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The Effect of Peer-To-Peer Recognition Systems on Helping Behavior: the Influence of Rewards and Group Affiliation

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ABSTRACT

Peer recognition systems are an increasingly popular management control tool through which employees can recognize and thank other employees. While these systems have potential to motivate firm desired behaviors, including behaviors that are unobservable by management, little is known about if, or when, they are effective. Using a laboratory experiment, I examine the effectiveness of these systems in motivating employee helping behavior, both when the system includes rewards and when it does not. While I document that helping behavior is generally greater when peer recognition systems are present, I also document that group affiliation is a key moderating factor in determining the effectiveness of these systems. Specifically, I find that peer recognition systems are more effective in motivating in-group versus out-group helping. Conversely, I also find that the incremental benefit of adding rewards to a peer recognition system is greater for out-group versus in-group helping. Theoretical and practical implications for peer recognition system design are discussed.

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CHAPTER 1

INTRODUCTION

This study provides an initial examination of the motivational effects of peer recognition systems as well as insight into when providing reward incentives in conjunction with those systems is likely to be most beneficial. Many firms including Intuit, Intel, Zappos, and Google have implemented peer recognition systems that allow employees to recognize other employees in the firm for their help and accomplishments (Irvine, 2012; Jones, 2015; Quinn, 2018; Zappos Insights, 2012). Despite their growing popularity in practice and in the business press (e.g., Globoforce, 2008; Gorman, 2014; Irvine, 2012; Jones, 2015), there is little research addressing peer recognition systems and how they work. Using a laboratory experiment, I examine how the presence, and type, of peer recognition system effects employees' beliefs, team identities, and most importantly actions.

Peer recognition is recognition of one's individual contribution sent directly from one employee to another employee (at the same or similar organizational level), at the sending employee's discretion. Peer recognition systems are a type of control system that encourage employees to acknowledge peers for positive individual behaviors. Given their responsibility for the design of the incentive and control system (Bonner & Sprinkle, 2002), management accountants can benefit from greater insight into the effectiveness of peer recognition systems.

While firms likely wish to capture multiple benefits from implementing peer recognition systems (e.g., helping behavior, better individual performance, employee satisfaction, reduced turnover, etc.), in this study I focus on how these systems affect helping behavior. Often firm outcomes are dependent on various individuals or departments supporting one another's efforts to achieve their individual objectives, yet such helping behavior can be difficult to motivate using traditional incentives because it is difficult for management to observe (Baiman, 1990; Holmstrom, 1979; Prendergast, 1999; Sprinkle, 2003). Because peer employees can often observe what management cannot, peer recognition systems may provide a unique opportunity to motivate helping behavior.

A choice firms face when considering the implementation of a peer recognition system is whether or not to sponsor rewards to be given along with the peer recognition. While one might assume that adding rewards would provide additional motivation, prior research on incentives and social preferences (e.g., Bowles & Polania-Reyes, 2012; Lourenço, 2015) suggests that the likely effect may be more nuanced. Further, although including rewards is a common feature of a number of peer recognition programs in practice (Irvine, 2012; Quinn, 2018; Zappos Insights, 2012), research has yet to establish if, or when, the inclusion of rewards provides incremental motivation. The purpose of this paper is to provide insight into (1) whether peer recognition systems are effective in motivating employees to help others in the firm, (2) when peer recognition systems (absent rewards) might be more or less effective, and (3) when there is an incremental benefit of tying rewards to peer recognition.

Given the peer nature of peer recognition, employees' social ties or group affiliations are likely to have important implications for how effective these systems are in motivating helping behavior. Further, in many settings, the firm can benefit when employees help both within their own groups and across groups (e.g., teams, departments, business units, etc.). It is possible, however, that interventions which will motivate employees to help a member of their own group (i.e., in-group) might not motivate them to help a member of another group (i.e., out-group), and vice versa. As such, different design features of a peer recognition system may be more or less effective depending upon the group affiliation of employees.

I predict that the presence of a peer recognition system will generally motivate increased helping behavior. I further predict that employees' group affiliation will moderate the effectiveness of peer recognition systems (absent rewards). I form this prediction based on findings from social identity theory (Abrams & Hogg, 1990), which suggest that individuals are more willing to help others when a shared identity is salient to them (De Cremer & Van Vugt 1998; Kramer & Brewer, 1984). I expect the presence of a peer recognition system to create a setting that makes salient the team identity shared by in-group (but not out-group) members, leading these systems to be more effective in motivating in-group versus out-group helping behavior.

Conversely, I also predict that there will be a greater benefit from tying rewards to peer recognition in settings where helping is more out-group than in-group. This is because, while prior research suggests that incentives typically strengthen motivation, it also suggests that incentives can crowd out or substitute for, rather than add to the motivational effects derived from other types of motivators (e.g., intrinsic or social)

(Bowles & Polania-Reyes, 2012; Frey & Jegen, 2001; Lourenço, 2015). Because I expect the degree of social motivation to be lesser for the out-group versus the in-group, I also expect substitution effects will be less relevant for the out-group versus the in-group. As a result, I expect that adding rewards to peer recognition systems will be more beneficial for out-group versus in-group helping.

I use a laboratory experiment to test my predictions. Participants are paid a fixed wage for working on a data entry task for six minutes and are then allowed to choose how much of an additional four minutes they wish to spend working on the task to help another participant versus working for their own gain. Time spent working for themselves earns them an additional piece-rate per entry they complete. Participants also know that time spent working to help someone else earns that participant additional pay. This creates a setting where participants must make a costly sacrifice of time (which represents forgone earnings) in order to help another participant. I manipulate group affiliation as either "in-group" or "out-group," by assigning participants to color groups when they enter the laboratory and then creating a helping opportunity either for a participant from their own color group (in-group) or for a participant from a different color group (out-group). I manipulate the peer recognition system as either absent, present, or present with a reward. In the peer recognition with rewards condition, participants know that if they are recognized, in addition to receiving the recognition message, they will have the opportunity to choose a small reward at the end of the experiment.

My experimental findings are consistent with my predictions. When comparing the presence versus absence of a peer recognition system (i.e., without regard for other

moderating variables), I find that peer recognition systems generally lead to an increase in the amount of time participants spend helping others, and that participants' expectations of receiving help mediates this effect. Further, when I split by condition, I find an interaction between group affiliation and the presence versus absence of a peer recognition system suggesting that when no rewards are present, peer recognition systems are more effective in motivating in-group versus out-group helping behavior. Conversely, I also find an interaction between group affiliation and the presence versus absence of rewards within the peer recognition system, suggesting that adding rewards is more motivating among out-group versus in-group members.

The Institute of Management Accountants (IMA) defines the role of management accountants to include, "devising…performance management systems, and providing expertise in … control to formulate and implement an organization's strategy" (IMA, 2019). Peer recognition systems are a unique type of control, which are likely to motivate greater helping behavior both directly and indirectly via their impact on company culture (Jones, 2015; Merchant & Van der Stede, 2007). Peer recognition systems bear similarities to mutual monitoring systems, only in peer recognition systems employees are asked to acknowledge peers for their positive individual behaviors as opposed to report peers' negative behaviors to management. My study provides an initial examination of the motivational effects of peer recognition systems and the addition of rewards to them. As such, my findings will be of interest to management accountants who have responsibility over compensation, incentive, and control system design.

My study also extends an emerging body of literature on recognition (e.g., Bradler et al., 2014; Burke, 2019; Burke et al., 2019; Wang, 2017), and introduces peer

recognition as an important source through which recognition may come. I document that peer recognition systems are effective in motivating helping behavior, which prior work has suggested can be difficult to accomplish using traditional incentives due to the difficulty of observing such behaviors (Baiman, 1990; Holmstrom, 1979; Prendergast, 1999; Sprinkle, 2003). Further, I document that group affiliation influences the effectiveness of peer recognition systems both when rewards are included and when they are not.

While firms will also want to consider costs associated with implementing peer recognition systems, my study provides insights into the potential benefits. My results suggest that firms wishing to motivate greater helping behavior when group affiliation is uncertain or unstable (e.g., across departments or workgroups) would likely do well to tie rewards to peer recognition systems. Alternatively, my results suggest that if a firm is able to strengthen the degree to which employees view themselves as being a part of the same group (e.g., via social events, team building activities, etc.) then they may be able to benefit significantly from a peer recognition system without incurring any additional costs of providing rewards.

CHAPTER 2

BACKGROUND AND HYPOTHESIS DEVELOPMENT

Background and setting: peer recognition systems

As part of an effort to find more innovative ways to motivate employees, many companies have implemented formal recognition programs, a number of which include peer recognition as a key component (Globoforce, 2008; Gorman, 2014; Irvine, 2012; Jones, 2015; Nohria et al., 2008; Quinn, 2018; Zappos Insights, 2012). While employees usually have opportunities to *informally* recognize one another (e.g., simply say, "thank you" or "great job" outside of any formal system), the fact that firms are also implementing *formal* peer recognition systems suggests that they are dissatisfied with the extent to which such informal recognition is happening, or perhaps are hoping to garner more of the motivational potential of peer recognition.[1] Emerging companies are also specializing in helping firms recognize and reward employees, including developing customized online platforms for that purpose (e.g., Globoforce and Motivosity).

Many peer recognition programs also allow employees to send company sponsored rewards of modest value in conjunction with recognition (Irvine, 2012; Quinn, 2018; Zappos Insights, 2012). Often these rewards can be sent with minimal management

[1] For example, relative to *informal* peer recognition, *formal* peer recognition systems could lead to *more* peer recognition, make the peer recognition more impactful, or both. While I do not study informal peer recognition, I acknowledge that the effects of formal systems that I document could be moderated depending on how effective the informal recognition culture of a company already is. I discuss this more in section V.

oversight (e.g., the manager may receive a carbon copy of the recognition message, but require no direct approval). A common way rewards are administered is through dollars or points that then must be redeemed for gift cards or other tangible rewards (Globoforce, 2008; Motivosity, 2019; Zappos Insights, 2012). For example, at Intuit, employees can use an online recognition platform to write a recognition message and select from a range of cash values (e.g. $0, $10, $25, or $50) to send to another employee.[2] The receiving employee can then use the same system to redeem the rewards for gift cards of their choice (Globoforce, 2008). Total monetary values of peer rewards relative to employee salaries are usually comparatively small. Thus, rewards associated with peer recognition typically provide "fun money" as opposed to significantly increasing employees' income (Kelly et al., 2017; Presslee et al., 2013; Quinn, 2018).[3] Using relatively small rewards may further act as a control; reducing the incentive for employees to collude to mutually reward one another so as to inflate each other's income (e.g., Evans et al., 2016).

