

The N-Effect in Sales: A Field Experiment

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April 2015

A Thesis Submitted in Partial Fulfillment of the Requirements for  
the Degree of Bachelor of Arts with Honors in Psychology from the  
University of Michigan 2015

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Acknowledgements

I would like to sincerely thank Dr. Stephen Garcia for his exceptional mentorship and support throughout this project, allowing me the autonomy to gain experience while giving guidance when needed. I would like to thank the University of Michigan Psychology Department and Honors Program for their continued support and remarkable opportunities for student-involved research. I would like to thank Adam Bradley for his extremely valuable assistance and cooperation throughout the duration of this study. I would also like to thank Patricia Chen, for guidance as an amazing graduate student mentor and for feedback on an earlier draft of the study. Finally, I would like to thank Taylor Bradburn, Seneca Bradburn, Steven Bradburn, and Brittney Austin for their support throughout this lengthy and trying project.

**Abstract**

Competition is a ubiquitous aspect of modern life and recent research has highlighted the role of social comparison in fueling competitive motivation (Garcia et al., 2013). One objective factor of competition that has been demonstrated to effect competitive motivation in individuals is that of the N-effect, the tendency for individual motivation to compete to decrease when the number of competitors increases even when odds of success are held constant. This phenomenon has been demonstrated in a wide variety of situations (Garcia & Tor, 2009), however it has not been demonstrated in a real world organizational context. The present study sought to explore the applicability of the N-effect to competitive sales settings in a field experiment. We created a competition among employees of the University of Michigan donation soliciting call center, and assigned employees to either a small or large pool of competitors. I hypothesized that those in the smaller competition pool would generate significantly more in terms of donations collected compared to those in the large competition pool. Results supported this hypothesis.

*Key Words: Competition, Sales, Retail, Social Comparison, N-Effect*

Infants vying for the attention of caregivers. The sundrenched fields of little league baseball. Seasoned businessmen striving to best each other for a coveted promotion. Competition is an ever present and deeply engrained facet of the human experience. Whether conscious or unconscious, for better or worse, competition is ubiquitous. The individual is often the focus of competition, but what is often ignored is the context in which the competition takes place and the effect that context has on the individuals taking part. Recent findings from social comparison theory, however, suggest that one important contextual factor in individual motivation to compete is number of competitors, or N-effect (Garcia & Tor, 2009; Garcia, Tor, & Schiff, 2013). Within this paper, we seek to further the base of research on the N-effect and explore the applicability of this phenomenon to the real world setting of sales.

### **Social Comparison and Competitive Motivation**

Recent research has emphasized the role of social comparison in fueling competitive motivation (Festinger, 1954; Garcia, Tor, & Gonzalez, 2006; Garcia & Tor, 2009; Garcia et al., 2013). According to Festinger (1954), there is in the human organism an innate drive to evaluate their opinions and abilities. In the absence of objective criteria, individuals compare their opinions and abilities to similar others in order to evaluate themselves. Research suggests that these comparisons are relatively spontaneous, effortless, and automatic (Gilbert, Giesler, & Morris, 1995). Festinger's (1954) original theory emphasizes self-evaluation as a purpose of social comparison, however newer research highlights its importance in self-improvement (Taylor & Lobel, 1989) and self-enhancement as well (Taylor & Lobel, 1989; Wills, 1981). Together, these fuel the motivation to compete, such that when we observe a discrepancy between our performance and those of another, or even anticipate such a discrepancy, we behave

competitively to minimize the discrepancy. In this sense, competition is a manifestation of the social comparison process (Garcia et al., 2013)

Literature has highlighted the role of both individual factors and contextual factors in influencing social comparison, and thus influencing social comparison driven competitive motivation (Cole, Bergin, & Whittaker, 2008; Dakin & Arrowood, 1981; Darnon, Dompnier, & Poortvliet, 2009; Festinger, 1954; Garcia, Tor, Bazerman, & Miller, 2005; Garcia et al., 2013; Gibbons & Buunk, 1999; Houston, McIntire, Kinnie, & Terry, 2002; Kilduff, Elfenbein, & Staw, 2010; Lount & Phillips, 2007; Mittone & Savadori, 2009; Poortvliet, Janssen, Van Yperen, & Van de Vliert, 2009; Summers, Schallert, & Ritter, 2003; Tesser & Smith, 1980). Individual level factors – individual characteristics that vary from person to person – can independently increase social comparison. For one, any number of individual difference variables can increase social comparison and thus competitive behavior, such as individual social comparison orientation (Gibbons & Buunk, 1999), competitive disposition (Houston et al., 2002), goal orientation (Darnon et al., 2009; Summers et al., 2003), and even personal histories (Kilduff et al., 2010). However, there are additional individual level factors that can increase social comparison as well, such as high similarity of individual and comparison target (Dakin & Arrowood, 1981; Festinger, 1954), high closeness of relationship between individual and comparison target (Tesser & Smith, 1980), and high relevance of performance dimension (Festinger, 1954; Tesser & Smith, 1980).

