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A Behavioral Insights Approach to Recruiting Entrepreneurs for an Academic Study During the COVID-19 Pandemic

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A Behavioral Insights Approach to Recruiting Entrepreneurs for an Academic Study

During the COVID-19 Pandemic

- We examined what researchers should say when recruiting entrepreneurs to participate in their academic study—specifically, using a sample of entrepreneurs ($N=1,450$) we conducted an experiment to determine recruitment message efficacy.
- We relied on the behavioral insights literature to develop five different email message recruitment statements that were randomly assigned across four phases of our experiment.
- Results indicate that a message grounded in the “descriptive norms” (i.e., social norms) approach resulted in the highest percentage of participants who clicked on the link to participate in our online survey.

A Behavioral Insights Approach to Recruiting Entrepreneurs for an Academic Study During the COVID-19 Pandemic

Abstract

What should researchers say when recruiting entrepreneurs to participate in their study? Using a sample of entrepreneurs ($N=1,450$) who were being asked to participate in an academic research project, we conducted an experiment to determine recruitment message efficacy. Drawing on best practices from the behavioral insights literature, we developed different email message recruitment statements that were randomly assigned across four phases of our experiment. Results indicate that a message grounded in the “descriptive norms” (i.e., social norms) approach resulted in the highest percentage of participants who clicked on the link to participate in our online survey. We discuss the theoretical as well as practical implications of our work.

Keywords: entrepreneur; participant; recruitment; research; behavioral insights

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1. Introduction

Entrepreneurship research, by definition, must focus on the study of entrepreneurs and entrepreneurship-related phenomena. Accordingly, engaging actual entrepreneurs and enabling them to participate in academic research is a cornerstone of the field. Existing literature largely focuses on how to design and implement studies that are both rigorous and relevant (Anderson, Wennberg, & McMullen, 2019; Steffens, Weeks, Davidsson, & Isaak, 2014) while generally neglecting the vital prerequisite—and practical problem—of how to actually get entrepreneurs to say “yes” to participate in an entrepreneurship-related research project. The current study seeks to begin to address this quandary by using behavioral insights theory to investigate how to optimize the recruitment messages sent to entrepreneurs.

We conducted this investigation in conjunction with a large-scale study, funded by the Ewing Marion Kauffman Foundation. The goal of the overall project was to study the social networks associated with entrepreneurs and their respective startups. Prior to the COVID-19 pandemic, we had planned to personally visit entrepreneurs in the field (at university-based centers, co-working spaces, incubators, etc.) and invite individuals to participate in this project. However, due to the COVID-19 pandemic, in the Spring 2020 our in-person recruitment plan was no longer an option and our recruitment approach had to be conducted virtually. So, we looked to the literature for email messaging best practices that could improve participation rates of entrepreneurs, but we were unable to identify a research-based approach which could guide our efforts. As a result, we launched our study and sought to answer the following research question: “What email-based messaging approach would be most persuasive to entrepreneurs recruited to participate in an online academic research study?”

2. Recruiting Participants for Academic Research

There exists a nominal amount of research concerning recruitment of academic study participants, with most of these studies focusing on how to best recruit minority or immigrant

participants (Katigbak, Foley, Robert, & Hutchinson, 2016; Yancey, Ortega, & Kumanyika, 2006). There has been limited work in the specific domain of management, and what work has been done has not revealed approaches that improve response rates (e.g., Cycyota & Harrison, 2002). However, there are several resources which detail how to ethically recruit samples for clinical research (e.g., Denhoff et al., 2015; Gul & Ali, 2010; Harris et al., 2012; Vincent, 2018), and there are multiple tips which provide practical insights on whom to recruit and from where (e. g., national registries and online panels, Brandon et al., 2014).

In the literature, there has been work that examines improving survey response rates among students and practitioners, and work in the domains of marketing and educational psychology focuses on responses rates (e.g., mail vs. e-mail modes of delivery) yet does not address how to provide persuasive messaging during the delivery process (e.g., Chiu & Brennan, 1990; Cook, Heath, & Thompson, 2000; Manfreda et al., 2008; Shih & Fan, 2009). Options such as monetary incentives (Pedersen & Nielsen, 2016; Pit, Vo & Pyakurel, 2014), personalization of invitations (Harrison, Henderson, Alderdice & Quigley, 2019; Pit, Vo & Pyakurel, 2014; Trespalacio & Perkins, 2016), and well-crafted messages in subject lines from trusted senders (Porter & Whitcomb, 2005; Tuten, 1998) have improved response rates. However, the entirety of the extant body of literature (across domains) in this area falls short of noting what specific messaging strategies might enhance participants' response rates, particularly during the recruitment stage (e.g., Baruch, 1999). Given the dearth of theoretical or empirical guidance that could help address our research question, we turned to the literature on behavioral insights.

2.1 Behavioral Insights

We looked to the broad scientific area of behavioral insights because it, fundamentally, is aimed to apply evidence-based observations about human behavior to solve practical problems—i.e., the situation in which we found ourselves, needing to influence human behavior to address an issue we were having (e.g., Hallsworth & Kirkman, 2020; Ruggeri, 2018). Existing research grounded in

behavioral insights illustrates, for example, how to increase vaccine adherence and optimize related policy (Betsch, Böhm, & Chapman, 2015; Thomson, Vallee-Tourangeau, & Suggs, 2018), improve world health (Hallsworth et al., 2016), and optimize the assessment of business outcomes (Anderson, Lazicky, & Zia, 2019).