An important aspect of peer recognition systems is their potential to motivate helping across departments and skillsets (e.g., Quinn, 2018; Zappos Insights, 2012). Often firm outcomes are dependent on various individuals or departments supporting one another's efforts to achieve their individual objectives. For example, other departments often rely on employees from the IT department to help them with their technical needs. While helping other departments would likely be part of an IT employee's job

[2] Although in practice, employees can sometimes choose from a range of possible reward amounts, in the present study I only address the presence versus absence of rewards associated with peer recognition and not variation in the value of the reward.

[3] Prior research has considered the effects of providing tangible versus cash rewards on employee motivation (Kelly et al., 2017; Presslee et al., 2013). In this study, I hold reward type constant, as a tangible reward, and vary whether a reward is present or not in conjunction with peer recognition.

description, it may be difficult for the IT manager to directly reward an employee for timely, quality service to other departments due to the difficulty of observing every individual interaction of that employee. As another example, an individual may have knowledge or skills that, if shared, might improve the outcome of a team member's assignment on a group project. In such cases, a peer recognition system gives employees the ability to directly recognize and reward others who may help them, leading to better results for those receiving help and for the company as a whole.

Peer recognition is different from peer evaluation. Under peer evaluation, peers provide positive *or* negative feedback about another employee to the manager. Peer recognition on the other hand is exclusively positive in nature and is often sent directly to the recipient, although managers are frequently made aware of the recognition as well.[4] A growing body of research has also begun to consider the effects of recognition *from a manager* on employees' motivation to complete their work (Bradler et al., 2014; Burke, 2019; Burke et al., 2019; Wang, 2017). Whereas recognition from a manager is vertical in nature, peer recognition is typically horizontal in nature. Research on *manager provided* recognition has also considered the effect of making relative performance recognition or information publicly available to an employee's co-workers versus privately conveyed to a particular employee (Burke, 2019; Tafkov, 2013; Wang, 2017). In practice, *peer*

[4] In practice, variation exists both in how salient peer recognition is to management and in how salient it is to employees that management may be aware of their recognition. In the present study, I develop theory regarding the effect of a peer recognition system in a setting where management does not play a role. I make this choice to cleanly test the effect of the peer recognition *system* without the potential confounding effect of management's awareness of the peer recognition. While it is possible that the presence of a manager could moderate (or potentially enhance) certain aspects of my findings, generally I would expect that my theory should extend to settings where managers are also aware of the peer recognition.

provided recognition may also be public or private in nature. In this study, I focus on private peer recognition. Any potential influence of using public peer recognition rather than private peer recognition is beyond the scope of this study.

My study speaks to settings in which a peer recognition system supports employees directly recognizing peers: both those seen as being part of one's own group and those viewed as part of a different group.[5] In such settings, employees can recognize co-workers for their help and other accomplishments. Helping is usually costly to the helper however, as they might have otherwise used the time they spend helping to engage in some other activity, such as leisure, or working more for themselves (which may increase their own pay, bonus eligibility, future promotion potential, etc.). I also assume a setting in which the potential recipient of help needs/benefits from help (even though it may not be directly solicited[6]) and the firm always benefits when help is given. Although in practice, there is likely a firm specific "optimal balance" of helping others versus completing one's own work, the fact that many firms are implementing peer recognition systems suggest that these firms believe that more help would benefit them, and thus I make a simplifying assumption that more help is better.

[5] Many different types of "groups" exist in practice. For example, employees from different departments, teams, and training backgrounds might all perceive themselves as being from different groups. Importantly, my theory is intended to generalize to any setting in which there exists a salient in-group or out-group connection/distinction between the employee who could give help and the employee who could receive help.
[6] In practice, there are many opportunities for helping even when it may not be directly solicited. For example, employees may simply see a need they might fill, share useful information others do not know they have, or prioritize their own work in order to help others meet deadlines without being asked.

Hypothesis development

Standard economic theory predicts that absent current or future monetary incentives, individuals will withhold costly effort, including effort to help others (Baiman, 1990; Holmstrom, 1979; Lambert, 2001; Prendergast, 1999). Behavioral studies, however, have found that individuals are sometimes willing to help others, even when it is costly (e.g., Black et al., 2019; Fehr & Gächter, 2002; Newman et al., 2019). Therefore, I assume as a baseline that, given an opportunity to help, some individuals will do so even when current or future monetary incentives for doing so are absent. I now outline theory predicting how peer recognition systems affect employees' willingness to exert costly effort to help others. I begin by discussing how a peer recognition system may generally (i.e., without considering the group affiliation of employees or whether or not rewards are tied to the recognition) affect beliefs about the likelihood of *receiving* help and how this in turn influences willingness to *give* help.

I expect that, in many cases, the implementation of a formal peer recognition system will signal to employees that the firm desires and supports helping behavior. Tayler and Bloomfield (2011) find that controls directly influence people's sense of what behaviors are appropriate in a given situation, and consistent with this finding, I expect peer recognition systems to signal to employees that the firm wants them to help others. While this direct signaling may have some impact, I expect a greater effect to come as the result of how the peer recognition system updates employee beliefs about the likelihood of receiving help. Specifically, I consider how an individual's anticipatory beliefs about how they are likely to be treated in a particular situation, influences their current behavior toward another who is *not* necessarily the same person who could help or hurt them.

Direct reciprocity (i.e., the opportunity to directly reward or punish an individual who helps or harms oneself) has been studied extensively and shown to have significant effects on behavior, including enhancing individuals' willingness to cooperate with others (e.g., Falk & Fischbacher, 2006; Fehr & Falk, 2002; Fehr & Gächter, 2000a; 2000b; 2002). In this paper, however, I focus on the less studied role of indirect reciprocity (i.e., reciprocity involving a third party) (Nowak & Sigmund, 2005). More specifically, how one's expectations regarding whether someone is likely to help them influences his/her own helping behavior toward a *different* individual. In so doing, I study how peer recognition systems influence the *perceived* norms or "culture" of the firm (Graham et al., 2019).[7] Employee expectations regarding others' helping behavior are likely to influence their own helping behavior for at least two reasons. First, psychology research suggests that people have strong preferences for behaving similarly to those around them (Asch & Guetzkow, 1951; Cialdini et al., 1990; Sherif, 1936). Peer recognition systems are likely to create a belief that others will engage in helping behavior, and this belief is then likely to influence employees' own helping behavior. Second, as beliefs about general helping behavior go up, a natural implication is that the individual themselves is more likely to be helped by others. If individuals believe that they specifically are likely to be helped by someone else, then preferences for fairness suggest that they will feel an obligation to also help others (i.e., if someone is likely to help me, I should help someone else) (Fehr & Gächter, 2000b; Sugden, 1984).

[7] Note that I consider how peer recognition systems affect expectations regarding others' (simultaneous) helping behavior in a single period setting. Thus, while what I study is similar to a "norm," I am cautious in using this term because no actual behavioral consensus has developed.

To summarize, I predict that a peer recognition system will influence employees' beliefs about the likelihood of receiving help. As employees' expectations of receiving help go up, they will in turn feel a greater obligation to help others. Hypothesis 1a and Hypothesis 1b are stated in alternate form as follows:

Hypothesis 1a: Employee helping behavior will be greater when a peer recognition system is present than when it is absent.

Hypothesis 1b: Employee expectations of *receiving* help will mediate the relation between peer recognition systems and employee helping behavior.

To this point, I have discussed the effect of the presence versus absence of a peer recognition system on employee expectations and helping choices *generally*. I now take a more nuanced view and consider how peer recognition systems may differentially affect in-group versus out-group helping. I begin by discussing my predicted effects when the peer recognition system does not include rewards.

Group affiliations are likely to have meaningful implications for helping behavior in organizations. Organizations are often complex with multiple departments, divisions, work teams, and other forms of "groups." Such groups, though often necessary, may at times present challenges in achieving the goals of the overall organization (Ashforth & Meal, 1989; Brewer, 1979; Cilliers & Greyvenstein, 2012; Stone, 2004; Towry, 2003). For example, members of various departments (e.g., accounting, marketing, engineering, etc.) may opt to help members of their own department, while being more reluctant to help members of other departments.

Social identity theory (Abrams & Hogg, 1990; Tajfel, 1974; Tajfel & Turner, 1985) suggests that individuals self-categorize into groups and that their identification with those groups affects the way they interact with others, both those from their own

group (i.e., in-group), and those from other groups (i.e., out-groups). As individuals identify with a group, there is a tendency to show in-group bias: favoring in-group members, while possibly discriminating against out-group members (Brewer, 1979). A number of studies find that individuals cooperate more in social dilemma settings when a common group identity is *salient* to them (De Cremer & Van Vugt, 1998; Kramer & Brewer, 1984; Wit & Wilke, 1992). For example, De Cremer and Van Vugt (1998) find that when a collective identity as opposed to a personal identity is made salient, participants contributed more in a public goods game. Balliet et al. (2014) also find in a meta-analysis that people are more cooperative with in-group versus out-group members. In addition, research has found that group membership can influence auditor judgments to be more likely to conform to perceived group norms (King, 2002). Together this discussion suggests that the degree to which employees identify with others will likely influence their willingness to help them.