Above and beyond these individual level factors, several contextual factors have been demonstrated to influence social comparison and competitive motivation (Cole et al., 2008; Garcia et al., 2005; Garcia et al., 2006; Garcia & Tor, 2007; Garcia et al., 2013; Lount & Phillips,

2007; Mittone & Savadori, 2009; Poortvliet et al., 2009). The incentive structure of the situation has been demonstrated to effect motivation and competitive behavior (Cole et al., 2008; Garcia et al., 2013; Mittone & Savadori, 2009). For instance, it has been demonstrated that effort and performance suffer on low stakes testing (Cole et al., 2008). Alternatively if an incentive is perceived to be scarce, the perceived value and desire, and hence competition, for that object increases beyond its previously determined perceived value (Mittone & Savadori, 2009). Proximity to a meaningful standard has also been demonstrated to effect competitive motivation in individuals (Garcia et al., 2006; Garcia & Tor, 2007; Poortvliet et al., 2009). It has been demonstrated that if an individual and their rival are towards the top of a meaningful standard (#2 & #3) or at the edge of a meaningful standard (#500 & #501 in Forbes 500) then competitive behavior is increased and cooperation is decreased, however when they are ranked intermediately (ex. #202 & #203) then rivals will be more cooperative (Garcia et al., 2006; Garcia & Tor, 2007; Poortvliet et al., 2009). The social categories that we place ourselves in and how we categorize competitors has also been shown to influence competitive behavior (Garcia et al., 2005; Lount & Phillips, 2007). If there is a choice of two options for payment between an individual and a rival when self-categorization and social category faultlines are primed, individuals are more likely to choose the smaller but equal option over the larger but unequal option in contrast to common sense rationality.

### **The N-Effect**

The N-effect is the tendency for individual motivation to compete in a competitive environment to decrease as the number of competitors increases, even when chances of success are held constant (Garcia & Tor, 2009). According to this theory, in a competitive situation an

individual competing with a group of ten other individuals will exhibit more motivation to compete than when competing with a group of one hundred individuals, even if in both situations the top 10% of competitors will receive a prize (making constant their odds of succeeding constant across conditions). Note that this phenomenon differs from social facilitation (Cottrell, Wack, Sekerak, & Rittle, 1968; Zajonc, 1965; Zajonc, Heingartner, & Herman, 1969) in that social facilitation compares one individual acting alone to a competitive situation where the individual is coacting with two or more others, where the N-effect in contrast compares an individual competing with few vs the individual competing with many (Garcia & Tor, 2009). The N-Effect also differs from social loafing theory (Karau & Williams, 1993; Latane, 1979) in that the N-effect focuses on individual based tasks, as opposed to collective ones (Garcia & Tor, 2009). Possible alternative explanations for this effect have been explored and disproven, such as ratio-bias (Denes-Raj & Epstein, 1994; Garcia & Tor, 2009) and sampling error (Mukherjee & Hogarth, 2010; Tor & Garcia, 2010).

The N-Effect has been demonstrated in a number of different situations (Garcia & Tor, 2009; Tor & Garcia, 2010). For instance, it was demonstrated that as the number of test takers at an SAT test taking facility increased, the average SAT score of the individual test taker decreased (Garcia & Tor, 2009). A similar inverse relationship was demonstrated with University of Michigan undergraduate students in performance on the Cognitive Reflective Test (CRT), in which the larger the number of students present during a CRT testing session the lower the average CRT score for that session (Garcia & Tor, 2009). In another study, individuals were recruited to take a short timed test in which the top 20% of performers, in terms of speed without compromised accuracy, would receive a small cash prize. Individuals were either told they were competing with ten or one hundred other individuals. Supporting the predictions of the N-effect,

the individuals in the small N condition completed the quiz significantly faster than the individuals in the large N condition (Garcia & Tor, 2009). Additionally, the results of the study demonstrated that the N-effect can be generated by mere knowledge of N, and that actual competitors need not be present.

