and volumes (e.g., [3, 5, 91, 109, 135]). Others have investigated the impact of the GameStop saga on the overall market quality of broader stock markets (e.g., [1, 113]). Additionally, researchers have analyzed WSB as a place that where small investors together could form collective actions to counter the hegemony of the global financial market (e.g., [35, 79, 83, 122]) and how WSB users' perceptions of the GameStop saga differ from those of institutional investors [51].

Although business and finance researchers have paid attention to social media, they tend to focus on quantifying how social media impacts the general financial markets or individual investors' performance. However, little attention has been paid to the role that social media plays in people's financial decision-making. Thus, we aim to address this question from an HCI perspective.

4 Methods

We used a grounded theory (GT) approach to address the research question of how individual investors form financial conversations on social media. GT is a widely used qualitative research methodology in HCI (e.g., [21, 33]), and its several characteristics such as iterative data collection and analysis and end goal of theoretical construction [40] aligns with our goal to develop an explanatory framework regarding individual investors' financial practices on the r/WallStreetBets subreddit. Next, we will detail our data collection and analysis processes. (Note that in a GT approach, data collection and analysis are highly interactive and mutually informed. Thus, a linear fashion of separating them into two consecutive subsections (i.e., 4.1 and 4.2) is meant to enhance the presentation clarity but does not fully reflect this interactive nature.)

4.1 Data Collection

GT has several variants differentiated based on several key methodological characteristics such as when to read the literature, what constitutes the final theoretical result, and positioning within the positivism-constructivism spectrum [39]. Regardless of the variant that researchers lean on, it is recommended that researchers explain in detail their methodological considerations in a reflexive manner [39]. Thus, we will detail our considerations as we gradually lay out our GT steps. We started this project with a strong interest in

understanding financial risks and harm on social media, as well as inspirations from news reports (e.g., [26, 136]) on how individual investors have increased significantly in number but tend to lose a lot of money in financial markets. At this outset, we identified this as an important topic of great interest to HCI but had not conducted a systematic literature review on relevant research strands. This aligned with Corbin and Strauss's GT variant that discourages a focused literature review prior to data collection and analysis [40]. Also, since this topic had been underexplored in the HCI scholarship, we intended to first develop a descriptive account of the role of social media in individual investors' financial practices. This also aligns with Corbin and Strauss [40] in developing a single theoretical category consisting of multiple concepts.

We chose the r/WallStreetBets subreddit (WSB) due to its prominent status as the largest financial online community. Specifically, we focused on posts with the flair of YOLO (short for 'You Only Live Once'). WSB designates YOLO posts for WSB investors who share their high-risk trade, oftentimes using a screenshot of the trade information, with the specific requirement that "The minimum value at risk must be at least $10,000 in options, or $25,000 in equity" [2]. By the time of this study, other flairs on WSB include 'DD' (short for due diligence), 'Discussion,' 'Gain,' 'Loss,' 'Earnings Thread,' 'Daily Discussion,' and 'Mods.' YOLO posters and other investors engaged in financial conversations about that particular trade. YOLO is an established practice within the community of practice supported by the WSB subreddit. Our review of threads on the WSB subreddit suggested that YOLO posts speak directly to a gambling mindset and represent the most extreme form of gambling on WSB.

Our data collection took place in early August 2023, during which two researchers engaged in iterative data collection through Reddit's API and data analysis. Given that market conditions for financial trading, ranging from federal monetary and fiscal policy to international affairs, could vary significantly, we decided that it was suitable to choose a window of time where the stock market was in an uptrend, because individual investors tend to be more confident and trade more in a rising stock market [36, 73, 126]. Thus, we chose the time to be from the end of May 2023 to the end of July 2023, where the market (i.e., the S&P 500 index) climbed for nearly 10%. There were a total number of 173 YOLO posts during the time period (May 31, 2023 - July 31, 2023), The two researchers then chose YOLO posts randomized based on their date of post, number of comments, and number of upvotes to perform initial coding, the first step in GT [40], to develop basic codes that could describe how WSB investors perceived the YOLO trade. The unit of analysis for this step could be one single post or comment or a sequence of them that reflected a single idea. To achieve so in a systematic manner, the two researchers always first agreed upon a new set of YOLO posts to code; each would code them individually; and then, the two researchers would hold meetings to discuss their respective basic codes and resolve disagreements. Basic codes were then linked to each other or broken down through a combination of inductive and deductive thinking, a process known as axial coding [40], with the goal of forming higher level concepts and eventually a single theoretical category. Through each iteration, the researchers employed theoretical sampling [40], meaning that in new YOLO posts, they actively looked for new data that could either enrich or challenge the existing theoretical construction.

We continued this iterative process, until we reached "theoretical saturation" [23], meaning no new idea was found through the data collection process. Through the whole process, the two researchers routinely took memos to record new ideas or observations [40]. Our final dataset included 90 posts with 8150 comments (about 52% of the total YOLO posts during the time period of data collection). The 90 posts were created by 50 unique authors. The 8150 comments were from 3349 unique authors.