The prior paragraph discussed findings suggesting that not only group membership, but the *salience* or degree of identification with the group is predictive of willingness to help. In forming a prediction regarding the effect of peer recognition systems when employees share an in-group versus an out-group status, it is important to highlight the potential for peer recognition systems to *strengthen* the sense of team identity in-group members feel to one another, beyond any connection they may already feel due to being part of the same group. Research suggests that social identities can be made more or less salient depending on the setting and context (Hogg & Terry, 2000; Oakes & Turner, 1990). When employees are already part of a group, I predict peer recognition systems are likely to create a context that strengthens the connection in-group

members feel to one another. The reason is that by encouraging *peer* recognition, these systems implicitly suggest a group paradigm (i.e., that everyone should support each other and is on the same team). This is likely to emphasize the team identity of group members. As a result, I expect employees to feel a greater obligation to help those in their group. Alternatively, out-group members do not share a pre-existing in-group status, and as such, there is less of a team identity to emphasize. As a result, I expect peer recognition systems to do less to motivate out-group helping.[8]

To summarize, I predict that the presence of a peer recognition system (which does not include rewards) will motivate in-group helping to a greater degree than out-group helping. Hypothesis 2 is formally stated in alternate form as follows:

Hypothesis 2: The increase in employee helping behavior caused by a peer recognition system (absent rewards) will be greater when helping is *in-group* as opposed to *out-group*.

I now turn my focus to the effect of adding rewards to a peer recognition system. Research has found that monetary rewards (whether cash-based or tangible rewards with monetary value) can motivate effort (Banker et al., 2000; Kelly et al., 2017; Lazear, 2000; Presslee et al., 2013; Shearer, 2004). However, research has also found that monetary incentives and other types of motivation (e.g., intrinsic or social) are not always additive in nature, but rather often are substitutes (e.g., Ariely et al., 2009; Bénabou &

[8] Note that in the setting I consider, employees do not necessarily know who might be able to help them (i.e., whether they are in-group or out-group). Employees only know the group affiliation of those *they* could help. As such, while I use *general* expectations of receiving help in developing my predictions for Hypotheses 1a and 1b, these expectations should not theoretically differ based on employees' knowledge of the group affiliation of an individual they might help. Consequently, I do not use expectations of receiving help, but rather feelings of team identity in developing predictions for Hypotheses 2 and 3.

Tirole, 2006; Bowles & Polania-Reyes, 2012; Deci, 1971; Frey & Jegen, 2001; Lourenço, 2015). For example, using a field experiment, Lourenço (2015) found a negative interaction between monetary incentives and public recognition from management. Her study suggests that these two act as substitutes that crowd out the motivational effects of the other.

Consistent with this literature, I also expect that reward incentives and social motivation[9] will not be simply additive, but rather will act as substitutes. Importantly, I expect that the degree to which this substitution effect will manifest depends on the group affiliation of employees. If team identity is relatively weak (as I expect for out-group members), then adding a reward should have a positive effect on overall motivation. If team identity is relatively strong however (as I expect for in-group members), then it is less clear what effect adding a reward will have on *overall* motivation because the reward could substitute for (or crowd out) the social motivation derived from the sense of team identity.[10] As a result, I predict that adding rewards will be more beneficial for out-group helping than in-group helping. Hypothesis 3 is formally stated in alternate form as follows:

Hypothesis 3: Adding rewards to a peer recognition system will be more beneficial for *out-group* helping than *in-group* helping.

[9] I use the term "social motivation" here and elsewhere in the paper, to refer to motivation that is derived from the social environment and is *not* caused by a reward. The specific source of "social motivation" in my study is the team identity employees feel.

[10] Note that my predicted substitution effect could result in *in-group* helping *decreasing*, *not changing* (i.e., perfect substitutes), or increasing but to *a lesser extent* than if no substitution were present. As such, I do not predict an absolute level difference for *in-group* helping, but rather that adding rewards will be *more* beneficial for out-group than in-group helping.

CHAPTER 3

METHOD

Experimental design and task

I use a 2x2+2 nested design to test my hypotheses. I manipulate group affiliation as either *in-group* or *out-group*, peer recognition system as either present or absent, and within the peer recognition present condition also manipulate the presence of rewards (leading to three total conditions related to peer recognition: *no peer recognition*, *peer recognition*, and *peer recognition with rewards*). Experimental sessions are randomly assigned to one of the three peer recognition conditions prior to running the experiment. Group affiliation is manipulated within each session as described below. I run 12 sessions with 16 participants each, resulting in 192 participants in total.[11] I programmed the experiment using Qualtrics, combined with Microsoft Power Automate to facilitate personal interaction.

Participants complete a data entry task in which they have an abbreviated customer listing and must identify and input the six-digit number of an indicated customer. Participants input the customer number and then move to the next entry. More entries can be accessed by scrolling down the page. All participants receive the same entries, in the same order. See the appendix for an excerpt from the experimental instructions explaining the task.

[11] I obtained approval to run this study from my University's Institutional Review Board.

Participants first complete the task for six minutes (360 seconds) and are paid $5.00 for their time. Participants then choose how much of an additional four minutes (240 seconds) they will spend working for themselves versus working to help another participant.[12] The four minutes are allocated in one-minute (60 second) increments to these two options. During the additional time participants spend working for themselves they earn $0.05 for each correct entry they complete. Participants also know that during the additional time they spend working to help another participant, *that* participant will benefit from each entry they complete, however participants do not know precisely by how much.[13] Participants receive no direct financial benefit from helping. Thus, allocating time to help is costly in that it requires participants to forgo additional pay they could have earned if they had allocated the time to working more for themselves.[14]

Everyone knows that potential helpers will be kept anonymous unless help is given. That is, if a participant chooses to help, then the participant receiving help is subsequently told who helped them and how much they were helped. Alternatively, if no

[12] For simplicity, in my setting participants do not request help, rather in the instructions, I make it clear to all participants that the other participant will benefit from any help given.

[13] Participants earn $0.10 for each entry someone else completes to help them. However, I refrain from telling participants the exact benefit from their help to reduce the likelihood that participants focus on economic payouts when making their helping choices. This design choice reflects many settings in practice, where employees do not know precisely how much someone else might benefit from their help.

[14] I am primarily interested in how peer recognition systems affect employees' willingness to make costly sacrifices to help others. While in practice there are likely a variety of alternative activities employees might engage in instead of helping (e.g., slack time, additional time on their own work, etc.), these alternatives are of less interest to me. I therefore assume a setting where the firm will always benefit from greater helping, and impose a financial cost to helping to proxy for a number of appealing alternatives that employees may experience in practice.

help is given, then the potential helper is never identified.[15] All participants also know that there is the possibility that someone else in the room could help them, but that they will only know who after the task is over and if that person chose to help them. If no help was given, then participants are told they received no help and nothing else after the task is over. Participants know that the person they have the opportunity to help is not the same person who could help them. I make this clear to rule out typical direct reciprocity concerns and to ensure that my manipulation is indeed influencing expectations of help *generally*.

Experimental overview

Upon arrival, participants are greeted and handed a card with their seat assignment. The card is color-coded and corresponds to their color division as discussed later on. After participants find their seats, each color group takes a turn standing and introducing themselves to the other participants in the room. Specifically, every individual in each group would say, "Hello, I'm participant [#] from the [color] group." Participants are then read instructions while they follow along on computer monitors. Instructions explain the data entry task and contain the peer recognition system manipulation as described later. Participants must then correctly answer each question of a comprehension quiz.

Next, participants complete the data entry task. Upon completion of the data entry task, participants complete process measures before being informed if (and if so how

[15] I make this design choice because in practice, if a potential helper does not wish to engage in helping behaviors, they are often able to credibly deny their ability or capacity to do so. Making participants anonymous unless help is given proxies for this credible deniability (i.e., everyone knows someone else could help them, but they do not know who).

much) they were helped during the data entry task. Participants then make a recognition choice if they are in one of the peer recognition conditions and received help. All participants then complete additional post experimental questions and recognized individuals receive an onscreen recognition message (and choose a reward, if applicable). Finally, participants are informed of their final payment. Actual payments come in the form of an Amazon e-gift card. Sessions took about 30 minutes to complete. I summarize the experimental flow in Figure 3.1.

Manipulations

Group affiliation

I manipulate group affiliation using color groups (Towry, 2003). Color groups might generalize to different divisions in a company (e.g., marketing, finance, accounting, etc.) or to different skillsets or training backgrounds. I use color groups to manipulate group affiliation to avoid introducing other contextual elements that could limit the generalizability of my results, thereby allowing me to speak to a variety of settings where in-group or out-group associations exist. The lab is divided into four color-coded areas. Four participants make up each color group and they sit at computers in the same quadrant throughout the experiment. During the task, immediately before participants choose how much time they will allocate to helping another participant, they are told specifically whom they could help. In the *in-group* (*out-group*) conditions, participants have the opportunity to help someone from their own (a different) color group. Specifically, in the *in-group* conditions participants are told that they have the opportunity to help "participant [ID#], from your own, [color] group." In the *out-group*

conditions, participants are informed that they have the opportunity to help "participant [ID#], from the [color] group."[16]

Peer recognition

Peer recognition is manipulated in the instructions after participants are informed that they will have the opportunity to help another participant in the room. Participants in *peer recognition* conditions read the following:

> To promote helping, there is a peer recognition system in place. Near the end of the experiment, individuals who feel like they were helped in a significant way will have the opportunity to choose to recognize the person who helped them by sending an electronic message of thanks to them.[17,18]

In the *no peer recognition* conditions there is no mention of an opportunity to be thanked by their peers.

Peer recognition with rewards

Participants in the *peer recognition with rewards* conditions receive the same instructions as participants in the *peer recognition* conditions with the addition that they are also told, "if you are recognized you will be able to choose a reward from the following reward options." The instructions contain pictures of the following five reward

[16] The underlined text in these manipulation phrases is also highlighted in the group color of the participant they could help for emphasis.