In general, the behavioral insights literature uses experimental designs to better understand why and how people make choices. Combining theoretical insights from psychology, cognitive science, neuroscience, and social science, behavioral insights approaches rely on behavioral economics, human-centered design, and rigorous evaluation to help scientists understand why an individual decides to engage in specific behaviors (OCED, 2019). Behavioral insights approaches are based upon the grounding principle that people are not necessarily rational actors who make perfect decisions all the time; instead, their judgment and decision making can be influenced by biases and mental shortcuts (Ariely, 2008). Accordingly, this literature is well-situated to provide insights about how to influence (via messaging) the decisions entrepreneurs make about participating (or not) in an academic research project—i.e., understanding the cues that influence individuals' thoughts and behaviors (Ariely, 2008).

At the center of behavioral insights approaches is experimentation (The Behavioral Insights Team, 2015). Using this approach, we applied the theories of behavioral science to develop specific language for a recruitment invitation email, with the hopes of increasing a participants' likelihood of engagement in our research study. We focused our efforts on testing five different behavioral approaches, each of which is described below, that provided an opportunity to take a scientific approach to testing the wording used in messages sent to entrepreneurs: (1) self-signaling, (2) dynamic norms, (3) inducing cognitive dissonance, (4) descriptive norms, and (5) social pressure.

2.1.1 Self-signaling. Self-signaling involves the way that people make choices in order to signal information to themselves about their own preferences and traits (Savary, Li & Newman, 2020). A study by Johnson and Chattaraman (2018) found that effective self-signaling is dependent

on the message sent, the sender, and the receiver—put succinctly, the receiver acts because the message sent, and the action taken, signals something about their own values or affirms their self-identity (Johnson & Chattaraman, 2018).

2.1.2 Dynamic Norms. Dynamic norms draw on the notion that norms change or evolve over time, versus being static or staying the same. A dynamic norm reflects the importance of a particular issue and/or signals what is to come, eliciting a desire for the receiver to counter the current normative behavior (Sparkman & Walton, 2017). Theory suggests that a norm must be salient to cause the receiver to choose a new behavior, especially if there are conflicting norms (Cialdini, Reno, & Kallgren, 1990).

2.1.3 Inducing Cognitive Dissonance. Cognitive dissonance is a psychological state where a person's beliefs, behaviors, or attitudes are at odds with each other, which induces an unpleasant emotional state (Festinger, 1957). People are motivated to reduce these contradictions or dissonance. As part of the core framework of cognitive dissonance theory, after people recognize that a cognitive discrepancy has occurred and feel the dissonance, people will take action to reduce the dissonance and align their attitudes and behaviors (Hinojosa et al., 2017).

2.1.4 Descriptive Norms. People's behavior is strongly influenced by social norms (Lehner, Mont, & Heiskanen, 2015). When people learn that their peers are taking part in certain behavior, they often engage in this behavior themselves (Mortensen et al., 2018). A descriptive norms approach draws attention—via messaging—to how other people are behaving, which provides a decisional shortcut for individuals to follow and engage in similar behavior (Cialdini, Reno, & Kallgren, 1990; Nolan, Schultz, Cialdini, Goldstein, & Griskevicius, 2008).

2.1.5 Social Pressure. According to the theory of planned behavior (Ajzen, 1988), human behavior is guided by three types of considerations, one of which is normative beliefs. Normative beliefs are a person's thought about the degree to which other people, who are important to them,

think they should perform a certain behavior. It is these normative beliefs that lead to the perceived social pressures that result in behavioral action (Ajzen, 2002).

3. Method

3.1 Aims, Participants, and Procedures

3.1.1 The Ask. The main aim of our Kauffman Foundation grant was focused on understanding entrepreneurs' social network engagement and embeddedness. Participation in our research study required entrepreneurs to sign in using their Gmail account and then complete a 10-minute online survey. Once logged in via their Gmail account, our algorithm imported only data concerning whom the entrepreneurs emailed and when—i.e., fields such as “Sent,” “To,” and “Timestamp.” Accordingly, although we did ask users to sign in via Gmail, which is a non-trivial ask, we ensured that the entrepreneurs knew that the only data gathered from their email was innocuous and did not involve any content from their emails. Everyone who participated in the main study received information on their own network engagement and embeddedness. But, they had to click on the survey link to get started—that is where our current work focused.

3.1.2 Participants. We used a participant pool of 1,450 entrepreneurs who had been interviewed, by students, during an introductory entrepreneurship class at a large university in the Southeastern United States (in 2018). Of the 1,450 participants, 89% self-reported their gender, 77% reported their ethnicity and 59% reported their age range. More than half of the participants identified as male (76%). The sample ranged in age from 20 to 69+ years old. Most respondents self-reported as white (80%).

3.2 Recruitment Design

3.2.1 Pilot Testing. Before we sent our recruitment emails, we asked subject matter experts to identify the language that would be used in each prompt based on the five behavioral intervention approaches: self-signaling, dynamic norms, inducing cognitive dissonance, descriptive norms, and social pressure. These subject matter experts all had experience working with entrepreneurs and were

members of the local academic community. The subject matter experts ranked each of the five intervention approaches on the likelihood that each would recruit more online survey participation for the entrepreneurship study, relative to the other categories. They based these rankings on the information we provided them about the psychological mechanisms behind each behavioral approach. Next, they wrote a prompt for each principle, which provided the language that was included in each phase of the current study.