The driving factor behind the N-effect is believed to be based on social comparison between competitors. It is believed that as the number of competitors increase, social comparison between competitors and comparison concerns decrease due to sheer number of competitors. As a result, motivation decreases due to this decreased importance of social comparison with a larger number of targets (Garcia & Tor, 2009; Garcia et al., 2013). Previous research has supported social comparison as an important component of the N-effect (Garcia & Tor, 2009). In previous research individual social comparison orientation (SCO) displayed a significant relationship with N-effect, in that the N-effect was especially pronounced in individuals with high SCO and insignificant in individuals with low SCO (Garcia & Tor, 2009; Gibbons & Buunk, 1999).

The N-effect has been demonstrated in within-subject and between subject designs, in-person and online participation, and imagined and behavioral situations. Despite the initial evidence of the N-effect, many questions remain. For example, does this effect really transpire in the real world? The N-effect was demonstrated in SAT scores and CRT testing, however this evidence was correlational and subject to many other factors that could have contributed it the effect (Garcia & Tor, 2009). There is experimental evidence in that the N-effect has been demonstrated in terms of speed on tasks, but these took place in contrived and controlled lab experiments. All other experiments have been purely hypothetical and imaginary. Thus this



present paper seeks to explore the N-effect in a real world field experiment and the applicability of this phenomenon to the organizational setting of competitive sales.

Competitive retail settings seem to be a prime environment for the N-effect to manifest, however the prevalence of N-effect in sales environments has not been explored. Businesses frequently use competition between salespersons as a common tactic to drive up sales figures. Based on previous research it would follow that this competitive environment would promote social comparison and that differing sizes of competing groups might elicit differing levels of motivation for sales staff, as demonstrated in other situations in previous N-effect research. Thus, we posit our central hypothesis:

*H1: Real-world competitive sales settings will display behavioral patterns of the N-effect in which an increase in number of competitors will decrease individual motivation to compete, even when odds of reward are held constant*

## **Method**

### **Participants**

For our study, we chose the University of Michigan Telefund as the setting to explore the application of the N-effect to competitive sales. The University of Michigan Telefund, founded in 1992, is a university-run donation soliciting center that employs current University of Michigan undergraduate and graduate students. These callers solicit donations from university alumni, students, and other individuals to fund various university programs. The Telefund is responsible for raising approximately \$2 million a year for the university and student callers work on a part-time basis for the center, typically required to work at least twelve hours a week for undergraduate students and eight hours a week for graduate students. Students call potential

donors during shifts from calling rooms within the Telefund building, located on 1027 E. Huron Street Ann Arbor, Michigan. Pay for employees is on an hourly basis and does not include commission from donations collected, however the Telefund occasionally offers competition based incentives for employees. The Telefund typically employs between sixty and eighty students callers at a time, however this number tends to vary throughout the calendar year.

We chose this organization because of its accessibility and business operations that replicate a traditional telemarketing center. Student callers have to essentially “sell” potential donors on donating to university programs, in a manner synonymous to that of a telemarketer selling a blender or other gadget to a call recipient or a car salesmen selling a car to a potential buyer. Social comparison is also believed to be relatively strong within this organization, as caller’s total donation figures are posted publically and similarity between employees is relatively high (Dakin & Arrowood, 1981; Festinger, 1954).

### **Procedure**

To foster a competitive environment, we sponsored a competition within the Telefund for current Telefund employees. The following instructions were emailed to all employees on Wednesday, November 12<sup>th</sup>, via the Telefund internal student caller listserv:

*The University of Michigan Psychology Department will be sponsoring a competition among Student Callers at the UM Telefund, from Monday November 17<sup>th</sup> to Sunday November 23<sup>rd</sup> where callers can win cash prizes.*

*Callers will be randomly assigned into pools of competitors and will compete within these groups to receive the prizes. These prizes will be based on who has increased the most (in percent) over their average donations collected over past weeks. For instance, if an individual collects \$100 in donations this week when on average they collect \$50, and another individual*

*collects \$1100 when they normally collect \$1000 on average in a week, the first individual will win the prize because they has the greatest percent increase within their group.*

*The Top 10% in improvement in their group will receive \$100*

*The next 20% in improvement within their group will receive \$50*

*Everybody else will receive \$10 just for taking part and filling out the survey*

*After the competition ends Sunday night, you will fill out a quick confidential online survey, after which you will receive an email with the amount you have won and the prizes will be dispersed.*

Emails were sent via a Gmail account created for the purposes of the study, umtefundstudy@gmail.com, in order to remove potential confounding by identification of researchers. Employees who worked between Friday, November 14<sup>th</sup> and Sunday, November 16<sup>th</sup> were also given a handout detailing the competition during their shift (Appendix A) and flyers were posted around the Telefund office Monday, November 9<sup>th</sup> until Sunday, November 16<sup>th</sup> (Appendix B) in order to maximize visibility of the competition.