[17] In practice, peer recognition systems are often framed to promote a positive culture, including helping behavior (Jones, 2015; Quinn, 2018; Zappos Insights, 2012), thus presenting the system as a means "to promote helping" is consistent with practice. Further, as discussed below, the results do not suggest that my findings are simply the outcome of a demand effect.

[18] In practice, employees are often allowed (and encouraged) to write personalized notes to peers they recognize. For simplicity, I hold recognition message content fixed. All recognition messages read as follows: "Participant [ID#] would like to thank and recognize you. Thank you for spending time to help me!" Participants do not know the exact message content unless (and until) they receive it.

options: stress ball, pencil (with school insignia on it), Snickers candy bar, M&M's candy, and Twix candy bar. Although participants are not told the dollar value of the items, I purchased all of the items for less than $0.90 each.

Dependent variable

My primary dependent variable is the amount of time participants chose to spend helping another participant. Other process and attention check variables are also collected.

Participants

I recruited 192 undergraduate students from core accounting classes at a large public university to participate in my study. Average age is 19, and 49 percent of participants are female. Undergraduate students are appropriate to participate in this study given that I use an abstract task that requires no specialized knowledge or skills (Libby et al., 2002). Participants are given course credit in return for their participation and are paid variable amounts depending on their own, and other participants' choices during the experiment as explained above. Average earnings were $7.56, with the minimum being $5.00 and $12.85 being the highest earnings.

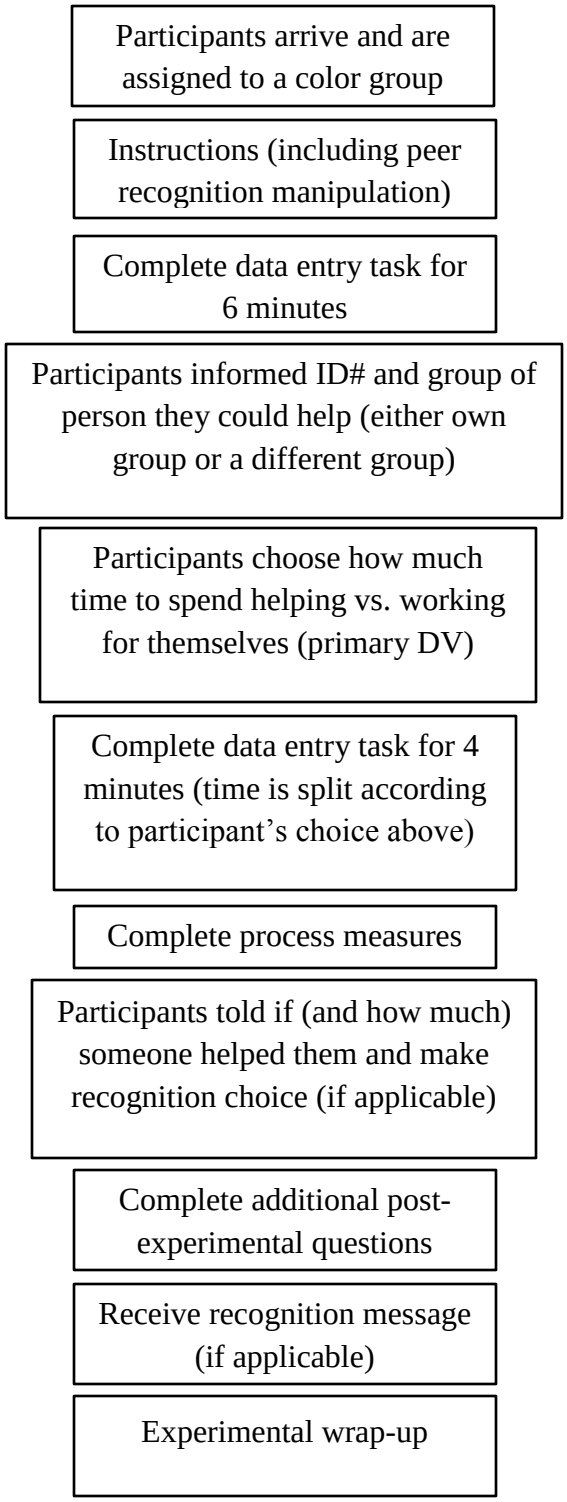


Figure 3.1 Experimental Flow

CHAPTER 4

RESULTS

Preliminary tests and descriptive statistics

To assess whether participants paid attention to my group affiliation manipulation, I ask participants to recall whether the participant they had the opportunity to help was in their own color group or a different color group. 92.7% of participants correctly responded to this question according to their condition, suggesting that participants paid attention to this manipulation.[19] Note that participants in peer recognition conditions are required to correctly acknowledge their understanding of the system in the comprehension quiz prior to completing the task, and thus I do not include a separate check for this manipulation.

Means for the *time spent helping* are displayed in Table 4.1, and are graphically displayed in Figure 4.1. As shown, the means suggest a pattern consistent with my hypotheses. Namely, it appears that helping is generally higher when a peer recognition system is present versus absent (Hypothesis 1a), that a peer recognition system (absent rewards) leads to a greater increase in *in-group* versus *out-group* helping (Hypothesis 2),

[19] In the analyses presented hereafter, I include all participants. Results for my main hypotheses tests related to group affiliation (i.e., hypotheses 2 and 3) are either inferentially identical, or in some noted cases, become slightly more significant if I exclude participants who did not correctly respond to this question.

and that adding rewards leads to a greater increase in *out-group* versus *in-group* helping (Hypothesis 3).[20]

Time spent helping is measured on a five-point scale from which participants could choose to (1) spend no time helping, (i.e., 0 seconds), (2) spend one minute (60 seconds) helping, (3) spend two minutes (120 seconds) or half their time helping, (4) spend three minutes (180 seconds) helping, or (5) spend the full four minutes (240 seconds) helping. The distribution of the total number of participants making each choice is displayed in Figure 4.2, Panel A (and by condition in Figure 4.2, Panel B).

As shown in Figure 4.2, the data is not normally distributed and a Shapiro-Wilk Test confirms this ($p < 0.001$). As such, tests that require a normality assumption (e.g., ANOVA or linear regression) are not optimal. Instead, I test my hypotheses in two different ways. My primary interest is in in how my manipulations influence helping to be relatively higher or relatively lower and while a median split lacks nuance, it does capture this important element. Accordingly, I first test whether the probability that a participant gave *at least* half of their time to help the other participant (which roughly approximates a median split) varies in a manner consistent with my predicted pattern. I then follow up this analysis and provide addition insights into how my manipulations are

[20] As suggested by Figure 4.1, I do not find that helping behavior was higher in the *in-group* versus *out-group* condition when *no peer recognition* system was present. Importantly, this does not prevent me from testing my hypothesized interactions, or related theory suggesting that peer recognition systems *strengthen* in-group team identity. While prior research might imply a main effect would also be present, a possible reason it did not manifest could be that I used a relatively weak form of group affiliation manipulation. For example, my participants never independently communicate, nor do they work with their group members, either on their primary task, or on a team building task (see Kachelmeier & Van Landuyt, 2017 and King, 2002 for examples of similar but potentially stronger manipulations).

influencing behavior across the full range of choices (i.e., did they lead participants to help versus not help, or influence the amount of help they gave given that they helped).

As shown in Figure 4.2, participants did not view all helping choices the same, and the majority of participants (55.2%) gave either no help (33.9%) or the minimum help (22.4%), while the remaining participants (44.8%) gave half of their time or more. I therefore categorize those who gave half of their time or more as "high helpers" and those who gave less than this as "low helpers." The percentage of "high helpers" by condition is shown in Figure 4.3. I now proceed to test whether the likelihood of being a "high helper" varies as hypothesized, using binary logistic regression.

Hypotheses tests

Hypothesis 1a predicts that employee helping behavior will be greater when a peer recognition system is present than when it is absent. Table 4.2 presents results related to this hypothesis. As shown in Panel B, participants are significantly more likely to be a "high helper" when a recognition system is present (including with rewards) versus absent (Wald = 3.02; p = 0.041, one-tailed), with the percent of "high helpers" when no peer recognition system is present being 35.9% and the percent of "high helpers" when a peer recognition system is present being 49.2% (see Table 4.2, Panel A). This supports Hypothesis 1a.

Hypothesis 1b predicts that employee expectations of receiving help will mediate the relation between a peer recognition system and employee helping behavior. To assess participants' beliefs regarding the likelihood of receiving help, I ask them the following question (prior to them knowing how much help they actually received): "How likely do you think it is that you were helped by someone else during the additional time?"

Responses are provided on a seven-point scale with endpoints 1 = Very unlikely, and 7 = Very likely. As shown in Panel A of Table 4.2, results reveal that participants believe the likelihood of receiving help is significantly higher when a peer recognition system is present (combined average of the *peer recognition* and *peer recognition with rewards* conditions = 3.35) than when it is absent (average in the *no peer recognition* conditions = 2.71) and this difference is statistically significant ($t = 3.01$; $p = 0.002$, one-tailed). To formally test the mediation effect predicted in Hypothesis 1b, I use PROCESS (Hayes, 2013) with 5,000 bootstrapped samples. Figure 4.4 presents the results of the mediation model. As shown in Figure 4.4, the 95% confidence interval for the indirect effect of peer recognition systems on the likelihood of being a "high helper" through *perceived likelihood of being helped* is entirely above zero (lower bound = 0.17; upper bound = 0.83) supporting the mediation effect predicted in Hypothesis 1b.[21]

Hypothesis 2 predicts that the increase in employee helping behavior caused by a peer recognition system (absent rewards) will be greater when helping is *in-group* as opposed to *out-group*.[22] This suggests an interaction between group affiliation and the presence/absence of a peer recognition system (while excluding rewards). To test this

[21] Note that as shown in Figure 4.4 the direct effect (as denoted by C'), which is the effect of *peer recognition systems* on the likelihood of being a "high helper" while controlling for *perceived likelihood of being helped* is not significant. This suggests that, as discussed in the theory section, any effect due to the peer recognition system directly signaling that the firm wants helping behavior is not significant when taking into account the indirect effect the system has on employees' beliefs regarding the likelihood of receiving help.

[22] To control for associations participants might have had outside of the laboratory, I asked participants to indicate their agreement to the following two questions: "BEFORE entering the experiment I knew the person I had the opportunity to help during today's study?" and "How likely do you believe you are to interact in the future with the person that you had the opportunity to help?" Interaction results reported here for Hypothesis 2 and Hypothesis 3 are robust to controlling for these two questions.

hypothesis, I run a binary logistical regression with "high helper" as the dependent variable and group affiliation, peer recognition system (present/absent), and the interaction term as independent variables. Results are presented in Table 4.3, Panel A. As shown, the interaction term is significant (Wald = 3.74; p = 0.027, one-tailed), supporting Hypothesis 2. Follow up analyses in Panel B show that the presence (versus absence) of a peer recognition system has a significant positive effect on *in-group* helping (Wald = 4.93; p = 0.013, one-tailed), but not on *out-group* helping (Wald = 0.28; p = 0.599, two-tailed).

My theory suggests that absent rewards tied to peer recognition, a peer recognition system will have a greater effect on helping behavior among in-group (versus out-group) members because it enhances the sense of team identity these individuals feel toward one another. Similar to Towry (2003), I measure participants' sense of team identity using the following question: "To what extent do you view the person you had the opportunity to help as a teammate?" Responses are provided on a seven-point scale with endpoints 1 = "Not at all," and 7 = "Very much." Mean responses to this question by condition are graphically displayed in Figure 4.5.

As predicted by my theory, among individuals who share an in-group status, a peer recognition system (absent rewards) leads to a significant increase in the sense of team identity participants feel (untabulated; t = 1.89; p = 0.032, one-tailed). Further, this increase in team identification mediates the relation between a peer recognition system (absent rewards) and the likelihood of being a "high helper" among in-group members

(untabulated; lower bound = 0.03, upper bound = 0.99).[23] Conversely, the presence of a peer recognition system does not significantly increase team identification for out-group members (untabulated; t = 0.38; p = 0.706, two-tailed).

Hypothesis 3 predicts that adding rewards to a peer recognition system will be more beneficial for *out-group* helping than *in-group* helping. This suggests an interaction between group affiliation and the presence/absence of rewards within a peer recognition system. To test this hypothesis, I run a binary logistical regression with "high helper" as the dependent variable and group affiliation, rewards (present/absent), and the interaction term as independent variables. Results are presented in Table 4.4, Panel A. As shown, the interaction term is significant (Wald = 2.61; p = 0.054, one-tailed), supporting Hypothesis 3.[24] Follow up analyses in Panel B show that adding rewards to a peer recognition system has a positive effect on *out-group* helping (Wald = 2.30; p = 0.065, one-tailed), but not on *in-group* helping (Wald = 0.58; p = 0.448, two-tailed).

These findings are consistent with my theory, which suggests that social motivation and rewards act as substitutes, and that adding rewards to a peer recognition

[23] In addition to measuring participants' feelings of team identity, I also asked participants to indicate their agreement/disagreement to four statements intended to assess the degree to which they were concerned about the social approval of the person they could help. The four statements were: (1) I thought a lot about what that person might think of me. (2) I was concerned about the approval of that person. (3) I thought a lot about what that person's opinion of me would be. (4) I was concerned about that person's impression of me. When I combine these four questions into a single factor score I find that it does not mediate the relation between a peer recognition system and the likelihood of being a "high helper" regardless of whether participants share an in-group status or not. This suggests that it is the team identity participants feel and not concerns for social approval that are driving the increase in helping behavior when no rewards are present and participants share an in-group status.

[24] If participants who failed to correctly identify that the participant they could help was/was not in their color group are dropped, this result becomes more significant (untabulated; $\chi^2 = 3.75$; p = 0.027, one-tailed).

system is more effective for out-group versus in-group helping because in the out-group case there is less substitution of social motivation taking place. Also consistent with this theory, I find that, although the presence of a peer recognition (absent rewards) led to a significant increase in the sense of team identity *in-group* members feel (relative to when no peer recognition system is present, as reported above), this increase is no longer significant when rewards are added to the system (untabulated; $t = 1.12$; $p = 0.266$, two-tailed) (see Figure 4.5). I also find that rewards have no significant effect on the sense of team identity felt by out-group members (untabulated; $t = 0.09$; $p = 0.932$, two-tailed). This is also consistent with my theory that the reward incentive (and not a sense of team identity) is driving the increase in helping behavior among out-group participants.

Alternative test of hypotheses: no help versus some help

In this section, I analyze how my manipulations influenced whether a participant chose to help versus not help at all, and in the following section, I analyze the amount of help chosen, *given that a participant chose to help*. Using a binary dependent variable coded as 1 if a participant chose to help (regardless of the amount) and 0 if they did not help at all (i.e., they used the full 4 minutes to work for themselves), I find support for Hypothesis 1a (Wald = 2.95; $p = 0.043$, one-tailed). Further, Hypothesis 1b is also supported using this dependent variable (95% confidence interval: lower bound = 0.31; upper bound = 1.48). This suggests that the presence (versus absence) of a peer recognition system led participants to be more likely to help and that their *perceived likelihood of being helped* explains this effect.

I next test whether Hypothesis 2 and Hypothesis 3 are supported using this dependent variable, but find that they are not (Hypothesis 2, $p = 0.405$ and Hypothesis 3,

p = 0.491). As such, I cannot assert that the probability of helping some versus not at all is influenced by my varables in the interactive ways that I hypothesized.

Alternative test of hypotheses: Amount of help, given a participant chose to help

In this section I test whether the *amount* of help participants chose to provide, given that they chose to help (i.e., *time helping* > 0), varies in a manner consistent with my predictions using ordinal logistic regression. I first test whether participants provide *more* help when a peer recognition system is present versus absent (Hypothesis 1a), but do not find support that they do (Wald = 1.02; p = 0.157, one-tailed). Similarly, Hypothesis 1b is not supported. Given this combined with my prior analysis, it appears that the general presence versus absence of a peer recognition system primarily influences whether help is given (versus not), but not *how much* help is given.

I next test Hypothesis 2 that a peer recognition system will have a greater positive effect on *in-group* versus *out-group* helping and find marginal support for the predicted interaction (Wald = 1.78; p = 0.091, one-tailed). I also test Hypothesis 3 that adding rewards to a peer recognition system will have a greater positive effect on *out-group* helping than *in-group* helping and again find marginal support for the predicted interaction (Wald = 2.34; p = 0.063, one-tailed).

While the analysis presented in the prior paragraph does provide marginal support for my predicted interactions, the results do not fully match those reported earlier using the median split. As such, I conduct additional analysis to provide further insights. Specifically, it is possible that certain types of individuals may choose to always help, regardless of whether or not (or what type of) a peer recognition system is in place. If this is the case, these individuals may be clouding my ability to detect my predicted effects

among those participants who *are* receptive to peer recognition systems. As shown in Table 4.1, the percent of participants who helped the maximum of 240 seconds (i.e., gave all their time to help) ranges from 6.3% - 21.9%. A chi-square test however, does not find that the probability of helping the maximum varies across my six experimental conditions (untabulated; $\chi^2 = 4.85$; $p = 0.434$, two-tailed). This suggests that the proportion of participants at the maximum of the helping range does not significantly vary based on the presence (or type) of peer recognition system (or group affiliation for that matter).[25]

Given this, I proceed to test whether the interactions predicted in Hypotheses 2 and 3 manifest among participants in the middle of the range (i.e., who did not chose to help for 0 or 240 seconds). I first test Hypothesis 2, which predicts that peer recognition systems (absent rewards) will be more effective in motivating *in-group* versus *out-group* helping. Results from the ordinal logistic regression reveal a highly significant interaction (untabulated; Wald = 7.40; $p = 0.004$, one-tailed). Hypothesis 3 predicts that adding rewards to a peer recognition system will be more beneficial for *out-group* versus *in-group* helping. Results from the ordinal logistic regression again reveal a highly significant interaction (untabulated; Wald = 8.33; $p = 0.002$, one-tailed).[26]

[25] This result is akin to findings reported in the honesty literature (e.g., Evans et al., 2001) which find that some individuals always prefer to be honest regardless of their condition. I also find some evidence that these individuals are unique demographically. Specifically, there were less non-native English speakers who helped the maximum relative to those who chose other (non-zero) helping choices ($\chi^2 = 3.07$; $p = 0.080$, two-tailed). Accordingly, it is possible that cultural differences were associated with the helping choices of these individuals.

[26] Results reported in this paragraph for Hypotheses 2 and 3 are inferentially identical if I use linear regression instead of ordinal logistic regression.

Discussion of results

While my analyses suggest that my results are subject to limitations, I also believe that I have provided relevant findings that support my theory. I first presented evidence that my theory is effective in predicting the likelihood that a participant will be a relatively "high helper." I defined "high helpers" as those who gave at least half of their time to help the other participant. I believe that this analysis provides relevant and generalizable inferences, as it captures whether participants helped relatively more or relatively less. I then conducted alternative tests in which I analyzed participants' choices to help versus not, and the amount of help given, assuming that they did help. These analyses revealed three additional takeaways. First, they suggest that the presence (versus absence) of a peer recognition system appears to be a primary driver in leading more individuals to help (versus not). Second, they suggest that certain types of individuals may not respond to peer recognition systems. This may be informative for firms contemplating implementing a peer recognition system. For example, if the firm believes that a large number of their employees fall into this category, a peer recognition system may be less effective for them. And third, importantly, I do find that my theory is predictive of behavior among individuals in the middle of the helping range. Thus, although my theory may not apply to *every* employee, it does appear to apply to a significant group of employees. Taken together, I believe I provide compelling findings in support of my theoretical predictions.

Table 4.1 Descriptive Statistics

Count of participants making each *time spent helping* choice, as well as mean time (standard deviations) for each condition

Seconds helping:			0	60	120	180	240	Total	Mean (s.d.)
	No peer recognition	n	14	6	8	0	4	32	71.25
			43.8%	18.8%	25.0%	0.0%	12.5%	100%	(81.27)
Out-group	***Peer recognition***	n	10	12	4	0	6	32	82.50
			31.3%	37.5%	12.5%	0.0%	18.8%	100%	(85.87)
	Peer recognition with rewards	n	11	5	7	2	7	32	99.38
			34.4%	15.6%	21.9%	6.3%	21.9%	100%	(93.46)
	No peer recognition	n	13	8	7	1	3	32	69.38
			40.6%	25.0%	21.9%	3.1%	9.4%	100%	(76.37)
In-group	***Peer recognition***	n	8	4	14	4	2	32	97.50
			25.0%	12.5%	43.8%	12.5%	6.3%	100%	(71.07)
	Peer recognition with rewards	n	9	6	11	0	6	32	97.50
			28.1%	18.8%	34.4%	0.0%	18.8%	100%	(84.51)
	Total	N	65	41	51	7	28	192	86.25

Table 4.1 (Cont.)

Notes to Table 4.1:
- *Time spent helping* is measured as the amount of time (in seconds) that participants chose to spend helping the other participant. Participants could choose to spend 0 seconds, 60 seconds, 120 seconds, 180 seconds, or 240 seconds.
-In the *no peer recognition* condition, there is no mention of a peer recognition system or an opportunity to be recognized by a peer.
-In the *peer recognition* condition, participants are informed that there is a peer recognition system present and that they could be recognized and thanked if they choose to help.
-In the *peer recognition with rewards* condition, participants receive the same manipulation as participants in the *peer recognition* condition but are also informed that they will be allowed to choose a small reward if they are recognized. The reward options were the following: stress ball, pencil (with school insignia on it), Snickers candy bar, M&M's, and Twix candy bar.
-In the *out-group* condition, the participant that could be helped is from a different color group than the helping participant.
-In the *in-group* condition, the participant that could be helped is from the same color group as the helping participant.

Table 4.2 Descriptive statistics and tests for Hypothesis 1a

Panel A: Descriptive statistics: percent of "high helpers" by condition and mean (standard deviation) *perceived likelihood of receiving help* by condition

	No peer recognition conditions	***All* peer recognition present conditions**
Percent "high helpers"	35.9% n = 64	49.2% n = 128
Perceived likelihood of receiving help	2.71 (1.28) n = 64	3.35 (1.44) n = 128

Panel B: Effect of a peer recognition system on likelihood of being a "high helper" and *perceived likelihood of receiving help*

	Test statistic	**p-value**
"High helpers" No peer recognition system vs *All* peer recognition present conditions	Wald =3.02	0.041*
Perceived likelihood of receiving help No peer recognition system vs *All* peer recognition present conditions	t = 3.01	0.002*

* Presented p-value is one-tailed for predicted effect.

Notes to Table 4.2:
-*High helper* is a binary variable which equals 0 if the participant spent 60 seconds or less helping and 1 if the participant spent 120 seconds or more helping.
-*Perceived likelihood of receiving help:* represents the average response to the following question: "How likely do you think it is that you were helped by someone else during the additional time?" (responses were on a seven point scale anchored at 1 = "Very unlikely," and 7 = "Very likely").
-In the *no peer recognition* conditions, there is no mention of a peer recognition system or an opportunity to be recognized by a peer.
-All peer recognition present conditions consist of the *peer recognition* conditions and the *peer recognition with rewards* conditions. In the *peer recognition* conditions, participants are informed that there is a peer recognition system present and that they could be recognized and thanked if they choose to help. In the *peer recognition with rewards* conditions, participants receive the same manipulation as participants in the *peer recognition* condition but are also informed that they will be allowed to choose a small reward if they are recognized.

Table 4.3 Tests for Hypothesis 2

Panel A: Test for Hypothesis 2, interaction between group affiliation and the presence/absence of a peer recognition system on the likelihood of being a "high helper"

Binary Logistic Regression Output	**Wald χ^2**	**df**	**p-value**
Group affiliation	2.46	1	0.117
Peer recognition present/absent	1.41	1	0.236
Group affiliation * Peer recognition	3.74	1	0.027*

* Presented p-value is one-tailed for predicted effect.

Panel B: Follow up analyses for Hypothesis 2, effect of a peer recognition system on *in-group* and *out-group* likelihood of being a "high helper"

	Wald χ^2	**p-value**
Presence versus absence of peer recognition system when:		
In-group	4.93	0.013*
Out-group	0.28	0.599

* Presented p-value is one-tailed

Notes to Table 4.3:
- *High helper* is a binary variable which equals 0 if the participant spent 60 seconds or less helping and 1 if the participant spent 120 seconds or more helping.
-*Group affiliation* is a binary variable that equals 1 if *in-group* and 0 if *out-group.* In the *in-group* condition, the participant that could be helped is from the same color group as the helping participant. In the *out-group* condition, the participant that could be helped is from a different color group than the helping participant.
-*Peer recognition present/absent* is a binary variable that equal 1 for the *peer recognition* condition and 0 for the *no peer recognition* condition. In the *peer recognition* condition, participants are informed that there is a peer recognition system present and that they could be recognized and thanked if they choose to help. In the *no peer recognition* condition, there is no mention of a peer recognition system or an opportunity to be recognized by a peer.

Table 4.4 Tests for Hypothesis 3

Panel A: Test for Hypothesis 3, interaction between group affiliation and the presence/absence of rewards on the likelihood of being a "high helper"

Binary Logistic Regression Output	**Wald χ^2**	**df**	**p-value**
Group affiliation	3.83	1	0.050
Rewards present/absent	0.31	1	0.580
Group affiliation * Rewards	2.61	1	0.054*

* Presented p-value is one-tailed for predicted effect.

Panel B: Follow up analyses for Hypothesis 3, effect of rewards on *in-group* and *out-group* likelihood of being a "high helper"

	Wald χ^2	**p-value**
Presence versus absence of rewards within peer recognition		
In-group	0.58	0.448
Out-group	2.30	0.065*

* Presented p-value is one-tailed

Notes to Table 4.1:
- *High helper* is a binary variable which equals 0 if the participant spent 60 seconds or less helping and 1 if the participant spent 120 seconds or more helping.
-*Group affiliation* is a binary variable that equals 1 if *in-group* and 0 if *out-group.* In the *in-group* condition, the participant that could be helped is from the same color group as the helping participant. In the *out-group* condition, the participant that could be helped is from a different color group than the helping participant.
- R*ewards present/absent* is a binary variable that equals 1 if *peer recognition with rewards* condition and 0 if *peer recognition* condition. In the *peer recognition* condition, participants are informed that there is a peer recognition system present and that they could be recognized and thanked if they choose to help. In the *peer recognition with rewards* condition, participants receive the same manipulation as participants in the *peer recognition* condition but are also informed that they will be allowed to choose a small reward if they are recognized. The reward options were the following: stress ball, pencil (with school insignia on it), Snickers candy bar, M&M's, and Twix candy bar.

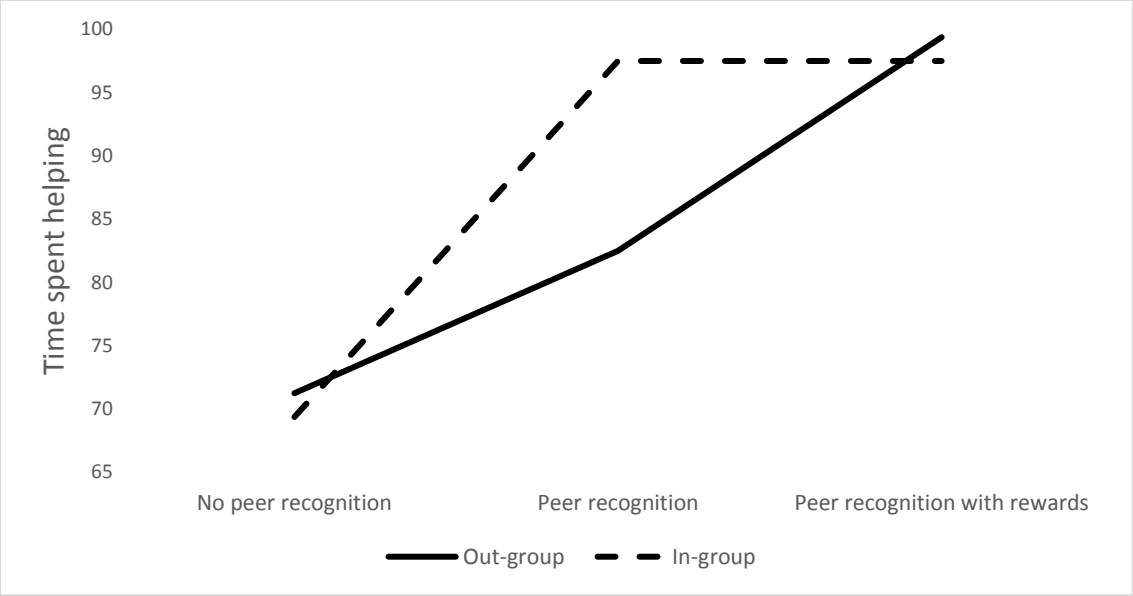
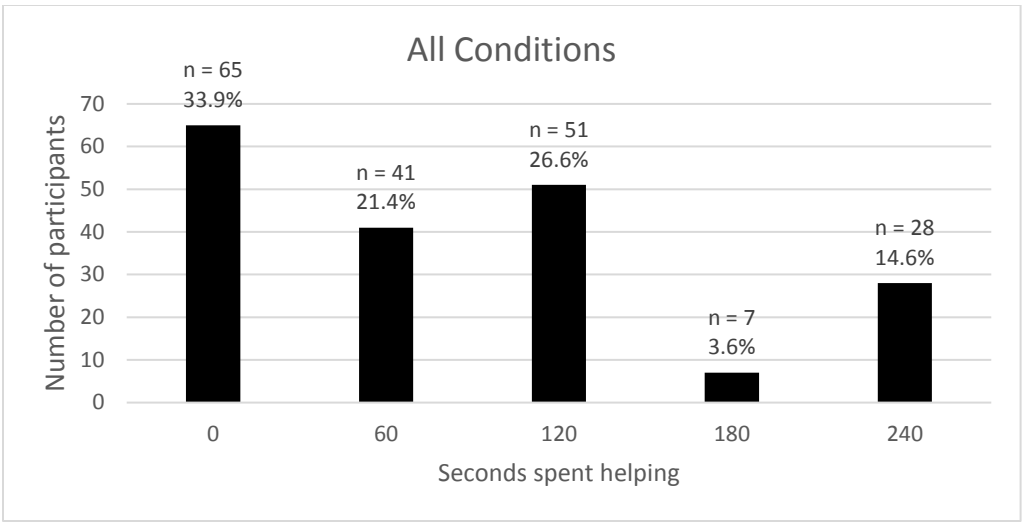


Figure 4.1 Pattern of means for helping behavior by condition

Notes to Figure 4.1:
-*Time spent helping* is measured as the amount of time (in seconds) that participants chose to spend helping the other participant. Participants could choose to spend between zero and four minutes helping, in one minute increments.
-In the *no peer recognition* condition, there is no mention of a peer recognition system or an opportunity to be recognized by a peer.
-In the *peer recognition* condition, participants are informed that there is a peer recognition system present and that they could be recognized and thanked if they choose to help.
-In the *peer recognition with rewards* condition, participants receive the same manipulation as participants in the *peer recognition* condition but are also informed that they will be allowed to choose a small reward if they are recognized. The reward options were the following: stress ball, pencil (with school insignia on it), Snickers candy bar, M&M's, and Twix candy bar.
-In the *out-group* condition, the participant that could be helped is from a different color group than the helping participant.
-In the *in-group* condition, the participant that could be helped is from the same color group as the helping participant.



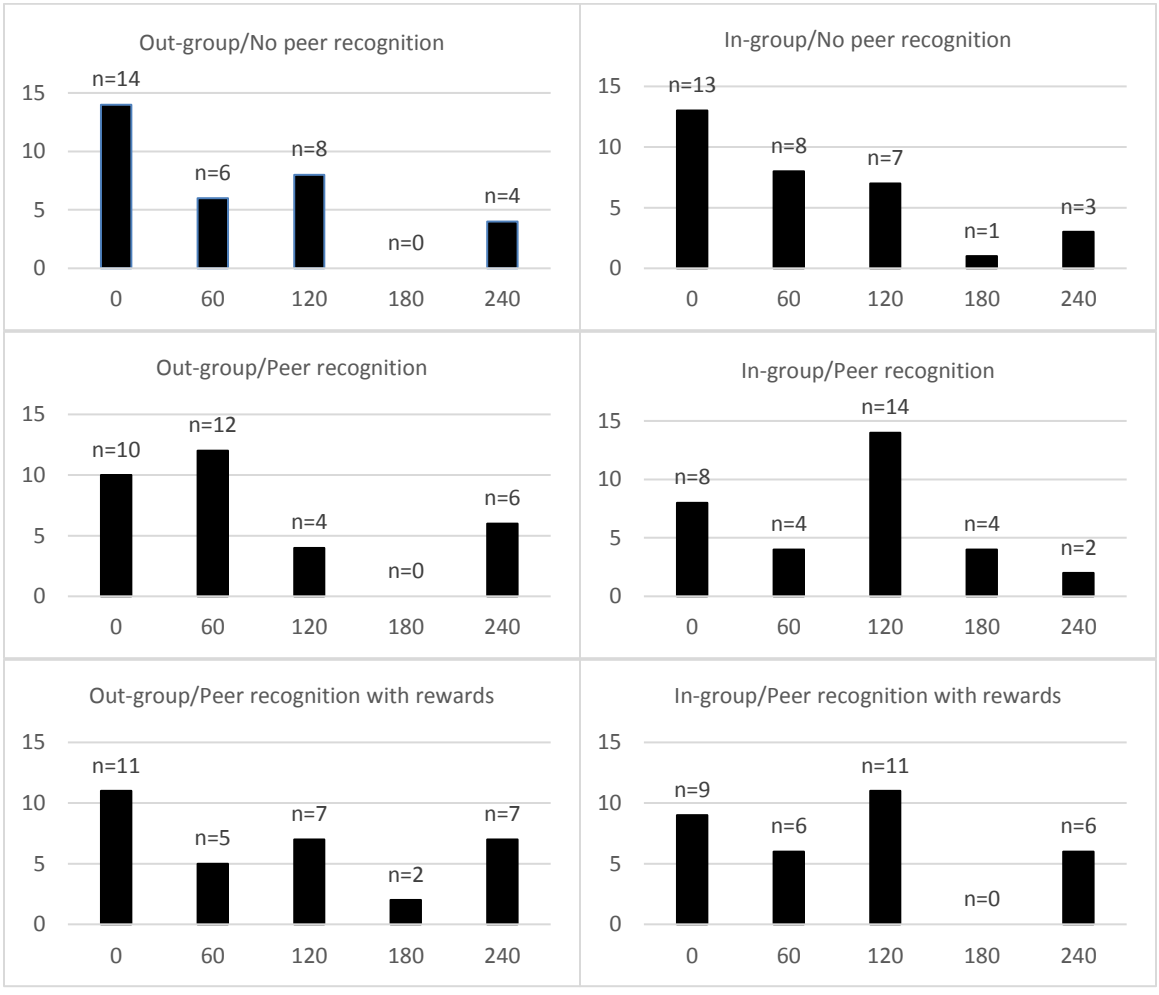


Figure 4.2 Number of participants choosing each amount of time to help

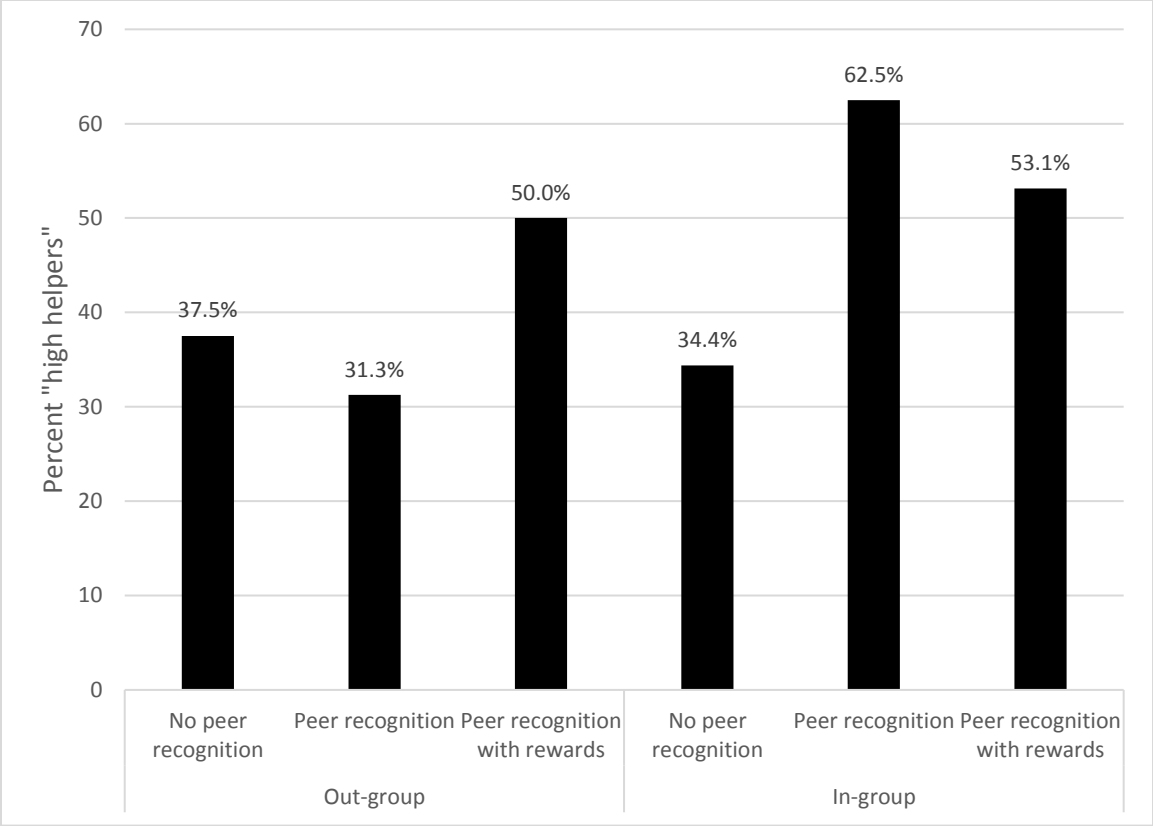
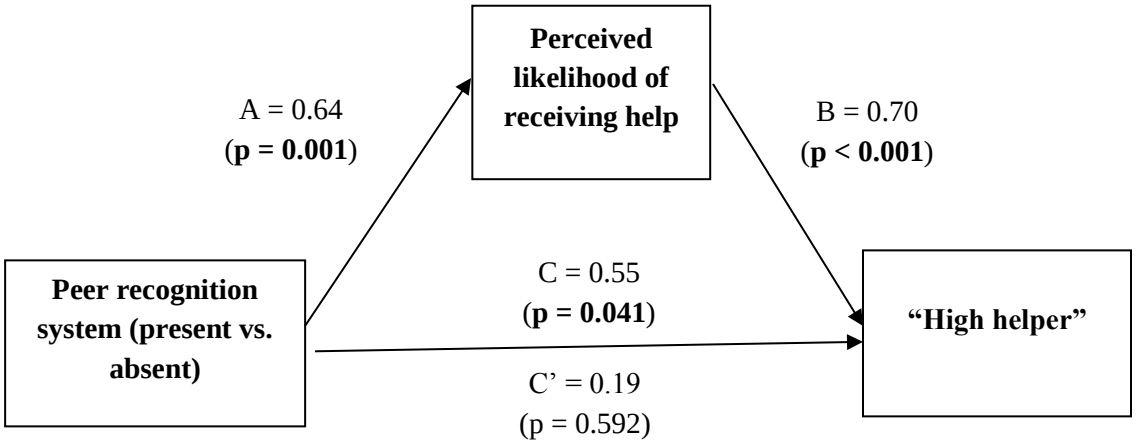


Figure 4.3 Percentage of participants who were "high helpers" by condition

Notes to Figure 4.3:
- *High helper* is a binary variable which equals 0 if the participant spent 60 seconds or less helping and 1 if the participant spent 120 seconds or more helping.
-In the *no peer recognition* condition, there is no mention of a peer recognition system or an opportunity to be recognized by a peer.
-In the *peer recognition* condition, participants are informed that there is a peer recognition system present and that they could be recognized and thanked if they choose to help.
-In the *peer recognition with rewards* condition, participants receive the same manipulation as participants in the *peer recognition* condition but are also informed that they will be allowed to choose a small reward if they are recognized. The reward options were the following: stress ball, pencil (with school insignia on it), Snickers candy bar, M&M's, and Twix candy bar.
-In the *out-group* condition, the participant that could be helped is from a different color group than the helping participant.
-In the *in-group* condition, the participant that could be helped is from the same color group as the helping participant.



Confidence interval for the indirect effect of a peer recognition system on time helping through perceived likelihood of being helped:

	Lower Bound	Upper Bound
Indirect Effect	0.17	0.83*

* Presented confidence interval is based on a 95% confidence level.

Figure 4.4 Test of Hypothesis 1b: Mediation analysis

Notes to figure 4.4:
-Bolded tests are one-tailed.
-P*eer recognition present* (includes both the p*eer recognition* and *peer recognition with rewards* conditions): Participants are informed that there is a peer recognition system present and that they could be recognized and thanked if they choose to help.
-*Perceived likelihood of receiving help:* represents the average response to the following question: "How likely do you think it is that you were helped by someone else during the additional time?" (responses were on a seven point scale anchored at 1 = "Very unlikely," and 7 = "Very likely").
-*High helper:* is a binary variable which equals 0 if the participant spent 60 seconds or less helping and 1 if the participant spent 120 seconds or more helping.
-Process uses binary logistic regression when assessing links with a binary dependent variable.
-C represents the total effect of a *Peer recognition system* on the likelihood of being a "high helper" without considering the effect of the mediating variable. C' represents the direct effect of a *Peer recognition system* on the likelihood of being a "high helper" when including the effect of the mediating variable.

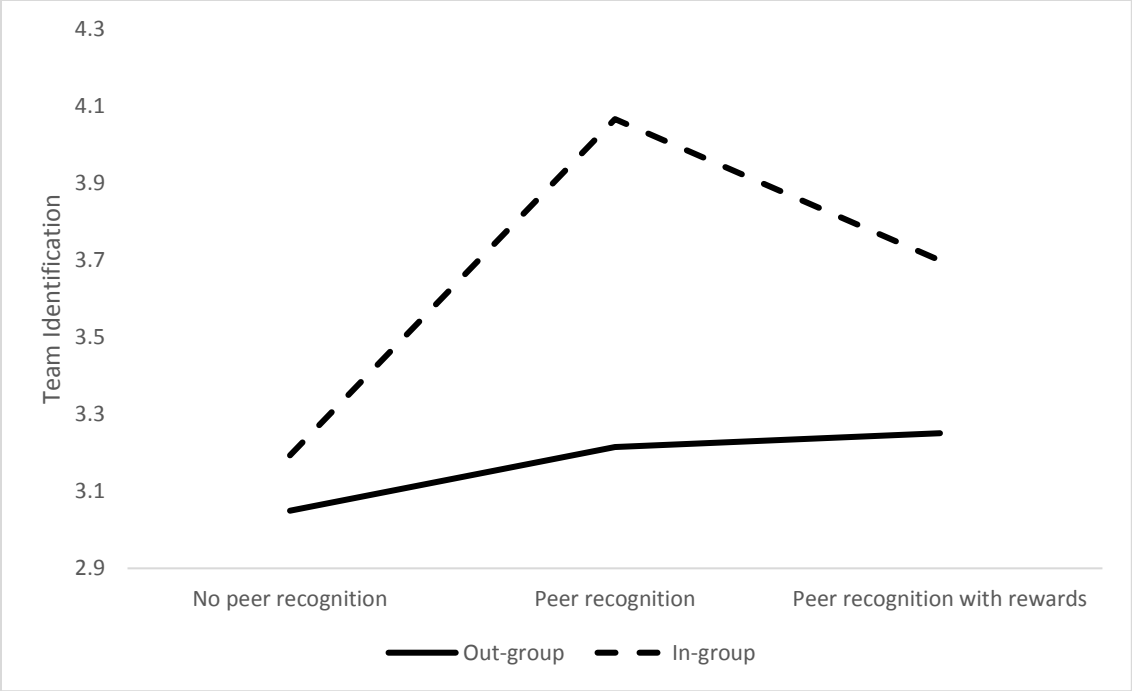


Figure 4.5 Plot of means for the sense of *team identity* participants feel in relation to the person they could help by condition

Notes to Figure 4.5:
-*Team identity* is measured by participant's responses to the following question: "To what extent do you view the person you had the opportunity to help as a teammate?" Responses are given on a seven point scale with endpoints 1 = "Not at all" and 7 = "Very much."
-In the *no peer recognition* condition, there is no mention of a peer recognition system or an opportunity to be recognized by a peer.
-In the *peer recognition* condition, participants are informed that there is a peer recognition system present and that they could be recognized and thanked if they choose to help.
-In the *peer recognition with rewards* condition, participants receive the same manipulation as participants in the *peer recognition* condition but are also informed that they will be allowed to choose a small reward if they are recognized. The reward options were the following: stress ball, pencil (with school insignia on it), Snickers candy bar, M&M's, and Twix candy bar.
-In the *out-group* condition, the participant that could be helped is from a different color group than the helping participant.
-In the *in-group* condition, the participant that could be helped is from the same color group as the helping participant.

CHAPTER 5

CONCLUSION

This study finds that group affiliation is an important factor to consider when designing peer recognition systems and provides insights for managers regarding when tying rewards to peer recognition is likely to be most beneficial. In so doing, this study provides valuable insights for managerial accountants who have responsibility over incentive, control, and performance management systems (Bonner & Sprinkle, 2002; IMA, 2019). This study suggests that firms should consider the nature of the social environment and group affiliations of their employees when deciding what type of peer recognition system to implement. For example, if a firm wishes to encourage greater helping behavior across groups, tying rewards to the peer recognition may be particularly useful for them. Alternatively, if a firm is able to strengthen the degree to which employees view themselves as being part of the same group, my results suggest that tying rewards to peer recognition provides little incremental benefit.

This study also adds to the motivation literature by considering the effects of *peer* recognition systems. Research has recently begun to examine the effects of recognition from superiors on employee effort to complete their own work (Bradler et al., 2014; Burke, 2019; Burke et al., 2019; Wang, 2017), but has not yet considered the effects of recognition from peers on helping behaviors. This paper provides an initial exploration into the effects of peer recognition systems on helping behavior, and suggests that group

affiliation and the addition of rewards are important factors to consider in understanding the effects of peer recognition systems.

This study is subject to limitations that offer possibilities for future research. While the business press tends to suggest that most firms are using too little, rather than too much recognition (e.g., Gallup, 2016; Motivosity, 2016; Nelson, 2012), it is possible that excessive amounts of recognition (including from peers) could cheapen the perceived value of being recognized and lead these systems to become ineffective. Further, the design of my study would seem to best speak to settings in which informal peer recognition is mostly absent, or generally ineffective. If companies already have highly effective informal recognition cultures in place, then the effect of adding a formal peer recognition system could be less (or more) positive than what is documented here. Future research may wish to consider these possibilities. In my experiment, I control for reputation and strategic effects by limiting interactions to a single period. This design choice allows me to cleanly test my theoretical explanations; however, future research might consider the effects of peer recognition in a multi-period setting. Considering multiple periods could clarify how being recognized (or not) influences helping behavior in future periods.

In my study, I assume that the firm wants helping behavior, and that within the possible range, more helping is better; however there likely exist settings where this is not the case. Future research could consider whether peer recognition systems might lead to excessive amounts of helping (e.g., at the expense of employees' own work) and whether different modifications to those systems might encourage more optimal amounts of helping. Further, in addition to helping behavior, firms likely wish to capture multiple

benefits from implementing peer recognition programs (e.g., better individual performance, employee satisfaction, reduced turnover, etc.). The effect of peer recognition systems on other dependent variables could be an interesting area for future research. In addition, future research might consider the effect of varying the frequency of peer recognition or the degree of personalization of recognition messages. Future research might also consider costs and benefits of varying the value of rewards associated with peer recognition.

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APPENDIX A

EXCERPT FROM EXPERIMENTAL INSTRUMENT

The experimenter read the following instructions, while participants followed along on computer monitors.

Your task today is to input hypothetical customer numbers into the computer. An example is shown below:

Name	Customer Number
Bob Martino	652331
Sam Smith	624409
Lydia Wright	851612
Melinda Crapo	622243
Hank Nelson	319882

Name: **Sam Smith**

Customer Number:

If you were given this example you would need to type by hand (you will not be able to copy and paste) "624409" into the customer number box for Sam Smith which is shown above. There will be many such entries to complete and you can access more entries by scrolling down the page. Once you input the number you can proceed to the next entry—you do not have to press enter.

While completing the actual task all participants saw the same customer listings in the same order. Only entries that were input correctly were counted, however as discussed in the body of the paper, my primary dependent variable is the amount of time participants spent helping (not the number of entries they completed).