3.2.2 Email Template. We designed an email template to be sent to each participant. This template included four sections: an introduction, a description of our study, a prompt explaining why the participant was invited to participate, and a paragraph reviewing privacy practices. The email template was identical for each participant, except for the prompt section, where we substituted paragraphs using each different behavioral intervention. Appendix A provides the email template used, Appendix B outlines the five distinct prompts for each approach, and Appendix C provides examples of behavioral insights work in the extant literature.

3.2.3 Randomization to Message Condition. We set up a study over a period of 8 weeks from May 19, 2020 to July 10, 2020 (see Figure 1). We input the email templates in Mailchimp (a marketing automation platform) and invited each participant to take part in our survey that examined entrepreneurial networks. Over the course of the eight weeks, we conducted four different phases of this experiment, with each phase building on the results from the previous one. Each experiment phase lasted two weeks.

For each of the four phases, entrepreneurs were randomly assigned to a different condition. Phase 1 had 500 participants and five different conditions. In Phase 2, we used the top two interventions from Phase 1 and assigned 300 entrepreneurs across these two conditions. For Phase 3, consistent with the tenets of behavioral science, we worked to modify and further optimize the language and to create two new versions of the top behavioral approach from Phase 2 (i.e., the messaging approach that exhibited the best click rate). These two new statements were derived via

feedback from the original group of subject matter experts we engaged for insights. With these two new versions, along with the original statement, we had three different recruitment messages. Here, 450 participants were assigned across these three recruitment message conditions. We also included a link to a short informational video about the research project. Finally in the final phase we sent 200 participants the “winning” message with a video link. See Table 1 (and Figure 1) for a summary of each phase.

In Phase 1, the study included one between-subjects independent variable, the behavioral intervention approach, which reflected the five approaches: self-signaling, dynamic norms, inducing cognitive dissonance, descriptive norms, and social pressure. The dependent variable was the unique click rate for the study link that was provided in the email. The survey completion rate was not included as a dependent variable, since the survey results were anonymized, and we could not tie together which message led to a completed survey. Using the results of the Phase 1 experiment, the Phase 2 experiment was developed. Specifically, in Phase 2 the study included one between-subjects independent variable, which reflected two behavior approaches: descriptive norms and self-signaling. The dependent variable was once again the unique click rate. Phases 3 and 4 followed the same design, with three levels and one level for the independent variable, respectively.

3.2.4 The Desired Outcome—Click Rate. The click rate was calculated as the percentage of successfully delivered emails that registered at least one click. The formula is the “Click Rate = $\frac{\text{Link Clicks}}{\text{Emails Delivered}}$.” As an example, we provide information on how this click rate was calculated for the Descriptive Norms campaign email in Phase 1. One hundred emails were sent out, but nineteen bounced back. This may have been due to an old email address or other technical issues on the receiver’s end. Due to the bounced emails, this left us with eighty-one emails that were successfully received. Out of those emails, there were five unique clicks, or five different individuals

who clicked on the link to the www.XXXX.io study¹. A person could click on the study link several times, but they would only be registered as a “Link Click” once. With five clicks and eighty-one emails delivered, the click rate was calculated at 6.2%. For comparison, the average click rate for email marketing campaigns in Mailchimp is 2.62% (“Average email marketing”, 2018).

4. Results

For Phase 1, we tracked the click rate for our survey link over the course of two weeks and found that self-signaling and descriptive norms had the highest percentage of engagement with click rates of 4.7% and 6.2%, respectively. In Phase 2, descriptive norms was the most effective behavioral approach with a click rate of 3.5%. The results of Phase 3 indicated that recruitment message one (“50 visionaries like you, have signed up for our study”) had the highest level of engagement at an 8.2% click rate. In this phase we also compared the original statement for descriptive norms used in Phases 1 and 2 (6.2% and 3.5% click rates) with the results from Phase 3 (6.3% click rate) to see if the video increased engagement. In Phase 4, we found a 5% click rate, which indicated that this version provided consistent results.

We did conduct a test for statistical differences between the response rate of Phase 1 participants who received messages based on self-signaling versus the response rate of those Phase 1 participants who received messages based on descriptive norms; however, the results indicated no clear difference at an $\alpha = .05$ threshold.² It is important to recognize that statistical significance is an arbitrary threshold defined by a respective scientific field. Specifically, the standard $p = .05$ threshold was set in conducting scientific experiments and later extended to correlational designs. In fact, leading scientists and statisticians have called for researchers to reduce the strict reliance on such arbitrary thresholds, which may restrict a field’s ability to advance (Armhein, Greenland, &

¹ Link blinded for peer review.

² Fisher’s Exact Test, one-tailed, indicated no difference at a $p = .05$ threshold between recruitment message and response rate in Phase 1 ($p = .321$).

McShane, 2019; Hurlbert, Levine, & Utts, 2019; Wasserstein & Lazar, 2016). The important message to observe here is that significance testing is only one methodological approach for advancing knowledge. Our specific results are beneficial in ruling out alternative explanations for why recruitment messages targeted towards entrepreneurs are more (or less) receptive. In other words, our study results indicate that behavioral theory and messaging can, and do, influence entrepreneurs to engage in academic research studies, but not at a 95% certainty threshold as indicated by the term, “statistically significant.” In sum, the practical significance of our study results provides useful information – for which little guidance currently exists – for how to engage entrepreneurs in academic studies.