4.2 Data Analysis

While GT's data collection and data analysis are highly interwoven, here we detail a few key considerations in our data analysis process. Open coding is a step in which researchers interpret raw data and extract meanings [40]. A basic code results from open coding and is linked to a piece of raw data it describes. For example, we encountered several instances where several WSB investors conversed about how the trade was like gambling, then we considered this as a single piece of data and developed a single basic code for it. We continuously applied open coding to all the YOLO posts and their comments, resulting in a total of 261 basic codes. In the iterative process, new basic codes were continuously added in, while axial coding was applied to build links between basic codes, leading to a higher-level concept. For example, we initially had several basic codes, one describing how two WSB investors were betting on the same side and expecting the price of a stock to go up the next day, but also another one describing how two WSB investors were betting against each other with the total opposite expectations. We deemed that these two basic codes could be linked together as they reflected a broader theme: WSB investors enjoyed the practice of betting together, and whether they were on the same side mattered less to them.

Eventually, our GT analysis resulted in an articulation of how WSB investors narrate their high-risk trading as gambling. Specifically, this theoretical category includes three mutually informed concepts, including 1) how WSB investors explicitly liken their trading practices to gambling, 2) how WSB investors show support for others' high-risk, gambling-like trading practices, and 3) how WSB investors normalize financial losses from their trading. Next, we detail these concepts and how they constitute the trading as gambling practices that have been sustained and celebrated in the WSB community.

4.3 Methodological Considerations

Given our GT methodology detailed above, our consideration of representativeness can be summarized as follows. First, when initially selecting YOLO posts, we utilized available metrics such as posting date and number of comments to diversify our selection, a strategy to ensure that our selection was representative along these key quantitative dimensions. Second, the notion of representativeness, well pronounced in positivist science, does not map directly to qualitative research, which features small sample size and in-depth insights. The evaluation of qualitative research relies on different criteria. For GT analysis, it is about the soundness of

[2] https://www.reddit.com/r/wallstreetbets/wiki/linkflair/

the eventual theoretical system. Thus, in GT analysis, detailed reporting of procedures and criteria taken in the methodology, such as theoretical saturation [23], is a way to ensure its soundness and validity. Our constructivist position in using GT acknowledges researchers' subjectivities and experiences in shaping the data collection process. Thus, it is through detailed documentation and reflexive considerations that we can help future readers to contextualize and understand our findings.

4.4 Ethics Statement

The study was approved by the IRB office at our institution prior to the data collection process. Given that the r/WallStreetBets subreddit is a pseudonymous community, content can be linked to a particular username, not the real-world person behind the username. However, collecting and using their data for research purpose still requires careful consideration of its potential risks, benefits, and harm [53]. In this study, we believed that the research carries significant benefits in revealing the worrying impacts of social media on people's financial behavior. In addition, our study goal was not to reveal individual investors' specific wording practices, but to uncover broader trends in collective online behaviors. Therefore, we took several measures to significantly reduce the likelihood that quotations used in this study could be traced back to a particular username. First, we removed all usernames when reporting data. Second, we paraphrased all the quotations to reduce their searchability.

5 Findings

Through a GT analysis of YOLO posts on the r/WallStreetBets community (WSB), we developed a theoretical understanding of gambling-like trading practices, which are continuously reinforced through three interconnected activities, including likening trading to gambling, supporting gambling-like trading, and identifying with gambling-like trading.

5.1 5.1 Likening Trading to Gambling

While gambling often carries a negative connotation, WSB investors do not hesitate to explicitly admit that their trading behavior in financial markets coincides with gambling. They openly endorse their trading as gambling and discuss how they make decisions with a gambling mindset.

5.1.1 Endorsing a Gambling Mindset WSB investors view YOLO trades as gambling and explicitly acknowledges so. Oftentimes, they directly use the word 'gamble' or its related terms such as 'casino' to characterize their financial decision-making in the posted YOLO trades. For example, one WSB investor wrote in their YOLO post:

> I have tens of thousands of dollars in RIVN calls that will expire this September. I also like PTON a lot and have more than ten thousand in its calls that also expire this September... I am just sharing my trades because I love to gamble.

In the quote above, RIVN and PTON are the stock symbols for two different companies (Rivian and Peloton). These two stocks are highly volatile in price, and calls are financial derivatives based on the underlying stocks. A call (option) is much riskier than stocks because it is essentially a bet that its underlying stock's price will go up in a specific time period, and the investors can lose all the money if the stock fails to reach a specified price. Thus, the WSB investor above shared their high-risk trade and admitted that this trade was similar to gambling. Indeed, the posted YOLO trade matches all the three core elements of gambling (i.e., betting, risk-taking, and chance/uncertainty).

The explicit acknowledgement of gambling, in turn, legitimazes their risk-taking behavior. Here is a conversation excerpt:

> WI1 (short for WSB Investor 1): if you expect the stock to move significantly, you could use the straddle strategy to buy both a call option and a put option. You can profit no matter which direction the stock goes.
> W12: But I am not investing. I am just gambling. My stock only goes up.

