

**Application for Emerging Scholars 2022 Summer Research, Scholarship, & Creative Program**

**Self-Expression in the Stock Market:  
An Analysis of Wall Street Bets (“WSB”) Posts on Reddit, and  
Implications for Individual Investors**

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Class of 2024

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**Proposed Weeks: 10 Weeks**

## Statement of Interest, Emerging Scholars Summer 2022 Program

### Self-Expression in the Stock Market: An Analysis of Wall Street Bets (“WSB”) Posts on Reddit, and Implications for Individual Investors

In recent years, millions of small, individual investors have flooded the stock market, opening scores of brokerage accounts and trading stocks with increased frequency. The pandemic accentuated this investing trend, as a rising number of Americans suddenly began working from home and also receiving stimulus checks – two developments that afforded many the time and money to start investing.<sup>1</sup> In their forays into equity investing, what have been their emotional and financial experiences, and what can they and others—including young investors like myself—learn from both their mistakes and their successes?

Certainly, there have been other periods in financial history (like the 1920s) that witnessed a sudden spurt in individual, “retail” investing. Yet this current period offers a unique window into their mindset due to small investors’ widespread usage of social media platforms. In particular, many have flocked to Reddit and the forum Wall Street Bets (“WSB”) to express in real time their emotions about their stock’s performance, detail and share their rationale for their buying and selling decisions, and weigh in on the prospects of their stock. In some notable cases, small investors have tapped this platform to inspire large moves in certain equities. As the Game Stop saga (highlighted by Ben Mezrich in his bestselling book<sup>2</sup>) reveals, it can be vital and valuable to understand how individual investors are using these platforms to express themselves, and in the process, inspire other small investors to think and trade in similar ways. Not surprisingly, research studies have begun to mine social media data to try to predict future individual stock returns.<sup>3</sup> My aims are somewhat different—although, as I will explain, there may also be a pragmatic, market value to my research as well.

This summer, I aim to explore individual investor self-expression in the stock market by deeply analyzing users’ posts on Wall Street Bets (“WSB.”) I will draw on psychology theory (especially prospect theory<sup>4</sup>) to examine how investors express themselves after experiencing both positive and negative news about their stock price movement. By using textual analysis in Python, I will assess the volume, length, sentiment, use of adjectives, and of vulgarity in WSB posts, segregating responses into two categories: reactions to positive and negative news on their stock. I hypothesize that there will be a greater influx in the frequency, vulgarity, and length of WSB posts after individuals experience negative (versus positive) price movement on their stock. While at first glance this hypothesis might appear obvious, it deserves serious exploration and testing, especially given the vast literature that suggests that investors are likely to sell their winners too quickly, and their losers too slowly (the “disposition effect.”). A heightened understanding of investor psychology-- how people tend to emotionally process their unrealized stock market gains and losses, and how those psychological reactions might inform their

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<sup>1</sup> I will be researching NYT, WSJ, and other newspaper and journal articles to understand more deeply how investing trends shifted during the pandemic.

<sup>2</sup> I intend to read Ben Mezrich’s *Gamestop* over the summer, among other books.

<sup>3</sup> I will be researching this growing body of scholarship, including studies like Jaroslav Bukovina, “Social Media and the Markets: An Overview,” *Procedia-Social and Behavioral Sciences*, (Vol. 220, 31 May 2016), pp. 70-78.

<sup>4</sup> Prospect theory, also known as risk-aversion theory, has been widely discussed in academic journals for decades. See, for example, C.H. Shen and H.L Chih, “Investor protection, prospect theory, and earnings management...”, *Journal of Banking & Finance*, 2005.

decisions to actually sell their stocks (often at inopportune times)—is critically important in many ways. For example, a deeper understanding of investor psychology might be utilized to devise ways to teach people how to be more sound, less emotional investors, thereby improving their long-term returns.

I am fascinated by the increasing influence that individual (or “retail”) retail investors seem to be having on the stock market as a whole. That being said, I also understand that large institutional investors like hedge funds will continue to drive stock price movements. The Game Stop story shows the potential impact that many retailers investors can have on a stock, even in the age of supposed institutional “domination” of the market. Will there be more Game Stop stories going forward, as small investors continue to band together to move markets? Or will Game Stop be an anomaly?