Four groups of competitors were created out of the fifty-seven student callers employed at the Telefund the week before the competition began, three groups consisting of ten callers for the small N condition and one group consisting of twenty-seven callers for the large N condition. Employee names were replaced with a five digit identification code linked to an email address (provided by the Telefund) in order to maintain anonymity of participants. Student callers were randomly assigned to one of the four groups using RStudio software and emailed group assignments via the following template:

*Earlier this week, we sent you an email detailing a competition for student callers at the U of M Telefund where all student callers could win cash prizes, up to \$100. For the*

*competition, you would be placed into pools of competitors and would compete within this pool for prizes, based on who has improved the most (in percent) over their previous average donations collected per week. The competition will run from Monday 11/17 to Sunday 11/23.*

*You have been randomly assigned to a pool of competitors that consists of 10 [50] student callers. In other words, the prizes that are up for grabs will depend on how well you perform relative to other student callers in this pool of 10 [50] competitors.*

Individuals assigned to groups were not given information on which other individuals they would be competing with within their assigned groups. Note that due to relatively low employment at the Telefund during the competition, we were unable to create a group of fifty individual for the large N condition and employees within the large N condition were competing within a group of twenty-seven for the cash prizes. However, chances of reward were constant across assigned and actual large N group size. On Friday November 21<sup>st</sup>, a follow-up email was sent to students callers with group assignment in order to maintain competition and group assignment salience throughout the week.

In order to receive winnings from the competition, callers were asked to complete an anonymous online survey that contained a variety of items relevant to the competition, social comparison, the N-effect, and hypothesized moderators of the N-effect in individuals, as well as a manipulation check of group assignment salience. The full survey can be found in Appendix C. Responses to the survey were linked to performance data by the caller's five digit identification number. Callers were given an extra \$10 incentive for completing the survey within three days of the end of the competition (November 26<sup>th</sup>) in order to incentivize early survey completion, and thus minimizing confounding effects of lagged time between competition and survey. Callers were initially given until December 3<sup>rd</sup> to complete the survey, however a forty-eight hour extension beyond this deadline was given for the survey in order to maximize survey completion.

After the extended survey deadline, winnings for individual were calculated based on relative ranking of individuals in individual performance within assigned groups. Individuals were sent an email detailing winnings and provided with a check for competition winnings, available for pickup at the Telefund office.

### **Results**

Sales data was collected for a total of sixty-one individuals (fifty-seven student callers, and four student managers). This data consisted of sales figures during the span of the week long competition and sales data from the three weeks prior to the competition, to serve as a baseline rate for donation amounts. As per management of the call center, the four weeks (week of competition and three weeks prior) were comparable from an operations standpoint and donor susceptibility to donation. Sales data collected from callers during this time frame included hours worked during the competition and three weeks prior, total donations collected by callers during the competition and three weeks prior, pledge dollars collected by callers during competition and three weeks prior (total donations collected less employer matching of donors), number of pledges collected during competition and three weeks prior, pledge rate (in percent of successful calls) during competition and three weeks prior, and average donation made per successful call for competition and three weeks prior.

Using these figures, donations collected per hour for both the competition and three weeks prior were calculated for individual callers by dividing total donations collected by hours worked for their respective periods. Using donations collected per hour for the competition and three weeks prior, increase/decrease of donations collected during the competition compared to the baseline (three week prior to competition) were computed by dividing competition total

dollars per hour collected by baseline total dollars per hour collected. If the number was greater than one, performance increased during the competition relative to baseline. If the number was less than one, performance decreased relative to baseline. For example, if the number computed for this metric (referred to as change in donations per hour) was 2.5 the caller collected two and a half times their baseline donations per hours during the competition. Total dollars per hour collected were used to calculate this metric because, per management of the Telefund, total dollars per hour is more representative of the effort of callers than pledge dollars alone because additional work is required on the part of the callers to determine if the donor is employed at a company that matches charitable giving.