In this example, a put option is the opposite of a call option, betting that the underlying stock's price will go down. WI1 proposed a trading strategy (i.e., straddle, meaning to buy both a put and a call) to minimize risk but still allows profit. However, such risk control strategy was quickly dismissed by WI2, because of WI2's inclination to gamble. Interestingly, WI2 also highlighted the sharp contrast between investing and gambling and identified with the latter. In this regard, what WI2 said actually contained a self-contradiction between gambling, which is chance taking, versus "stock only goes up," which suggests high certainty. These two seemingly contradicting ideas are compatible in WSB, because the phrase "stock only goes up" is frequently chanted by WSB investors to express a prediction of a stock's price movement, but WSB investors also are aware that such a prediction, however, is rarely substantiated and mostly based on wishful thinking. In other words, the phrase "stock only goes up" is more symbolic than a reflection of a rational statement of substance.

Relatedly to this gambling propensity, WSB investors also tend to openly acknowledge the high financial risks associated with their trades. For example, one wrote:

> Just sit back and watch me become rich or become homeless.

In the above quote, the WSB investor admitted that their trade would only have two extreme types of results. This echoes well with prior literature on individual investors' skewness preference, where they emphasize the potential high return but ignore its low probability [50]. Many YOLO posters admit how their trades actually put their long-term savings at stake. One said that "I have put all my twenty five thousand dollars in this position, and it's all my savings."

However, not all types of high-risk trades are welcomed. WSB investors make a clear distinction between what is or is not a proper gamble. A proper gamble requires that a trade has a possibility to win. Thus, WSB investors would also question trades that have a very low probability to win.

> You have lost more than one hundred thousand. What kind of mindset do you have to buy weekly calls that are so far out of the money? Your chance of winning is very low.

In this quote, a 'far out of the money' weekly call refers to the YOLO poster's betting strategy of expecting the price of a stock to go up significantly in a week, which usually has a rather low probability. Thus, the WSB investor making the above comment found this not to be a proper gamble, as gambling still entails a certain chance to win. Similarly, another WSB investor also exercised the criterion to determine if a trade constituted a gamble, writing that "This isn't a gamble. The person has almost no chance of getting his money back."

5.1.2 Rejecting Rational Thinking during Gambling Prior work discussing the convergence of gambling and financial trading has pointed to sensation-seeking as one common motive [50], highlighting how certain individual investors seek excitement from high-risk trading, and subsequently deviate from making rational decisions. Such motive is also reflected in conversations among WSB investors. For example, two WSB investors discussed the mental state of trading:

> WI1: Perhaps you can use marijuana before making any trading decisions.
> WI2: Yes. It is quite often that I am trading when I am high. This makes my trading more fun.

In the conversation above, both WSB investors stressed the emotional state of being 'high' through marijuana use. Trading and marijuana use together enhanced the sensations such as pleasure and excitement the two WSB investors sought from their trading practices. Such depiction of mental state decidedly diverges from the conventional emphasis on rationality and calculation in financial investment decision-making.

While WSB investors liken their financial trading to gambling, which emphasizes sensation-seeking and risk-taking, they also dismiss other approaches to financial investment and trading, which typically stresses careful and rational planning, calculation, and management. For example, WSB investors can cite their feelings or guesses as the reason for entering a trade. For example, here is how one WSB investor explained why a stock's price would go up:

> WI1: Why are you so sure that PENN [PENN Entertainment Inc.] will keep going up until the end of the week?
> WI2: Because I will be sad if it doesn't.

As evident in the example above, WI2 used their emotion, 'sad,' to justify their prediction of stock price and trading decision. Similarly, such emotions could be spread to other WSB investors and influence their financial decisions. For example, one wrote:

> WI1: So, I know people who have made a lot of money in Meta. They tell me that PayPal gives the same vibes.
> WI2: Thanks!

In the first half of 2023, the stock price of Meta went up by nearly 150%, while that of PayPal largely fluctuated. The quote above suggested that the stock price of PayPal could be like Meta, based on "vibes," a term that describes an emotional state. Such reasoning, despite being obviously fallible, was well received and acknowledged by other WSB investors such as WI2.

Sometimes, WSB investors openly admit to having a gambling addiction, which affects their ability to make rational decisions in financial trading. We observed such reasoning within several conversations, like the one below:

> WI1: I'm excited for the coming Monday. I have several calls expiring on that day.
> WI2: Don't be me. I was up a hundred thousand and then lost all of them overnight… So far, I have lost nearly 40k from the beginning. It is such an addiction. I cannot stop it.

In the conversation above, WI2 lost significantly, because they did not exit their position in a financial product when they had profits, in the hope of obtaining more gains. To WI2, it was an addiction that they did not have control over. They let their impulses, instead of rational thinking, make decisions about high-risk financial trading. As the gambling literature states, gambling could be recreational, but become a problem when the gambler loses control and incurs financial harm [52]. Such experience is not uncommon among WSB investors. Another two conversed about a similar experience:

> WI1: Your post history is wild, full of big gains.
> WI2: Yeah, but I ended up losing lots of times. Oftentimes I planned to close a position but could not.