5. Discussion

We found that messaging grounded in descriptive norms resulted in the highest percentage of entrepreneurs who clicked on our survey link. Descriptive norms refer to what is typical or normal behavior. Cialdini (1988) argued that this social norm offers people a decisional shortcut when deciding on which behavior to engage in. By highlighting the action of other entrepreneurs, our messaging approach may have offered participants an information-processing advantage about what action to take. Since we all have limits to our thinking capacity, time, and available information—especially entrepreneurs—this behavioral intervention may have offered our participants enough incentive to decide to engage in our study (Simon, 1982).

5.1 Implications

From a theory-based perspective, our work brings behavioral science and psychology more deeply into entrepreneurial research approaches with respect to survey recruitment. This is important since almost no attention has been devoted to the most effective messaging needed to get entrepreneurs to say “yes” to participate in academic research. Our study provides five empirically tested and theoretically grounded message templates that scholars can use to develop recruitment messages for entrepreneurs to participate in research. In particular, our findings reveal

that the motivational cues embedded in recruitment messages may improve response rates in academic studies that are not incentivized (e.g., with money or other rewards). Our work highlights the potential importance in providing entrepreneurs with salient reasons to spend time on a task (like participating in an academic study) that may not directly affect the future of their venture (i.e., receiving information about their social network may not necessarily directly influence their venture's survival or success).

Entrepreneurs, especially nascent and emerging entrepreneurs, often have two main resources available to them: time and money. Our research indicates how and why entrepreneurs might allocate their time to a non-venture related task. We found that the behaviors of others may be a driving force behind an entrepreneur's decision to participate in an academic study. Put simply, if messaging suggests that 'everyone else is participating,' this approach may provide a decisional short cut that individuals use to choose which behavior (to participate or not participate in our study) to choose.

From a practical standpoint, the results from this experiment provided us with a theory-based approach to recruit additional participants (i.e., expanding our project deployment to other U.S. cities) to our research study. Accordingly, for other researchers who are intrigued by the idea of optimizing response rates, it seems wise to consider integrating behavioral insights concepts into future projects that rely on entrepreneurs and their survey responses, and possibly interview requests. To do so, we would recommend the following steps. First, identify the desired behavior that will be your outcome variable of interest. Second, researchers need to understand what barriers might discourage this desired behavior (i.e., time, technology, current reward structure, etc.). Third, researchers should examine the literature for interventions aimed at influencing the specific outcome of interest. Useful resources may be, as examples, papers that examine the application of behavioral science, such as Foster (2017) or Shephard (2017). Fourth, the concluding step would be to develop and test the selected intervention(s) with a large sample size to evaluate the findings and explore how the results may impact desired behaviors.

5.2 Limitations and Directions for Future Research

This research was completed during the COVID-19 pandemic and only comprises one research study, which limits our ability to generalize these results. It is possible that some of our messaging may not resonate with entrepreneurs' post pandemic (e.g., different time-related demands, different priorities). Additionally, we anticipate that some individuals chose to not participate due to our "ask," which involved signing in via Gmail. It could be that studies in which the "ask" did not involve signing in via Gmail could see different responses rates than we did, and that different messaging strategies could be more (or less) effective (i.e., different than what we found for each message strategy). Furthermore, the primary participant pool to whom we sent emails were individuals who had some prior contact with a university. Thus, on one hand they may have been predisposed to say "yes." On the other hand, since they had already participated in the past, they may have been disinclined to say "yes" again. One additional factor to consider is venture age—put differently, nascent or emerging entrepreneurs may be differentially inclined to participate (or not) in academic research due to their venture stage. This would be intriguing for future research to explore. Related, there are additional behavioral interventions that we did not include, such as time pressure or injunctive norms, that could also be explored in future research across ventures that differed in age (e.g., nascent, young, established, etc.).

We make the following note about practical versus statistical significance. As discussed earlier, there is limited evidence of traditional statistical differences (i.e., $p = .05$ threshold) between descriptive norms and self-signaling. On the whole, the low response rates overall make it difficult to detect much in the way of effect size. However, in terms of practical significance, a higher percentage is important to note, especially in larger samples. Moreover, effect sizes should be considered in relation to relevant benchmarks, particularly where novel interventions are concerned (Hill et al., 2008). Given that average click rates for email marketing campaigns in Mailchimp are only 2.62%, the between-group differences in response rates that we observe here are noteworthy,

and provide a strong basis to guide future inquiry. Here, we only tested the behavioral approaches in conjunction with one research study, though. Thus, conclusions are necessarily preliminary, but scholars in the domain of entrepreneurship now have reason to suspect that the inclusion of descriptive norms in their recruitment messages may improve response rates.