Data from twelve student callers were dropped from analysis due to a lack of sales data for the competition, three weeks prior, or both (five individuals from the large N condition and seven individuals from the small N condition). Due to this deficiency of data, we were unable to determine performance increase or decrease for these individuals. Data from an additional four individuals were removed from analysis due to a lack of assignment to an N condition, as they acted in the role of student managers and were not included in the original study design.

Due to the nature of donation call centers, there is a considerable possibility for outliers. An individual donor might contribute an exceedingly large amount (above what is typical of donors) which would heavily skew the data for the caller receiving the donation. In this case, the large increase in donations collected for the caller might not be representative of effort, but simply luck in calling that particular donor. To control for this possibility, we tested for outliers and removed individual cases in which an individual's change in donations collected was three standard deviations away from the mean for their respective N group. One outlier was removed

from the small N condition ( $M = 2.52$ ,  $SD = 2.29$ ) and one outlier was removed from the large N condition ( $M = 2.81$ ,  $SD = 3.65$ ) and were not included in further analysis due to atypical performance. After removing cases with missing sales data and outliers, the data set contained donation statistics for forty-three individual callers (twenty-one in large N condition and twenty-two in small N condition).

A logarithmic conversion was applied to the change in donations per hour metric (to account for the heavy positive skewedness of the data) and this log converted metric was used to compare mean change in donations per hour for the small and large N conditions. The mean log transformed change in donations per hour was larger for the small N condition ( $M = .4071$ ,  $SD = .9788$ ) than the large N condition ( $M = .2692$ ,  $SD = 1.1637$ ).

To test for significant differences between performance for the small and large N conditions univariate ANOVA was used, with log transformed total donations per hour during competition as the dependent variable and N size as the independent variable. Within this analysis, several variables were controlled for as covariates. Total dollars collected and hours worked during the previous three weeks before the competition were controlled for as a covariate to control for base rate in donations collected per hour. Pledge rate (percent of calls successful in securing a donations) for the competition and three weeks prior was also controlled for. This was done due to the fact that some callers are given better lists of potential donors to caller, categorized as non-donors, lapsed donors, and previous donors, who all have different average rates of giving. For instance, non-donors are much less likely to donate than lapsed donors who are less likely than previous donors to donate. Pledge rates were controlled for as a covariate in order to account for this different that might distort data if not accounted for. Controlling for

these four covariates, the difference between the two groups for this analysis was significant ( $F(1, 36) = 5.969, p = .020$ )

To further test for differences between N conditions, average donations during the competition and three weeks prior to competition were compared. The metric change in average donations collected was calculated by dividing average donation during competition by average donations during three weeks prior. The average donation metric is the total donations collected by an individual caller during a period divided by number of donations during that period, for example of an individual collected \$400 with eight pledges the average donation would be \$50. Going off of this, the change in average donations collected metric created from this shows the increase or decrease in the average pledge during the competition over the three weeks prior. Less than one would represent a decrease and greater than one would represent an increase. The mean change in average donations for the small N condition ( $M = 1.9400, SD = 1.1435$ ) was larger than the mean change in average donations for the large N condition ( $M = 1.3432, SD = .9195$ ). This suggests that the average donation collected during the competition compared to the three weeks prior almost doubled for the individuals in the small N condition and increased by roughly 34% for large N individuals. Univariate ANOVA was used to test for a significant difference between the two N conditions in terms of change in average donations. A marginally significant difference was found between the two conditions in terms of this metric ( $F(1, 41) = 3.536, p = .067$ ).

We sought to do additional analysis with survey results and explore potential moderators of the N-effect. However, a particularly low response rate to the survey lends itself to questionable generalizability. The survey generated sixty-three responses. However, many were



left significantly uncompleted and only twenty-six responses could be matched with the respective performance data. The survey was not mobile device compatible which we believe significantly contributed to the incomplete and unusable responses. Since the useable response rate was relatively small and accounted for less than half of callers, we considered the generalizability of the responses low and did not use survey data for analysis.

### **Discussion**

Based on our findings and analysis of the data, our hypothesis of the presence of the N-effect in competitive sales settings is supported. When controlling for relevant covariates, log donations per hour during the competition for the small N condition was significantly greater than in the large N condition. Additionally, change in average donations for the small N condition was greater than the large N condition and marginally significant. This can be interpreted as the individuals in the small N condition increased their donations compared to their individual baseline more than the large N condition and their average donation received increased more than large N individuals. Put simply, the individuals in the small N condition were more motivated to compete and perform their job to the best of their ability during the competition, as reflected in their superior performance. Our findings in this sales setting are synonymous to behavioral effects of the N-effect, in which the small N condition individuals exhibited more motivation to compete than the large N condition as shown through larger performance increased for the small N group.