WSB investors are also aware of and discuss the mental impacts of having a gambling addiction in financial trading. Here is an example:

> WI1: How do people here spend tens of thousands gambling like this? I can become very frustrated when losing just a few hundred.
> WI2: This is a gambling addiction. It can make people feel numb about financial losses.

Here, WI1 and WI2 discussed the emotional reactions to financial losses. WI1 drew from their own experience of financial loss to question how others in this community manage to cope with financial losses, given that gambling is highly risky. WI2 acknowledged how having a gambling addiction could make a WSB investor insensitive to financial losses, and tolerant to financial risks.

5.2 Collective Celebration of Gambling

With the acceptance of trading as gambling, WSB investors tend to show support for others who make a YOLO post and share their gamble. This social support sometimes manifests in forms of cheering expressions, and other times, materializes in the practices of gambling together.

5.2.1 Cheering Spectatorship When a WSB investor shares their high-risk trade, they receive overwhelming support from other WSB investors, almost like cheering spectators in a casino. The forms of cheering could range from as simple as wishing the YOLO poster good luck to hyping. For example, below are three example responses to YOLO posts:

> I didn't play this. I'm just spectating. Good luck to you!
> I'm more excited to see an update from this than to watch a presidential election!
> I hope this works for you! I understand the rationale, but you have more courage than me! Good luck!

In these responses, WSB investors praised the YOLO poster for their risk-taking. Although they did not participate in the gamble, they were still excited about the posted trade.

The cheering spectator in the WSB community also likes to provide their analysis of the posted gamble in a YOLO post. Sometimes, the analysis comes with a degree of cynicism as WSB investors feel they have clearly spotted market manipulations. For example:

> WI1: I'm shorting C3.AI.
> WI2: C3 is total garbage with major accounting frauds, but the market doesn't make sense. So, your chance is 50/50.
> WI3: This is a shady company attracting lots of con artists and snake oil salesmen. In short, it's AI hype.

C3.AI is a U.S. company. "Short" means that the trader bets that the stock price will go down. In the conversation above, three WSB investors agreed that fraudulent information was prevalent about C3.AI, and that the stock price of C3.AI would move downwards.

WSB investors also do not hesitate to congratulate each other on successful gambles. The exact words of congratulation, however, often involve profane language. Here is one example:

> WI1: I YOLOed four days ago and made a lot of money!
> WI2: Congrats and f*** you!

When WI1 posted a successful gamble, WI2 employed a phrase, "congrats and f*** you," to congratulate their fellow WSB investor. The phrase combines both praise and offense and is a commonly used one in the WSB community.

5.2.2 Gambling together While being a cheering spectator resonates with the gambling atmosphere of the WSB community, other WSB investors can be intrigued by posted gambles and announce their participation as well. As previously stated, the trade/gamble that a WSB investor has posted usually indicates their prediction of the direction that a stock's price will move. A gamble naturally attracts people to participate. Such is the case in the WSB community:

> WI1: Is it too late to jump in now?
> WI2: Not at all, my brother. The water is warm. Quick!
> WI1: I just bought it.
> WI2: This is the way!
> WI1: This is my biggest bet! This better prints [generates lots of money]!

In the conversation above, WI1 was enticed by WI2 into the gamble, spending a large sum of money on one single financial trade. Interestingly, WI1 and WI2 used the metaphor of 'water' to reference the gamble that they engaged in. Water carries the meanings of uncertainty, unpredictability, and risk in this context, and this does not prevent WI2 from enjoying the gamble and inviting others to join. "This is the way," another common WSB chant, serves to affirm the gambling attitude. There is an eerie mismatch between the light-hearted, cheerful conversation and the financial stakes that are involved.

Gambling together also entails a certain degree of mental toughness to cope with the volatility inherent in financial markets. WSB investors stress the mentality that can handle volatility well:

> WI1: I tried to the same YOLO, but chickened out when the stock price started to drop.
> WI2: My dude, this is not the way. Come back in.
> WI3: You were scared last week? I held this stock from top to bottom, and back to top again. I didn't even blink my eyes seeing huge losses on my account. Get some balls.

Here, WI1 admitted the lack of courage in holding a stock when the price became highly volatile. Then, WI2 and WI3 emphasized the importance of having the courage to hold, and invited WI1 to keep gambling together.

Other times, WSB investors who gamble together would engage in a hopeful discussion, expecting their prediction to be right:

> WI1: It has got out of the bottom area. Maybe we will win big tomorrow when the market opens. I'm already happy with the current price.
> WI2: I own it as well. I believe it will go higher! … We will see tomorrow!
> WI3: I just bought a call last minute. The market will pump!

"Pump" is a derogatory term referring to how misinformation or fraudulent information is deployed to manipulate the price of a financial produce to move higher. The WSB community has long normalized this term in a nihilistic way. The euphoria in the three WSB investors' conversation is self-evident. The WSB investors all expressed high hopes that a particular stock, which they all bet on, would move in a desired direction in the next day. According to WI3's words, such sentiment clearly influenced their financial decision to participate in the gamble as well.