There are multiple ways in which future research can build on, and extend, what we have done in this exploratory research. First, since there is limited empirical research that applies behavioral interventions to encourage entrepreneurs to participate in academic research, we need a replication of this study and additional research using other behavioral insights-based interventions. Future studies should integrate such interventions into their messaging to test what is most effective post COVID-19 or what may be most salient for entrepreneurs living in other regions of the United States (or globally). Although the age range of participants in our study was well distributed, the participants were predominantly male and white. Future studies should test messaging in a more diverse (e.g., race, ethnicity, geography, etc.) sample, and (as mentioned above) across the lifespan of entrepreneurial ventures—it could be that younger (in age and/or venture age) may be more (or less) inclined to participate in academic research. We make an important note here—we suggest that authors of all research studies, both quantitative and qualitative, report the exact message that was used to recruit participants. This way, we can eventually build a robust body of work that can be synthesized and empirically summarized and which can provide guidance as to what message(s) work best.

Second, the behavioral insights literature has shown that psychological and social incentives can be a more powerful tool than monetary incentives in behaviorally-informed interventions (Shepard, 2017). Although we did not include a financial incentive in this study, future research might consider the effects that a monetary incentive could have on an entrepreneur's participation in an academic study (relative to a theory-based messaging strategy, or in conjunction with one). Also, we recommend that future research ask questions related to how much an entrepreneur values their

time with respect to activities not directly connected to their business (i.e., as a control variable). Overall, the notable lack of very high response rates in online surveys (ours as well as throughout the literature) targeted at entrepreneurs suggests we need additional studies on what situational conditions, and level of incentive (monetary and/or persuasive messaging), will increase the odds of entrepreneurs engaging in academic research.

Third, based on our knowledge of behavioral interventions, we believed—initially—that social pressure would lead to the highest click rate. However, research has shown that this message should come from someone who is important to the recipient of the message (Boyd & Wandersman, 1991). It is possible that although we have had a small interaction with each of the participants, they did not see us as an important messenger. Future research is advised to explore more closely how the relationship of the sender to the potential participant affects response rates.

5.3 Conclusion

Participant recruitment is a task that every researcher who engages entrepreneurs to participate in academic research must do. Yet, despite the ubiquity of this task in entrepreneurship research, there was disappointingly little research to guide our design of the creation of messages that would resonate with entrepreneurs. Accordingly, our exploration—drawing on theory-based findings from the behavioral insights literature—provides a needed example for how scholars might attempt to effectively recruit entrepreneurs as participants. And, if scholars respond favorably to our explicit call for authors of all research studies, both quantitative and qualitative, to report the exact message that was used to recruit participants, this line of inquiry can provide very useful insights to future scholars in order to increase participation in academic research.

References

- Amrhein, V., S. Greenland, & B. McShane (2019). Scientists rise up against statistical significance, *Nature*, 567, 305–307.
- Ajzen, I. (1988). Attitudes, personality, and behavior. Chicago, IL: Dorsey.
- Ajzen, I. (2002). Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior. *Journal of Applied Social Psychology*, 32(4), 665-683.
- Anderson, S. J., Lazicky, C., & Zia, B. (2019). Measuring the unmeasured: Combining technology and behavioral insights to improve measurement of business outcomes. *World Bank Policy Research Working Paper*, (8836).
- Anderson, B. S., Wennberg, K., & McMullen, J. S. (2019). Enhancing quantitative theory-testing entrepreneurship research. *Journal of Business Venturing*, 34(5), 105928.
- Ariely, D. (2008). *Predictably irrational: The hidden forces that shape our decisions*. New York: Harper Collins.
- Average email marketing campaign stats of Mailchimp customers by industry*. (2018, September) Retrieved from <https://mailchimp.com/resources/email-marketing-benchmarks/>
- Baruch, Y. (1999). Response rate in academic studies-A comparative analysis. *Human Relations*, 52(4), 421-438.
- Belcher, W. L. (2019). *Writing your journal article in twelve weeks: A guide to academic publishing success*. University of Chicago Press.
- Betsch, C., Böhm, R., & Chapman, G. B. (2015). Using behavioral insights to increase vaccination policy effectiveness. *Policy Insights from the Behavioral and Brain Sciences*, 2(1), 61-73.
- Brandon, D. M., Long, J. H., Loraas, T. M., Mueller-Phillips, J., & Vansant, B. (2014). Online instrument delivery and participant recruitment services: Emerging opportunities for behavioral accounting research. *Behavioral Research in Accounting*, 26(1), 1-23.
- Boyd, B., Wandersman, A. (1991). Predicting Undergraduate Condom Use with the

- Fishbein and Ajzen and the Triandis Attitude-Behavior Models: Implications for Public Health Interventions. *Journal of Applied Social Psychology*, 21(22), 1810-1830.
- Chiu, I., & Brennan, M. (1990). The effectiveness of some techniques for improving mail survey response rates: A meta-analysis. *Marketing Bulletin*, 1(13-18), 1-7.
- Cialdini, R. B. (1988). *Influence: Science and practice* (2nd ed). Glen- view, IL: Scott, Foresman.
- Cialdini, R.B., Reno, R.R, Kallgren, C.A. (1990). A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places. *Journal of Personality and Social Psychology*, 58(6), 1015–1026.
- Cook, C., Heath, F., & Thompson, R. L. (2000). A meta-analysis of response rates in web-or internet-based surveys. *Educational and Psychological Measurement*, 60(6), 821-836.
- Cycyota, C. S., & Harrison, D. A. (2002). Enhancing survey response rates at the executive level: Are employee- or consumer-level techniques effective? *Journal of Management*, 28, 151-176.
- Darley, J. M., Zanna, M. P., & Roediger III, H. L. (2004). *The compleat academic: A career guide*. American Psychological Association.
- Denhoff, E. R., Milliren, C. E., de Ferranti, S. D., Steltz, S. K., & Osganian, S. K. (2015). Factors associated with clinical research recruitment in a pediatric academic medical center—a web-based survey. *PLoS One*, 10(10), e0140768.
- Festinger, L. 1957. *A theory of cognitive dissonance*. Stanford, CA: Stanford University Press.
- Foster, L. (2017), “Applying behavioral insights to organisations: Theoretical underpinnings”, OECD, Paris.
- Gul, R. B., & Ali, P. A. (2010). Clinical trials: the challenge of recruitment and retention of participants. *Journal of Clinical nursing*, 19(1-2), 227-233.