### **Limitations**

As with all studies, this study has its limitations. First, it is possible that the Telefund organization might not be representative of a more typical sales organization. Although

operations seem comparable to a typical call center, some aspect of the organization might limit its generalizability to other business settings. It is possible that having primarily student employees might lend itself to more social comparison, as employees are by nature similar in age and educational status, than a more traditional business setting with a more diverse employee population. Additionally, our results might be generalizability to only telemarketing and call center settings. It is possible that in situations where social comparison is more difficult and jobs themselves are more complex this pattern of N-effect might not manifest itself. For instance if there is a competition among nurses in terms of bedside manner across a wide range of scenarios, social comparison might be more difficult in absence of easily comparable criteria and N-effect might not manifest itself.

The lack of a usable manipulation check is also a limitation of this study. In the survey distributed to callers, there was a manipulation check testing caller's awareness of number of competitors. Since there was a relatively low rate of response to the survey and its generalizability can be called into question, we were not able to test if the assigned group was salient and significantly retained by individuals. We believe that through the competition's high visibility (emails, flyers, postings) and reference to group assignment, as well as two emails with assignment throughout the week that group assignment would be clear to participant, but we are unable to explicitly check this manipulation.

Finally, a lack of a definite causal mechanism is a further imitation of this study. Social comparison has been demonstrated as an important factor in terms of N-effect and hypothesized to be the motivational mechanism behind this effect (Garcia & Tor, 2009), however a strong cause-effect relationship has not been demonstrated and support is correlational in nature.

Without a specific cause for this effect, generalizations and implications of N-effect findings are limited.

### **Future Research**

Through this study, we have demonstrated evidence that the N-effect is in fact applicable to competitive sales settings. This finding raises questions of the N-effect's applicability to other real world competitive settings in which social comparison can be theorized to be high. A possible area of research could be into the applicability of the N-effect to competitive sports. For example, in competitive weightlifting would competing concurrently with a small group of competitors elicit greater effort and thus weight lifted than in a larger group, when chance of reward is held constant across group size? Would the number of bowlers present in a bowling alley during a competition effect motivation (manifested through performance), when holding odds of reward constant? Would larger groups of stationary cyclists exhibit slower time trials than smaller groups when competing for prizes constant across group sizes?

The limitations of this study lend themselves to interesting and relevant future research. Our study looked specifically at a telemarketing or call center type of organization. Future research could explore the N-effect in sales organizations of different types. Would the N-effect manifest itself in a competition among used car salesmen? Would a typically non-competitive environment, for instance healthcare focused professions, display the N-effect if a competitive environment is created? Our study also created the competition pools in which individuals were assigned. If, for instance, procedures at calling centers were standardized and only size varied across the country, would the N-effect be observed in this larger scale, more naturalistic setting? Another possible avenue for future research is exploring the role of incentive pay. Could higher

incentive pay counteract the role of N in decreasing motivation within a large competitive pool in comparison to small competitive pools?

Additionally future research could explore possible moderators of the N-effect which we sought to explore further through this study, but were unable due to complications with the survey. Specifically, the moderating effects of innate competitiveness and subjective view of ability could be explored.

### **Implications**

The implications of our results are far-reaching and relevant to a wide range of industries. A more researched focused implication of this study is additional evidence that the N-effect is not just a lab-setting phenomenon. Although some prior research has demonstrated correlational evidence of the N-effect in real world settings, such as in SAT testing and CRT testing, this study provides especially strong real world behavioral evidence of the N-effect (Garcia & Tor., 2009). This demonstration was not based on archival data, such as the SAT data, and was sustained for a relatively long period of a week where prior research demonstrated a short-term effect, such as the length of a timed quiz or CRT test (Garcia & Tor, 2009).

Perhaps even stronger implications can be found for industry. Our findings suggest that if an organization plans on using competition as a method for motivation and increasing performance, it would be more beneficial for the organization to limit the competition to smaller groups as opposed to larger scale competition. Our findings suggest that within an organization, branch focused competition would boost motivation to a greater degree than companywide initiatives. Similarly our research suggests that for large companies, more but smaller operations centers would be more effective in fostering competitive motivation for employees than few

large offices in competitive sales environments. It would follow that if compensation is primarily competitive within an industry, smaller and more decentralized offices would produce greater performance results than larger centralized offices if odds of reward can be considered somewhat constant across these settings.