WSB investors explicitly state that they come to this subreddit to find like-minded investors:

> WI1: We are in this together! I also have calls expiring on the same day.
> WI2: This is the reason I came to this sub[reddit].
> WI1: This is how we make money.

However, WSB investors are well aware of the financial risks associated with such collective behavior. This is when they often reference the notion of 'casino.' For example, three WSB investors conversed:

> WI1: This is a good bet! The company will go up!
> WI2: I totally agree, but this is a casino.
> WI3: It is like a dumpster fire, but we are just dancing around it.

Here, when WI1 again chanted a variant of "the stock will go up," WI2 and WI3 made a response in a more realistic tone. WI2 and WI3 recognized the riskiness associated with the said company, and they likened the collective behaviors of investing in such company as playing in a casino. The metaphor of dancing around a dumpster fire pictures a concerning scenario in which a group of gamblers seek sensations, oblivious to financial risks associated with such behavior. In relation to this, another WSB investor commented that "we all drowning and laughing together" to capture the euphoric and risky atmosphere.

5.3 Normalization of Financial Losses

When WSB investors' high-risk trades lead to financial losses, almost inevitably, the WSB subreddit serves as a place where they

find community and identify with each other. This, in turn, allows WSB investors to normalize their financial losses.

5.3.1 Identifying with Financial Losses WSB investors are willing to admit that they have made a poor decision in their gambles and associate it with the typical trading outcome of the WSB community. For example:

> WI1: It is always to buy high and sell low.
> WI2: This is the way.

"Buy high, sell low" is frequently cited in the WSB community, and depicts how a WSB investor makes a wrong prediction of stock price movement and ends up losing a significant amount of money. In the conversation above, WI1 utilized this phrase to characterize a loss as representative of the community. WI2 employed another common phrase 'this is the way' to echo WI1's sentiment.

Not every WSB investor can manage the frustration associated with significant financial losses. In cases like this, WSB investors also share their stories of financial losses to support each other. Here is an example:

> WI1: The stock price dropped so much!
> WI2: Yea, I'm screwed [I lost a lot].
> WI1: If this makes you feel better, I lost more than 10k.

Other times, WSB investors appreciate others' loss sharing. One wrote:

> How are you able to lose so much money? This makes feel better about my $1000 loss.

In this regard, the practice of loss sharing and commenting in the WSB community also provides emotional support to each other, making it easier for WSB investors to digest their losses.

As financial losses following a gamble become a normalcy, WSB investors also make predictions about others' future financial losses in a joking manner. It is common for WSB investors to reply to a YOLO post with predictions of whether the poster would be rational or lose it all:

> WI1: The poster can sell half to cover their cost and let the rest run.
> WI2: He can. But he won't. He will lose it all.

Financial losses are such a commonality in the WSB community, that WSB investors would joke about the rare wins. For example:

> WI1: The poster YOLOed nearly ten thousand when AAPL is already at its all time high… He doesn't even consider taking profits. This is so WSB.
> WI2: We can be smart once in a while.

Here, when WI1 praised how the YOLO poster's gamble made profits, WI2 followed in a self-depreciating manner, suggesting that WSB investors are usually associated with making poor financial decisions, so it was a rarity that they could be 'smart' and make a profit.

And WSB investors reason why one would make such a decision. An example is:

> WI1: I recall in the past, people still got some ideas about how to trade options. What happened to this sub?
> WI2: It's better not to make a well thought out plan. It is easier to accept the losses if you don't think [when you make a trade]. If you think and calculate, then you will be frustrated and forced to reflect on what was supposed to work.

When WI1 questioned the reasoning for trading, WI2 responded with a fallible logic that assumes that rational thinking should lead to zero-risk. This is a reductive, deterministic view of rational thinking in financial markets that disregard probabilities. Thus, WI2 developed a distinctive way to normalize their financial losses.

5.3.2 Identifying with a Financially Struggling Identity WSB investors' financial conversations follow a shared narrative that significant financial losses are normal and serve as both cause and effect for belonging to a financially struggling identity. WSB investors frequently make several references to this identity. For example, they often jokingly picture how large financial losses have caused their family to fall apart. Here is one conversation:

> WI1: I was forced out of the position last week and only made a few thousand. I'm going back this week.
> WI2: Poor man. Have you told your wife about this?
> WI1: She left me a long time ago.

The WSB community is a male-dominated, masculine online space where WSB investors assumed each other to be male. The gendered story above, co-constructed by WI1 and WI2, depicts how a typical WSB investor would incur large losses in financial markets and eventually cause his wife to leave him. Besides referencing a failing family, WSB investors also reference other financial aspects of their life that suggest financial struggles, such as working in low-paid, unstable jobs. Here is an example:

> WI1: I lost one third today.
> WI2: You can find the nearest soup kitchen when you can still use your phone.
> WI1: This is my work phone.
> WI2: Did you mean the pay phone behind Wendy's?

In this conversation, when WI1 posted their loss, WI2 immediately mentioned soup kitchen, which provides food to homeless or poor people, and Wendy's, a major fast-food chain in the U.S, suggesting that WI2 must be financially struggling. In another example, a WSB investor directly replied to another loss post, writing that "I see a bright Wendy's career for you!" or that "I'm saving a spot at the dumpster behind Wendy's for you."