- Harris, P. A., Scott, K. W., Lebo, L., Hassan, N., Lighter, C., & Pulley, J. (2012). Research Match: a national registry to recruit volunteers for clinical research. *Academic medicine: journal of the Association of American Medical Colleges*, 87(1), 66.
- Hallsworth, M., & Kirkman, E. (2020). *Behavioral insights*. MIT Press.
- Hallsworth, M., Snijders, V., Burd, H., Prestt, J., Judah, G., Huf, S., & Halpern, D. (2016). Applying behavioral insights: simple ways to improve health outcomes. *World Innovation Summit for Health, Doha, Qatar, 29–30 November*.
- Harrison, S., Henderson, J., Alderdice, F., & Quigley, M. A. (2019). Methods to increase response rates to a population-based maternity survey: a comparison of two pilot studies. *BMC Medical Research Methodology*, 19(1), 1-8.
- Hill, C. J., Bloom, H. S., Black, A. R., & Lipsey, M. W. (2008). Empirical benchmarks for interpreting effect sizes in research. *Child Development Perspectives*, 2(3), 172–177.
- Hinojosa, A.S., Gardner, W.L., Walker, H.J., Coglisier, C., Gulliford, D. A. (2017). Review of Cognitive Dissonance Theory in Management Research: Opportunities for Further Development. *Journal of Management*, 43(1),170-199.
- Hurlbert, S. H., Levine, R. A., & Utts, J. (2019). Coup de Grâce for a tough old bull: “Statistically significant” expires. *The American Statistician*, 73, 352–357.
- Johnson, O., Chattaraman, V. (2018). Conceptualization and measurement of millennial's social signaling and self-signaling for socially responsible consumption. *Journal of Consumer Behavior*, 18(1), 32-42.
- Katigbak, C., Foley, M., Robert, L., & Hutchinson, M. K. (2016). Experiences and lessons learned in using community-based participatory research to recruit Asian American immigrant research participants. *Journal of Nursing Scholarship*, 48(2), 210-218.

- Lehner, M., Mont, O., & Heiskanen, E. (2015). Nudging - A promising tool for sustainable consumption behaviour? *Journal of Cleaner Production*, 134(Part A), 166–177.
- Manfreda, K. L., Bosnjak, M., Berzelak, J., Haas, I., & Vehovar, V. (2008). Web surveys versus other survey modes: A meta-analysis comparing response rates. *International Journal of Market Research*, 50(1), 79-104.
- Mortensen, C. R., Neel, R., Cialdini, R. B., Jaeger, C. M., Jacobson, R. P., & Ringel, M. M. (2018). Trending norms. *Social Psychological and Personality Science*, 1–10.
- Nolan, J. M., Schultz, P. W., Cialdini, R. B., Goldstein, N. J., & Griskevicius, V. (2008). Normative social influence is underdetected. *Personality & Social Psychology Bulletin*, 34(7), 913–923
- OECD (2017), *Behavioural Insights and Public Policy: Lessons from Around the World*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264270480-en>.
- OECD (2019), *Tools and ethics for applied behavioural insights: The BASIC Toolkit*, OECD Publishing, Paris, <https://doi.org/10.1787/9ea76a8f-en>.
- Porter, S. R., & Whitcomb, M. E. (2005). Email subject lines and their effect on web survey viewing and response. *Social Science Computer Review*, 23(3), 380–387
- Pedersen, M. J., & Nielsen, C. V. (2016). Improving survey response rates in online panels: Effects of low-cost incentives and cost-free text appeal interventions. *Social Science Computer Review*, 34(2), 229-243.
- Pit, S. W., Vo, T., & Pyakurel, S. (2014). The effectiveness of recruitment strategies on general practitioner's survey response rates—a systematic review. *BMC Medical Research Methodology*, 14(1), 1-14.
- Ruggeri, K. (Ed.). (2018). *Behavioral insights for public policy: concepts and cases*. New York: Routledge.

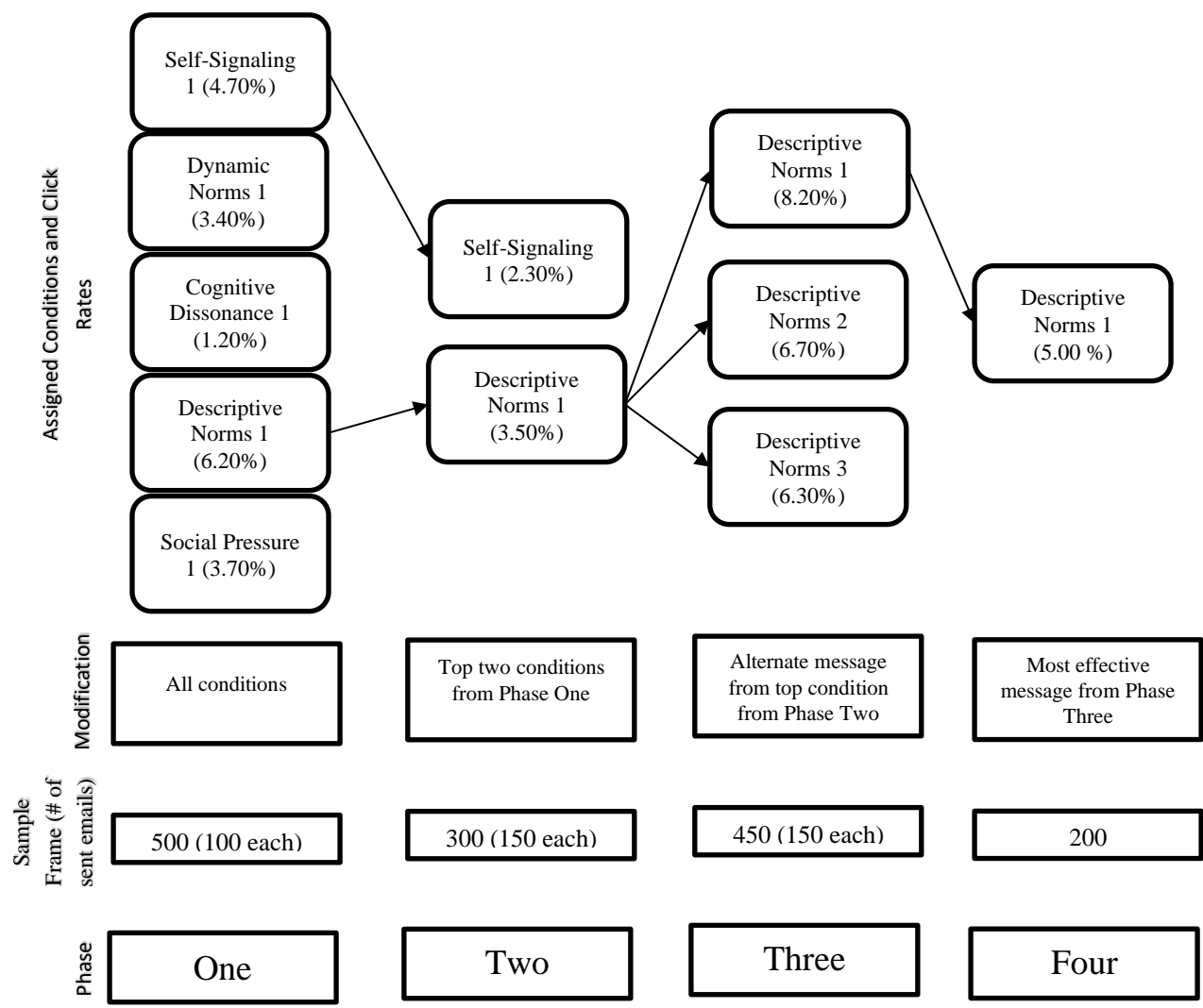
- Savary, J., Li, C.X., Newman, G.E. (2020). Exalted purchases or tainted donations? Self-signaling and the evaluation of charitable incentives. *Journal of Consumer Psychology*, 30(4), 671-679.
- Shephard, D. (2017). "Applying Behavioural Insights to Organisations: Global Case Studies," OECD, Paris.
- Shih, T. H., & Fan, X. (2009). Comparing response rates in e-mail and paper surveys: A meta-analysis. *Educational Research Review*, 4(1), 26-40.
- Simon, H. A. (1982). *Models of bounded rationality*. Cambridge, MA: MIT Press.
- Singleton, R. A., Jr., Straits, B. C., & Straits, M. M. (1993). *Approaches to social research* (2nd ed.). New York: Oxford University Press.
- Sparkman, G., Walton G.M. (2017). Dynamic Norms Promote Sustainable Behavior, Even if It Is Counternormative. *Psychological Science*, 28(11),1663-1674.
- Steffens, P. R., Weeks, C. S., Davidsson, P., & Isaak, L. (2014). Shouting from the ivory tower: A marketing approach to improve communication of academic research to entrepreneurs. *Entrepreneurship Theory and Practice*, 38(2), 399-426.
- Stice, E., Marti, C. N., Spoor, S., Presnell, K., & Shaw, H. (2008). Dissonance and healthy weight eating disorder prevention programs: long-term effects from a randomized efficacy trial. *Journal of consulting and clinical psychology*, 76(2), 329.
- Stingl, V. and J. Geraldi (2017), "Errors, lies and misunderstandings: Systematic review on behavioural decision making in projects", *International Journal of Project Management*, 35(2), 121-135.
- The Behavioral Insights Team. (2015). *Update Report 2013-2015*.
https://www.bi.team/wp-content/uploads/2015/08/BIT_Update-Report-Final-2013-2015.pdf

- Thomson, A., Vallee-Tourangeau, G., & Suggs, L. S. (2018). Strategies to increase vaccine acceptance and uptake: From behavioral insights to context-specific, culturally-appropriate, evidence-based communications and interventions. *Vaccine*, *36*(44), 6457-6458.
- Trespalacios, J. H., & Perkins, R. A. (2016). Effects of personalization and invitation email length on web-based survey response rates. *TechTrends*, *60*(4), 330-335.
- Tuten, T. L. (1997). Getting a foot in the electronic door: Understanding why people read or delete electronic mail (Rep. No. 97/08). Mannheim: Zentrum fuer Umfragen, Methoden und Analysen.
- Vincent, B. W. (2018). Studying trans: recommendations for ethical recruitment and collaboration with transgender participants in academic research. *Psychology & Sexuality*, *9*(2), 102-116.
- Wasserstein, R., & Lazar, N. (2016). ASA statement on statistical significance and p-Values. *The American Statistician*, *70*, 131–133.
- Yancey, A. K., Ortega, A. N., & Kumanyika, S. K. (2006). Effective recruitment and retention of minority research participants. *Annu. Rev. Public Health*, *27*, 1-28.

Table 1. The Behavioral Intervention, Participants, and Results for a Four-Phased Study

Condition	Click Rate	Number of Participants Sent the Email	Number of Participants Received the Email
Phase 1			
Self-signaling	4.70%	100	86
Dynamic norm	3.40%	100	87
Inducing Cognitive Dissonance	1.20%	100	85
Descriptive Norms	6.20%	100	81
Social Pressure	3.70%	100	82
Phase 2			
Self-signaling	2.30%	150	130
Descriptive norms	3.50%	150	114
Phase 3			
Descriptive norms			
Recruitment Message 1 + video	8.20%	150	122
Recruitment Message 2 + video	6.70%	150	114
Recruitment Message 3 + video	6.30%	150	120
Phase 4			
Descriptive norms			
Recruitment Message 1 + video	5%	200	139

Figure 1. Summary of Phases



Appendix A. Email Template

I am reaching out to follow up on an interview you participated in last year for an introduction to entrepreneurship class at North Carolina State University (NC State). Thanks again for taking time to share your story.

A group of top researchers at NC State received a Kauffman Foundation grant to study the benefits of social networks for the startup community. Over the past year they have worked diligently to develop a secure tool which measures the local business community's network engagement and embeddedness.

The study is secure, takes 30 minutes to complete, and your data is anonymized and only used for research purposes. Please use study code XXXX when you participate.

Appendix B. Prompts, Messages, and Video for each Behavioral Intervention³

Self Signaling: You are receiving this email because you have been identified as someone who believes in the power of connection. Contribute to our study at www.XXXX.io to understand your level of personal engagement within your network.

Cognitive Dissonance: Do you know how well you are staying engaged with your professional network during this crisis? Please consider participating in our study at www.XXXX.io and find out how well you are staying engaged during these times.

Dynamic Norms: “The Triangle is one of the fastest growing start-up communities. With this growth comes the ability to develop more market ties, expand your network, and build resilience. At the center of this success will be an understanding of your company’s social connections. Do you have a clear picture of your network? Please consider contributing to our study at www.XXXX.io to understand your level of personal engagement within your network.”

Social Pressure: “The landscape of business is changing and it’s more important than ever to understand your connection to others. Please contribute to our study at www.XXXX.io and help us understand what your entrepreneurial community’s connections look like.”

Descriptive Norms: “50 business leaders have already signed up for our study. Join our study at www.XXXX.io”

Recruitment 1: “50 visionaries like you, have signed up for www.XXXX.io. They’re helping us better understand the social networks of this local entrepreneurial ecosystem. Join our study at www.XXXX.io.”

Recruitment 2: “50 entrepreneurs in your area have already signed up for www.XXXX.io. Join our study at www.XXXX.io.”

Recruitment 3: “50 business leaders have already signed up for www.XXXX.io. Join our study at www.XXXX.io.”

Video link: <https://www.youtube.com/XXXXXXXX>

³ Links blinded for peer review.

Appendix C. Behavioral Insights (BI) in the Extant Literature.

BI Approach	Description of BI Approach	Example of this BI Approach in Other Studies
Self-Signaling	Examines the way that people make choices in order to signal something to themselves about their own values or to affirm their self-identity.	Savary, Li and Newman (2020) looked at donation rates when phrased as “charitable purchases” vs. “donations with a gift” and found that when donating to an organization, receiving a gift in exchange may lower the self-signal of altruism.
Dynamic Norms	With dynamic norms, an individual envisions the future and espouses the belief that a behavior is important to other people, thus leading to potential change in behavior.	When promoting sustainable behavior, Sparkman and Walton (2017) found dynamic norms motivated behavior change. They used the phrasing “Stanford Residents Are Changing: Now Most Use Full Loads! Help Stanford Conserve Water!”
Inducing Cognitive Dissonance	Cognitive dissonance is a psychological state when a person’s beliefs, behaviors, or attitudes are at odds with each other, which induces an unpleasant emotional state	Stice, Marti, Spoor, Presnell and Shaw (2008) found a positive relationship between dissonance-based interventions and long-term reduction in risk for eating pathology onset.
Descriptive Norms	Descriptive norms describe what is “typical” behavior and what will be effective outcomes. This can create a decisional shortcut when an individual is deciding how to behave.	Cialdini, Reno and Kallgreen (1990) found a positive relationship between the use of descriptive norms and reduction of littering in public places.
Social Pressure	An individual’s normative beliefs can lead to perceived social pressure and result in behavioral actions by that individual.	Boyd and Wandersman (1991) looked at how normative expectations impacted condom use in college undergraduates.