Researching the emerging force of individual investors in the stock market through the lens of the Wallstreet Bets Reddit forum will help me better understand how these small investors are expressing themselves and with what effects on the stock market. Eventually, I might want to expand my research and track individuals’ postings over time. It might be useful to see if there are any meaningful changes in their self-expression styles as they gain investing experience, and whether those shifts in self-expression may indicate real alterations in their buying and selling strategies.

I am excited and confident that my summer research into self-expression on Wall Street Bets will provide a rich database that will help me answer not only the questions I’ve posed here, but also additional, deep questions that I can identify and address in future research projects, such as a potential Honors thesis.

**Methods and anticipated work plan:** Motivated and inspired, I am fully prepared to put forth much effort and time (at least 35 hours a week) into this project.

**Week 1:** Review previous literature into small investor trends and investor psychology

**Weeks 2 to 4:** Gather social media posts made by retail investors from the Reddit forum Wall Street Bets (“WSB”). I will collect data from WBS by using Reddit’s existing Application Programming Interface (API). Accessing the Reddit API via Python, I expect that I will be able to collect data on each relevant WSB posts such as the title, time posted, the content shared in the post.

**Week 5:** Once I have gathered all of the relevant posts, I will conduct textual analysis in either Python or LWIC to measure the following characteristics of interest for each WSB post: volume of post, length of post, the use of vulgarity, sentiment, and adjectives that either have a positive or negative connotation.

**Week 6:** Using the date & time of the post, I’ll compare the WSB post date to stock price charts for the firm discussed in the post to determine whether the WSB post was made during a period of *recent positive* or *negative price movement* for the stock discussed in the post. This will serve as my primary data set.

**Weeks 7 to 8:** I will conduct statistical tests based on my primary data set. I’ll compare the difference in post volume, length, sentiment, use of adjectives, and use of vulgarity between posts in a period of recent positive vs. recent negative stock price movement.

**Weeks 9 to 10:** I will be prepare my findings and summarize them in a poster as well as written format, so as to be well prepared for the August 15th deadline.

### **Faculty Mentoring Relationship**

My mentor will be Dr. Daniel Street, Assistant Professor of Accounting. Already, we have built a strong relationship during my time here at Bucknell, and he has been instrumental in stoking my interest in accounting and other fields. I have previously worked with Dr. Street as a Research Assistant. In that capacity, I collected and sorted stock analyst reports, and also read, collected, and recorded data in those reports such as price target and valuation methods.

Dr. Street has helped me not only discover my love for research, but also advance my academic course work. So far, I have taken two courses with him, ACFM 104 and ACFM 321, and I have benefitted enormously from his instruction. I am a hard-working student, and will apply that same discipline and rigor to this project. We plan on meeting at least once a week in person to discuss how my research is progressing. In addition, I anticipate we will be emailing back and forth on a consistent basis throughout the summer. I intend to be on campus during my 10 weeks of research, and look forward to the weekly workshops as well.

I am grateful to Dr. Street for being willing to mentor me, guiding me in the coding for the textual analysis, helping me refine my regression analysis, and assisting in other key ways. I look forward to working with Dr. Street this summer and beyond.

### **Outcomes**

By researching “Self Expression in the Market”, I hope to broaden my understanding of the stock market and the factors—including crowd psychology-- that can affect it. My research also will propel me to contemplate what makes a sound investor, and the role (sometimes dangerous) of emotions in investing. At the same time, this research will enable me acquire proficiency in coding in Python.

Ultimately, I hope to publish a research paper on my findings. To that end, I look forward to receiving valuable feedback from Dr. Street on an ongoing basis, and also from the Kalman Research Symposium when I present my summer research there (and also perhaps at the Susquehanna Valley Undergraduate Research Symposium.) Graduate school is in my longer-term plans, as I would like to obtain a Master’s or even PhD in Accounting. This summer project is my gateway to understanding how to conduct effective research and critically analyze my findings, and I would be most grateful for this opportunity.

Thank you so much for your consideration!

## References

Bukovina, Jaroslav. "Social Media and the Markets: An Overview." *Procedia-Social and Behavioral Sciences*. Vol. 220 (31 May 2016), pp. 70-78.

Mezrich, Ben. *The Antisocial Network: The Gamestop Short Squeeze and the Ragtag Group of Amateur Traders that Brought Wall Street to Its Knees*.

Shen, C.H. and H.L Chih. "Investor protection, prospect theory, and earnings management..." *Journal of Banking & Finance*, 2005.