While WSB investors narrate their financial losses, they also tend to link financial gains to institutional investors. In their mindset, financial markets are a zero-sum game, and individual investors and institutional investors are simply betting on opposite sides. Thus, WSB investors' financial losses mean institutional investors' gains. In this context, one WSB investor responded to a trade loss that "Hedge fund managers thank you for paying for their weekends at the beach!"

6 Discussion

Our findings depicted how WSB investors treated their high-risk trading in financial markets as gambling. Their financial conversations reflected their acceptance, endorsement, and reinforcement

of the 'trading as gambling' ethos. WSB investors' playful depictions of their trading/gambling practices create a sharp contrast to the substantive financial stakes involved in their actions. Our findings resonate with Sultana et al.'s work [133] in identifying similar patterns of reasoning such as moving away from rationality in decision-making, collectively celebrating gambling-like behaviors, and alternative ways of viewing financial loss. However, differing from prior work [133] that investigated the actual gambling practices in the Global South context, what our work depicted is how WSB investors likened their high-risk financial trading to gambling, and how their trading practices were intertwined with the distinctive discursive culture in a financial online community and conditioned in a broader, complex financial context. Thus, such a unique study context enables us to reflect on the distinctive characteristics of financial conversations on social media, and reveal financial risks associated with social media and the urgent needs to understand and enhance individual investors' financial literacy and healthy investing.

6.1 Social Investing: When Financial Investment Meets Social Media

The WSB community provides a unique context for understanding social investing, referring to how social computing technologies such as social media enable individual investors to participate in financial investment in social contexts. Social investing grows out of the convergence of two distinct, sometimes contradicting, cultures: One of financial investment that is hundreds of years old [102], dominated by powerful actors, and rooted in rationality, calculation, and fierce market competition, and the other of social media that is much younger, democratic, and participatory. Pertaining to these characteristics, our findings characterized a somewhat bizarre phenomenon where individual investors practice their financial trading as a form of gambling and openly accept and promote such practice. However, beneath the bizarreness is a vibrant online subculture that gets to develop its unique aesthetics and values in "an unconventional third place" [24].

The transformation of social investing on WSB into a gambling-like activity is constituted and narrated through a particular language practice. Prior work has depicted the WSB community' unique tribal, self-depreciating language style [56, 68], such as calling themselves and each other as "degenerates" or "apes" (see [24, 28, 68]). Relatedly, our study articulated how the WSB investors' language practice plays an indispensable role in defining, endorsing, and reinforcing the gambling-like trading practice. By describing their financial and emotional experiences, attitudes, and actions, WSB investors delineate the boundary between what is and is not a gamble worth celebration. Sultana et al. [133] observed how rural Bangladeshi bettors set up and follow local rules and protocols for smooth betting via strategies such as group formation and supervision of experts, and how disputes are typically resolved through a hierarchical intervention. In our study, rules for what constitutes a YOLO trade are prescribed by WSB's official requirements and the boundary maintenance work is performed by WSB community members who most likely do not know each other offline. Thus, in the WSB community, rule-making can be seen as in a top-down fashion, but rule-enforcement is usually done in a collective fashion without the involvement of experts.

A significant part of the language practices of WSB investors revolve around endorsing large financial losses. When WSB investors are ambivalent or hesitant as they ponder their participation or absorb their financial losses, the WSB community has its well-developed language and vocabulary for the purpose of persuading them back into practice. Sultana et al. found how social and religious norms would contribute to rural bettors' financial loss [133]. Our study found similar patterns where the communal norms contribute to WSB investors' financial loss. However, different from how the rural bettors not only bet for monetary benefits and view financial losses in complex ways [133], in WSB investors' high-risk financial trading practices, financial losses are usually framed as an inevitable outcome and constitute their identity as a WSB investor. Thus, public announcement of personal financial losses becomes worth celebrating and further reinforces their WSB identity.

WSB investors' social investing practice has an affective underpinning. From an affective economy lens [2], people's emotions and affective experiences are intertwined with economic processes. For example, strong emotions may drive fans into purchase and consumption around people they follow. In the WSB community, affections bond WSB investors together. For example, the widely known GameStop short squeeze event was partly driven by WSB investors' affections for GameStop, which holds an important place in many's childhood memories [79]. Our findings also indicate how frequently WSB investors collectively produced, expressed, and affirmed strong emotions (e.g., "love to gamble" and "I will be sad") and affective relationships with fellow WSB investors (e.g., "my brother" and "we are in this together"). Thus, the social investing community on WSB is simultaneously an emotional community, what Rosenwein considers as a community marked, demarcated, and cohered by a system of emotions [121]. The emotional community of WSB works to bond WSB investors together and partly contributes to their outsized risk-taking in financial trading.

As social investing deviates from the conventional understanding of financial investment [59, 108], it adds nuances to our existing understanding of money. Reflecting on the social context of monies, Zelizer [148] coined the term 'special monies' to emphasize how monies are not merely the 'ultimate objectifier' of every aspect of life and society (e.g., accumulation of wealth and tracking of job performance), but are shaped by culture and social structure and carry other meanings such as values and sentiments. Sultana et al. [133] reported how the rural bettors' view of money moved away from the economic rational perspective, and even losing money could be a gain to "improve inter-personal relationship within the society… seem beneficial to their social wellbeing from a cultural standpoint." This is also the case for the WSB community. Clearly, WSB investors' languages depict an emphasis on the affective value of their money, moving beyond economic rationality. For WSB investors, a large sum of money, even if it represents a substantive portion of their long-term savings, becomes disposable through just one single gamble. In the meantime, money has acquired a communal meaning. Having money is not something to be proud of. But the social sharing of losing or gaining money in an acceptable way is. By using their own money in a proper gamble, WSB investors

gain admiration and applause from the community. However, different from how rural Bangladeshi bettors based their rationality on culturally rooted, communal values and good and social wellbeing [133], what the WSB community's view of money has little to do with communal good or wellbeing, but points to a strong sense of play in their collective gambling-like trading practices.

As money shifts from the serious purpose of calculating loss and gain, cost and benefit, it becomes an instrument of play in the WSB community. Play is a fundamental activity that constitutes the human life [76]. According to play theorist Johan Huizinga [76], play is enacted as if there is a 'magic circle.' And once players enter the magic circle, the boundary of the playfield, they deprioritize what happens outside the playfield, and focus on following the rules of play within the magic circle. In the WSB community, what WSB investors do can be seen as a form of play. They play with their money, and their rules of play follow gambling closely. There are explicit rules set by the WSB community, such as the 'minimum value at risk." There are also implicit rules and etiquette commonly followed by WSB investors, as our findings found. For example, WSB investors still expect a proper gamble, where there is a certain chance that the gambler can win. When WSB investors explain their trading rationales, they must be written in a playful and nihilistic style, instead of serious, meticulous financial analysis typically produced by institutional investors. Regarding this, prior work also found that WSB investors have created and maintained a hybrid language combining both traditional financial expertise and entertaining materials [56]. WSB investors also hold and reinforce a shared identity to normalize their financial losses.

6.2 Social Media and Two Sources of Financial Risks

A curious and critical reader might question whether we really know the trades posted by WSB investors are true, and, to what extent, we can view this community's language and deeds seriously. This type of question and the like are reasonable, and the answer to them is an epistemological one and hinges on what we can know from people's language. There is more importance that ought to be attached to language. Philosopher John Langshaw Austin proposed how words can be seen as deeds [11]. Researchers from HCI and related fields such as Winograd [143] and Suchman [132] also suggest that language functions as tools for people to take actions in the real world. Aligning with this perspective, we suggest that the very fact that the WSB community has attracted millions of subscribers and represent tremendous effort into developing a sophisticated language system, such as what we found about the coherent language practices to legitimate trading as gambling, may have a material effect in the real world. WSB investors' language practices may successfully persuade young or new individual investors into adopting or normalizing such high-risk trading behavior. In this way, financial conversations on social media can incur financial risks in the real world.

Particularly, our study revealed two distinct sources of risk associated with these financial conversations on social media. First, financial risks are inherent in financial investments [108], and more so in high-risk financial products such as cryptocurrencies and financial derivatives such as options. This type of financial risk is already well known and discussed in the literature. When WSB investors exercised the 'trading as gambling' mindset, their words demonstrated their self-awareness of gambling in full. While gambling could be for recreational purposes, it becomes problematic when it causes harm [52]. And it is reasonable to assume that losing a significant portion of one's long-term savings is severe enough to constitute financial harm.

However, as social media can influence individual investors' trading behavior [19], WSB investors' financial conversations contain a second source of risk—the risk that individual investors are influenced to disregard, downplay, or misunderstand financial risks, the first source of risk. Our findings presented plenty of examples where WSB investors willfully engaged in risk-taking behaviors and their reasonings tended to lack a proper risk assessment. This is even more so in the collective gambling practice. As such, the second source of risk exists to compound the first source of risk, only to render individual investors who converse on social media more vulnerable.

Prior HCI research has reflected on how interface design patterns of popular trading apps such as Robinhood (e.g., highlighting past performance instead of potential and encouraging frequent trading) can encourage risk-taking and problem gambling [29]. Our research adds to this line of work by highlighting how social media platforms also play an instrumental role in introducing two sources of financial risks to individual investors. What is more concerning is how such financial risks may disproportionately impact already disadvantaged groups. Prior literature from business and finance has shown that high-risk financial products are more popular during economic downturns and disproportionately impact people from lower socio-economic backgrounds [87]. People who trade frequently and compulsively are more likely to be lower in education, income, and wealth [44]. In addition, young individual investors are more vulnerable due to a higher likelihood of seeking sensation, insufficient diversification, and excessive trading [95]. Given that most WSB investors are millennials [120], it is not coincidental that the average financial conditions this demographic has been experiencing are characterized by financial crises, rising house prices and college costs, and lagging wealth creation [22, 88, 92], has a role to play in this WSB investors' risk-taking behavior and nihilistic approach to gambling. Prior scholarship has associated financial struggles with social isolation [105] and distrust in institutions [147], which may align with nihilistic tendencies. This ties well to our own findings about WSB investors' self-reported financial decision-making and identity performance. In our study, WSB investors' nihilistic approach to gambling-like financial decision-making manifests in the many ways they use self-depreciating languages to deny their self-worth, celebrate their and others' financially struggling identity, be it having a failing family, or working at a low-paid job, as well as challenge societally accepted views of financial investing and money. If nihilism stresses the idea of meaninglessness [98], what makes the WSB community so interesting is how financially struggling, nihilistic individuals finding meaning in this very online community, to form affective relationships with each other, and to engage in a shared practice, regardless of its associated financial risks. In this regard, the peculiar discursive culture on WSB both reflects and shapes WSB investors' economic conditions and financial meaning-making.

Reddit is a place where people from diverse cultural contexts gather (e.g., [45, 49, 131]), and the WSB community, with over 14 million community members, naturally entails a cross-cultural aspect. As such, the two sources of financial risks we discussed above also have profound cross-cultural implications. Chiefly, the discursive culture within the WSB community is decidedly US-centric, and reflects American masculinity [66]. This is evident in how WSB investors focus primarily on American companies such as Rivian and Peloton, frequently refer to aspects of American daily life such as American presidential election and Wendy's, and masculine narratives such as wife leaving her husband for financial reasons. Postcolonial computing researchers have observed how technologies born in the Western contexts may not reflect values in cultural contexts such as Bangladesh [133] and Iraqi [124]. In a similar vein, the US-centric discursive culture hosted in the WSB community may not reflect values in non-Western cultural contexts. As such, a Reddit user from a non-Western context may not fully understand the language and its nuanced meanings from the WSB community and make misinformed financial decisions. As such, non-Western Reddit users are disproportionately susceptible to the financial risks associated with the WSB community.

6.3 Implications for Promoting Financial Literacy and Healthy Investing

Joining the existing financial HCI literature that investigates how HCI can support financial management [81, 138] and financial literacy [149], our study adds another cause that is to mitigate financial risks introduced by financial conversations on social media. Corresponding to the two sources of risk, financial literacy entails not only knowledge and skills about financial systems, but also a specific application of social media literacy [34] that concerns how an individual investor constantly assesses their financial state, in relation to the particular type of social media and the real world, as well as how they analyze, evaluate, and contribute to financial conversations and information on social media. To promote this kind of literacy to navigate the messy space of financial conversations on social media, there is a lot that HCI researchers can do. They can design training programs and boot camps that help individual investors to develop awareness of inherent risks in these online financial conversations. These efforts can be smoothly integrated into existing financial education [149].

As high-risk financial products grow in popularity, Philander [115] suggested that financial regulators should also consider standards that can promote financial literacy and understanding of financial risks associated with gambling-like trading behavior. Social media platforms hosting financial conversations centered on high-risk investment should pay more attention to managing potential financial harm to their users. Corresponding platform policies can be developed to explicitly state the risks and dangers associated with certain content.

There are also opportunities for investing platforms to promote healthy investing. For example, Chaudhry and Kulkarni [30] explored how a game approach could promote long-term planning and careful financial thinking. Our study identified how some WSB investors admitted how they risked a large percentage of their total portfolio or took repeated, high-risk actions. These behavioral patterns can be used to identify problematic trading individuals and engage suitable interventions. For example, Pena et al. [14] explored design that can support the co-management of financial risks through enabling financial third party access. Similarly, investing platforms can consider methods of co-management for individuals who display problematic trading patterns.

7 Limitations

The study was focused on a short period of time (from the end of May 2023 to the end of July 2023) and a particular type of posts (i.e., YOLO posts). In addition, we acknowledge that there are numerous factors (i.e., economy, politics, and international affairs) impacting a market trend. Thus, our findings may not be generalizable to the whole WSB community, or individual investors who gather on other online platforms. Much work can be done in the future to validate and cross-compare with our findings by investigating a larger corpus of data via quantitative or computational methods, or utilizing empirical methods such as interviews and survey to solicit experiences from individual investors who rely on online platforms for financial information.

8 Conclusion

The financial investment landscape has become increasingly complex post the COVID-19 pandemic, especially as online platforms have started to play an important role in supporting individual investors to exchange investment ideas and circulate financial information. The initial research question of how individual investors form financial conversations on social media served as a point of departure, but our grounded theory analysis gradually revealed a peculiar picture of how WSB investors treated financial trading as a form of gambling via three interconnected discursive practices, including likening trading to gambling, collectively celebrating gambling-like financial decisions, and normalizing large financial losses. Our study revealed how social media brings unique financial risks to individual investors as they connect with each other, but also recognized how such phenomenon is conditioned in a unique socioeconomic backdrop, and how technology can exacerbate financial vulnerabilities. Moving forward, we see an urgent need for HCI researchers to pay attention to the financial dimension of technology-based risk and safety and engage in more conversations about how design can play a productive role in bolstering individuals' financial decision-making.

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