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## Appendix A

***Student Caller Competition******Monday 11/17 to Sunday 11/23***

The University of Michigan Psych Department will be sponsoring a competition among UM Telefund Student Callers.

Student Callers will be randomly assigned to groups of varying sizes and will compete within these groups to collect the most donations individually for the week. Group assignment will be sent out Sunday 11/23.

***Top 10% of callers within group - \$100******Next 20% of callers within group - \$50******All other callers - \$10***

After the competition, you will receive an email with a short confidential 5-10 minute survey to fill out before your winnings are revealed and prizes are dispersed.



If you do not wish to take part in the competition and do not want to have your donation data used for the study, send an email to [umtelefundstudy@gmail.com](mailto:umtelefundstudy@gmail.com).

Additional questions, comments, and concerns can also be addressed to this email.

Appendix B

# UM Telefund Student Caller Competition Monday 11/17 to Sunday 11/24

Within assigned groups in donations collected:

Top 10% - \$100

Next 20%- \$50

Everyone Else - \$10



Sponsored by UM Psychology Department.

Contact [umtelefundstudy@gmail.com](mailto:umtelefundstudy@gmail.com) with any questions

**Appendix C**

## Telefund Study Survey

Q13 Responses to this survey are confidential and will only be used by the University of Michigan Psychology Department for research purposes. After the survey closes, you will receive an email with the prize amount you have won from the Telefund competition and your check will be available for pickup at the U of M Telefund in the near future. You may skip any question that you do not wish to answer, as your participation in this study is voluntary. If you have questions or comments, please contact [umtelefundstudy@gmail.com](mailto:umtelefundstudy@gmail.com)

Q21 When you were participating in this competition, how often did you find yourself wondering how your performance would compare to others in the competition?

- Not at all (1)
- (2)
- (3)
- (4)
- (5)
- (6)
- Very much (7)

Q22 When you are in the call center, how often do you find yourself comparing yourself to others?

- Not at all (1)
- (2)
- (3)
- (4)
- (5)
- (6)
- Very much (7)

Q24 How concerned would you feel about if your donations tally and those of the other caller participants were visible for everyone to see?

- Not at all concerned (1)
- (2)
- (3)
- (4)
- (5)
- (6)
- Very concerned (7)

Q23 Do you consider yourself someone who compares their caller performance to that of others?

- Not at all (1)
- (2)
- (3)
- (4)
- (5)
- (6)
- Very much (7)

Q25 To what extent did you feel motivated to perform well in this caller competition because of the fear of being evaluated by peers?

- Not at all (1)
- (2)
- (3)
- (4)
- (5)
- (6)
- Very much (7)

Q26 To what extent did you feel motivated to perform well in this caller competition because of the fear of being evaluated by the administrators of the competition?

- Not at all (1)
- (2)
- (3)
- (4)
- (5)
- (6)
- Very much (7)

Q27 What do you think your chances of winning the top prize were during the competition (in percent)?

Q4 To what extent do you agree with the following statements?







Q5 From your point of view, how large was the group of callers you were competing with in the competition?

- Very Small (1)
- Small (2)
- Medium (3)
- Large (4)
- Very Large (5)

Q28 Among caller participants, where do you see your own ability to perform well in getting donations overall relative to other participants? I am in the \_\_\_ percentile (100% = tippy top; 0% = bottom) of callers

Q11 Indicate the degree to which you agree or disagree with the following statements

	Strongly Disagree (1)	Disagree (2)	Neither Agree nor Disagree (3)	Agree (4)	Strongly Agree (5)
I always pay a lot of attention to how I do things compared with how others do things (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I want to find out how well I have done something, I compare what I have done with how others have done (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I want to learn more about something, I try to find out what others think about it (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am not the type of person who compares often with others (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often try to find out what others think who face similar problems as I face (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often compare how my loved ones (boy or girlfriend, family members, etc) are doing with how others are doing (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often compare myself with others with respect to what I have accomplished in life (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I often like to talk with others about mutual opinions and experiences (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I always like to know what others in a similar situation would do (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I never consider my situation in life relative to that of other people (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often compare how I am doing socially (e.g., social skills, popularity) with other people (11)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q10 Indicate the degree to which you agree or disagree with the following statements:

	Strongly Disagree (1)	Disagree (2)	Neither Agree nor Disagree (3)	Agree (4)	Strongly Agree (5)
I enjoy competing against an opponent (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In general, I will go along with the group rather than create conflict (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I don't like competing against other people (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am a competitive individual (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often remain quiet rather than risk hurting another person (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I dread competing against other people (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like competition (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I try to avoid competing with others (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I try to avoid arguments (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I get satisfaction from competing with others (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I will do almost anything to avoid an argument (11)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I find competitive situations unpleasant (12)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I don't enjoy challenging others even when I think they're wrong (13)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often try to out perform others (14)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Q19 Read the following statements and decide if they are true or false as they pertain to you

	True (1)	False (2)
I rarely worry about seeming foolish to others (1)	<input type="radio"/>	<input type="radio"/>
I worry about what people will think of me even when I know it doesn't make any difference (2)	<input type="radio"/>	<input type="radio"/>
I become tense and jittery if I know someone is sizing me up (3)	<input type="radio"/>	<input type="radio"/>
I am unconcerned even if I know people are forming an unfavorable impression of me (4)	<input type="radio"/>	<input type="radio"/>
I feel very upset when I commit some social error (5)	<input type="radio"/>	<input type="radio"/>
The opinions that important people have of me cause me little concern (6)	<input type="radio"/>	<input type="radio"/>
I am often afraid that I may look ridiculous or make a fool of myself (7)	<input type="radio"/>	<input type="radio"/>
I react very little when other people disapprove of me (8)	<input type="radio"/>	<input type="radio"/>
I am frequently afraid of other people noticing my shortcomings (9)	<input type="radio"/>	<input type="radio"/>
The disapproval of others would have little effect on me (10)	<input type="radio"/>	<input type="radio"/>
If someone is evaluating me I tend to expect the worst (11)	<input type="radio"/>	<input type="radio"/>
I rarely worry about what kind of impression I am making on someone (12)	<input type="radio"/>	<input type="radio"/>
I am afraid that others will not approve of me (13)	<input type="radio"/>	<input type="radio"/>
I am afraid that people will find fault with me (14)	<input type="radio"/>	<input type="radio"/>
Other people's opinion of me do not bother me (15)	<input type="radio"/>	<input type="radio"/>
I am not necessarily upset if I do not please someone (16)	<input type="radio"/>	<input type="radio"/>
When I am talking to someone, I worry about what they may be thinking about me (17)	<input type="radio"/>	<input type="radio"/>
I feel that you can't help making social errors sometimes, so why worry about it (18)	<input type="radio"/>	<input type="radio"/>

I am usually worried about what kind of impression I make (19)	<input type="radio"/>	<input type="radio"/>
I worry a lot about what my superiors think of me (20)	<input type="radio"/>	<input type="radio"/>
If I know someone is judging me, it has little effect on me (21)	<input type="radio"/>	<input type="radio"/>
I worry that others will think I am not worthwhile (22)	<input type="radio"/>	<input type="radio"/>
I worry very little about what others may think of me (23)	<input type="radio"/>	<input type="radio"/>
Sometimes I think I am too concerned with what other people think of me (24)	<input type="radio"/>	<input type="radio"/>
I often worry that I will say or do the wrong things (25)	<input type="radio"/>	<input type="radio"/>
I am often indifferent to the opinions others have of me (26)	<input type="radio"/>	<input type="radio"/>
I am usually confident that others will have a favorable impression of me (27)	<input type="radio"/>	<input type="radio"/>
I often worry that people who are important to me won't think very much of me (28)	<input type="radio"/>	<input type="radio"/>
I brood about the opinions my friends have about me (29)	<input type="radio"/>	<input type="radio"/>
I become tense and jittery if I am being judged by my superiors (30)	<input type="radio"/>	<input type="radio"/>

Q1 Last Five Digits of UMID

Q2 Sex

- Male (1)
- Female (2)
- Other (3)
- Prefer not to specify (4)

Q20 Age

Q15 Current Class Standing

- Freshman (1)
- Sophomore (2)
- Junior (3)
- Senior (4)
- Non-Student (5)

Q3 How long have you worked at the University of Michigan Telefund (In Months)?

\_\_\_\_\_ Months at Telefund (1)

Q8 As a student caller, I call primarily:

- Non-Donors (1)
- Lapsed Donors (2)
- Prior Donors (3)

Q12 In the competition, the number of individuals that I competed against in my competition pool was the following: