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Abstract

Make a Name for Yourself: Recognizability, Prosociality, and Identity Expression in Online Pseudonymous Contexts

Katie Duchscherer

2021

Given the increasing prevalence of social media in people's social lives, understanding the dynamics of interpersonal interaction online is timely and important, both theoretically and practically. One key element in these dynamics is the way people identify themselves online. Identity can influence how people see themselves and others, as well as how people treat others. One way through which people create or claim an identity online is through the use of a pseudonym: a self-designed identifier that is used in place of one's actual name. My dissertation investigates how Internet users come to value persistent online identifications, such as pseudonyms, as extensions of self and how this process shapes online behavior. The specific goals of this dissertation are to investigate how (a) pseudonymous settings online influence prosociality relative to anonymous settings, and (b) different features of pseudonyms, such as their persistence and level of expressiveness, can change people's expectations for their own and others' identifiability and thereby influence behavior and attitudes. This dissertation also studies how personality factors, social context, and group identity can serve to moderate the effects of pseudonymity on behavior and attitudes.

The dissertation pursues these goals across six chapters. Chapter 1 introduces the key concepts and objectives in the dissertation. Chapter 2, which contrasts pseudonymity

and anonymity, reviews the existing literature and outlines theoretical considerations that inform subsequent study designs. Chapter 2 explains how pseudonymity may make personal and group identities salient, and how personal and situational factors may interact with pseudonymity to influence behavior. Chapter 3 investigates in two studies how prosocial behavior online may be influenced through the use of personal identifiers. These two studies distinguish the effects of anonymity from pseudonymity (Study 1) between temporary and persistent pseudonymity (Studies 1 and 2) in online behavior. The results of Study 1 and Study 2 suggest that the effects of having a pseudonym, compared to being anonymous, or having a persistent versus temporary pseudonym, influence prosocial behavior primarily by affecting perceptions of recognizability. Chapter 4 presents an experiment (Study 3) that investigated how qualities of persistent pseudonyms can affect users' psychological states and ultimately their online social behavior. It explored the effect of a pseudonym that contained "unique" personally-relevant information or one that was personally relevant but also is designed to be expressive of oneself, compared to a control condition in which participants had a persistent pseudonym that was designed to individuate them (a pseudonym that distorts personal information in an unrecognizable fashion), on online social experiences and behavior. Although, as expected, participants valued unique and expressive pseudonyms more than information pseudonyms and found expressive pseudonyms as being more personally reflective, inconsistent with expectations, unique and expressive pseudonyms did not make participants feel more recognizable to others than did information pseudonyms. Chapter 4 describes Studies 4 and 5 that further considered prosociality and group dynamics. Study 4 included an additional manipulation of others' recognizability

and a measure of participants' concerns about leaving a good impression on others, and it also investigated participants' everyday sadism as a moderator of prosociality. Guided by findings from Study 4, Study 5 manipulated the perceived group membership of participants and included other aspects of altruistic punishment (Fehr & Gächter, 2002) as behavioral measures. These two studies indicated that there may be an optimal amount of personal information to receive about another person online—particularly when one does not feel a strong sense of ingroup cohesion with this other person. When individual identities were emphasized, individuating information about others online appeared to be “too much information,” which discouraged prosocial feelings. By contrast, when group identity was salient, receiving personal information about others did not reduce prosociality relative to not receiving such information. Chapter 6 discusses implications, limitations, and future directions of my research. In particular, Chapter 6 compares the results of the studies to existing literature and explains the studies' novel contributions, while also acknowledging their shortcomings. Chapter 6 then proposes future studies for testing wider implications of the dissertation research. Ultimately, I expect that my work will contribute to the psychological understanding of online social interaction, particularly in the context of identity, and that its implementation will help both website administrators and users to create social spaces that are safer, more collaborative, and more enjoyable to use.

Make a Name for Yourself: Recognizability, Prosociality, and Identity Expression in
Online Pseudonymous Contexts

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Presented to the Faculty of the Graduate School
of
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Doctor of Philosophy

by
Katie M. Duchscherer

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Chapter 1:

Introduction

Dramatic advances in computer-mediated communication have facilitated the creation of social spaces within the Internet—situations in which people can interact with each other in ways that are analogous to how they interact in physical space, such as conversing or sharing items they find interesting. The increased availability of Internet-capable devices, such as computers and smartphones, has opened the possibility of social interaction online to a wider subset of the population than ever before; even people who are homeless make extensive use of social networking sites (Guadagno, Muscanell, & Pollio, 2013). Social networking sites are online places where people can connect and communicate with others. These spaces often serve as nexuses for positive and constructive social interaction, with users forming close relationships through the use of social networking tools online (Chayko, 2014), and with some even finding love (Cacioppo, Cacioppo, Gonzaga, Ogburn, & VanderWeele, 2013; McKenna, Green, & Gleason, 2002). Furthermore, repeated positive interactions with others online may facilitate the formation of unique communities with their own standards of behavior (i.e., social norms; Bernhard, Fehr, & Fischbacher, 2006). For example, users of the social networking site Reddit (reddit.com) may take advantage of the website’s allowance of multiple user accounts to create one-off, “throwaway” accounts for disclosing personal secrets separately from their primary account (Leavitt, 2015). My dissertation builds on existing social psychological theory to create expectations for online settings in which people interact while using pseudonyms (self-designed or chosen identifiers) and how people’s behavior in these settings differs from or is similar to their behavior in

anonymous settings—that is, settings in which a person feels relatively unidentifiable because the settings do not use names or other personal identifiers.

Although there has been considerable attention devoted to antisocial behavior online, such as trolling (see Buckels, Trapnell, & Paulhus, 2014), prosocial behavior is also prevalent online. Prosocial behavior involves intentional actions oriented toward benefiting others (Eisenberg & Miller, 1987; Sproull, Conley, & Moon, 2005). Internet prosocial behavior may include, for example, offering assistance to another person who has a specific problem, or volunteering helpful information to an online community as a whole (see Sproull et al., 2005). Consistent with work on altruistic punishment (punishing antisocial actors to reinforce prosocial norms; Fehr & Gächter, 2002) more broadly, online prosocial behavior may involve actions to address behaviors exhibited by another person that would be detrimental to an online community.

Studying the translation of psychological processes into online behavior has prompted researchers to develop theories specific to social interaction online. Social psychological perspectives on behavior on the Internet have focused primarily on understanding how people behave in online anonymous settings. Anonymity represents a situation in which a person is not identified using a name or other personal identifier (a designation that serves to differentiate one person from others). Specifically, research suggests that anonymous settings, due to their lack of personal identifiers, may make individuals feel more as if they are a member of a crowd or overarching group than a singular person (see Postmes, Spears, & Lea, 1998). Anonymity may also make individuals feel less personally identifiable (i.e., more “deindividuated”), and thereby safer from reputational damage or reprisal due to harmful behaviors; such a situation may

lead to anonymous people feeling relatively less socially inhibited (Suler, 2004), with a variety of consequences. For example, when people feel more anonymous—compared to more personally identifiable—they conform less to group opinions when responding to opinion questions (see Stowell, Oldham, & Bennett, 2010), are less likely to help others (Dovidio, Schroeder, & Penner, 2006), and are more likely to disclose personal information (Joinson, 2001). Such disinhibition can encourage positive outcomes—such as the formation of close relationships based on shared vulnerabilities or personal experiences—but it can also encourage negative ones, such as a person feeling more free to harass or bully others when anonymous (Udris, 2014).

Compared to the effects of anonymity, research on social interaction online has focused less on pseudonymous settings—which are situations online in which one may use a self-designed identifier that is different from one’s “real name.” Considering the nature of these settings may illuminate aspects of online behavior that differ from those found in anonymous settings. Pseudonyms are present in a wide variety of online settings, including general settings such as online forums and news website comment sections, and specific popular social media and blogging platforms such as Twitter, Tumblr, Wordpress, and YouTube. Thus, pseudonymous interactions may comprise a considerable percentage of a person’s interactions with others online.

These pseudonymous interactions may differ from anonymous interactions in several ways. In contrast to the facelessness of anonymity, pseudonyms are usually reflective of their users, and they may provide a way for a user to provide a “first impression” to others—to communicate a bite-sized description of the self (Zhao, 2005). Pseudonyms are usually personally-designed or chosen and are thereby also different

from one's "real name" (the name by which one prefers to be called in most physical situations)¹. Furthermore, although anonymity may be either maintained or broken, pseudonymity is more flexible in its provision of recognizability to its users; a person may use the same pseudonym over a long period of time (a persistent pseudonym) or may use a given pseudonym for only a short period of time, and may periodically switch pseudonyms for different needs (thereby using multiple temporary pseudonyms). Thus, pseudonyms may serve both to protect one's physical identity from others and to provide an avenue for self-expression, through which one can still be recognized for one's actions, if one so chooses.

This dual nature of pseudonyms, in that they provide both privacy and recognizability, presents two distinct sets of expectations for how the use of pseudonyms may influence the behavior of people online, relative to anonymous contexts. Anonymous contexts seem to disinhibit people in ways that can encourage either more vulnerability or more cruelty than in contexts in which people are easily recognized (Udris, 2014). Behavior in pseudonymous contexts may differ in two distinct ways. The first possibility is that pseudonymous contexts, because they prevent others from knowing one's true identity, simply act as less extreme versions of anonymous contexts, with users taking advantage of their relative inability to be recognized as "themselves" to act in ways they otherwise would not. A second alternative is that because pseudonymity creates a unique context due to its facilitation of self-expression, a pseudonym may serve to allow its user to remain identifiable over multiple interactions, and perhaps may also express an aspect of its user's identity online. That is, users of pseudonyms may come to

feel recognizable, and thereby responsible for their actions, in ways that anonymous people do not.

This second possibility, which suggests that pseudonyms represent a form of personal identity, leads to several expectations for the results of manipulating factors of pseudonymity in online contexts. For instance, a pseudonym that is frequently changed or discarded may lead a user to feel still relatively anonymous. Such a pseudonym may be used for relatively benign ends, such as to separate a more recognizable pseudonym from a personal secret someone is disclosing (Leavitt, 2015), or users may create temporary accounts to deceive or manipulate others by posing as someone different from their more recognizable persistent pseudonym (also known as “sockpuppeting”; Kumar, Cheng, Leskovec, & Subrahmanian, 2017). Both risky self-disclosure and the malicious behavior of sockpuppeting found in temporary pseudonymity are more similar to the disinhibition of anonymity than to the relative inhibition of recognizability. In contrast, pseudonyms that persist across many interactions may start to become more recognizable through gaining a reputation—that is, they may become less anonymous. This expectation is consistent with the presence of online reputation systems for user accounts on websites, such as Reddit’s “karma” point system, which rewards users for posting content that becomes popular and serves as a public marker for the quality of a user’s contributions to the community (Massanari, 2017). It is possible that manipulating the extent to which an Internet user feels recognizable in an online setting—through persistent or temporary pseudonyms, for instance—may prompt Internet users to feel they have a greater or lesser opportunity to create a long-lasting or identifiable presence while interacting with others. In settings where the opportunity to create an identifiable presence is low, and users thus

feel relatively unrecognizable, they may act less civilly and less prosocially. This result has been found in studies of online settings with high anonymity (Santana, 2014). A similar effect has also been found in online settings where users have relatively few opportunities to express personal aspects of themselves (Ma & Agarwal, 2007), which suggests that opportunities for self-expression and self-disclosure online may also make users feel more recognizable.

Moreover, pseudonyms that allow users to express aspects of themselves, compared to pseudonyms that are assigned to users, may serve to remind users of their personal identities (that is, identities based on personal values and considered core to the “self”; Hitlin, 2003) and their personal behavioral standards. Such self-expressive pseudonyms may thereby prompt users to behave more prosocially online by making such identities more accessible, and viewing others’ expressive pseudonyms may serve to make others seem more recognizable as well. Perceptions of oneself or others as being recognizable may motivate users to behave more prosocially; users may expect to be recognized as the person who helped another, or to be able to recognize later the person whom they helped. Therefore, it is possible that the self-expressive aspect of pseudonyms could interact with the persistent aspect of pseudonyms, such that pseudonyms that are both self-expressive and persistent would provide the strongest feelings of recognizability online, relative to pseudonyms that were self-expressive but temporary or persistent but non-expressive. Persistent, self-expressive pseudonyms could thereby serve as the strongest cue of personal identities online, short of using one’s real name.

In addition to the features of pseudonyms that influence people’s feelings of identifiability and their interactions with each other, online behavior may also be

influenced by internal and external moderating factors, such as a user's personality and the overarching context of the situation. For example, previous research on Dark Tetrad traits (antisocial personality motivations: Machiavellianism, narcissism, psychopathy, and sadism; Buckels, Jones, & Paulhus, 2013) has revealed a correlation between these negative personality traits and antisocial behavior online. In the Dark Tetrad, Machiavellianism is one's desire to manipulate others; narcissism is one's tendency to self-aggrandize; psychopathy is operationalized as the extent to which one has high impulsivity and low empathy and anxiety; and sadism is one's tendency to enjoy causing others pain. The traits are related to antisocial behavior such that increased self-reported Dark Tetrad traits—on any one trait, or on a combination thereof—predict increased antisocial behavior (Buckels et al., 2013; Buckels et al., 2014). Because of the specific influence of sadism on online behavior, and because of its position as a motivator of cruelty rather than manipulation or self-aggrandizement, it is of particular interest as a personality trait that may influence a person's tendency to engage in prosocial behavior. In addition to personality traits, social signals that an activity is group-based or individualistic may differentially motivate a person to display more prosocial behavior or attitudes toward group members, provided that the person identifies sufficiently strongly as a member of a particular relevant group.

In summary, the goals of the present research are to investigate how pseudonymous settings online influence prosociality relative to anonymous settings, and how different features of pseudonyms, such as their persistence and level of expressiveness (that is, the extent to which a person feels their pseudonym reflects their personal qualities online), can change people's expectations for their own and others'

identifiability and thereby influence behavior and attitudes. Through the present research, I also study how personality factors, social context, and group identity can serve to moderate the effects of pseudonymity on behavior and attitudes. Across five studies, described in Chapters 3-5, I investigate aspects of these research goals by experimentally manipulating the online setting encountered by study participants, to compare pseudonymity to anonymity, persistent pseudonyms to temporary pseudonyms, and self-expressive pseudonyms to assigned pseudonyms. I also address the mediating role of recognizability, both of oneself and of others, and the moderating roles of sadism, group-based or individualistic social context, and group identity strength.

The conceptual outcome of interest in the dissertation is prosociality, which has been given particular focus in this research due to its potential to encourage the formation of positive relationships and communities online (see Jadin, Gnambs, & Batinic, 2013). Across the empirical studies in my dissertation, aspects of prosociality are operationalized as stated feelings of community with others, helping behavior towards others, and punishment of those who are acting antisocially. The mediators of prosociality studied in the dissertation are recognizability of self and recognizability of others. These are of particular importance because using pseudonyms with others in an online setting, particularly persistent or self-expressive pseudonyms, is an easy strategy for recognizing, and being recognized by, others. Furthermore, because self-expressive pseudonyms can express aspects of the self that are hidden in physical interactions (McKenna & Bargh, 1998), feeling recognized by others while expressing such an aspect of the self online may contribute to the formation of a personal identity in the online setting.

The moderators of prosociality studied in the dissertation are sadism (enjoying causing others pain; Buckels et al., 2014), social context (whether the situation is framed as being individualistic or group-based), and group identity (the extent to which users identify as being a member of an overarching group). The importance of these moderators to the model is discussed in Chapter 2. These moderators may influence the extent to which one wishes to engage in prosocial behavior, the mindset one has when entering an interaction with a potentially-recognizable partner, and the accessibility of relevant social information that could facilitate or hinder feeling socially-connected to others. In the conceptual model, feeling recognizable to others—or being able to recognize others—through features of pseudonymity influences prosociality, and the extent to which this effect takes place is moderated by sadism, social context, and group identity.

Two additional potential moderators of participants' perceptions of and behaviors regarding pseudonymity are participants' personal goals and expectations for the social interactions that are to take place. Personal goals are goals that one might access when activating a role identity (Piliavin & Callero, 1991) or those encompassing reputational concerns (Krämer & Winter, 2008), as well as other interaction and communication goals, such as gathering information or maintaining a friendship, that require plans of action to accomplish (Berger, 2004). For instance, a person with the goal of “finishing a survey” might act differently in an experimental setting of online social interaction than would a person with the goal of “making a new friend.”

Interaction expectations, which can also have a moderating effect, involve anticipated influences (such as beliefs about others' potential goals in a situation or

others' prosocial motivations) that can shape the behavior of people in social settings in systematic ways (Holmes, 2002) and thus can potentially determine the nature and outcomes of the social exchange. For example, people may display expectancy effects, in which their behavior serves to reinforce outcomes that are consistent with their expectations (see Rosenthal, 1994), or they may act prosocially in anticipation of reciprocity (a characteristic of faith or trust in others; Yamagishi et al., 2013). Online, these expectation influences could lead to the avoidance of interactions with unfamiliar people or being hostile toward people from whom one expects hostility or, conversely, being welcoming of people from whom one expects prosocial behavior. This dissertation will not investigate the impact of goals or expectations directly; their influence in pseudonymous settings remains an open question for research. Figure 1 presents a schematic representation of the conceptual framework that guides the dissertation, and it identifies the contributions of specific chapters.

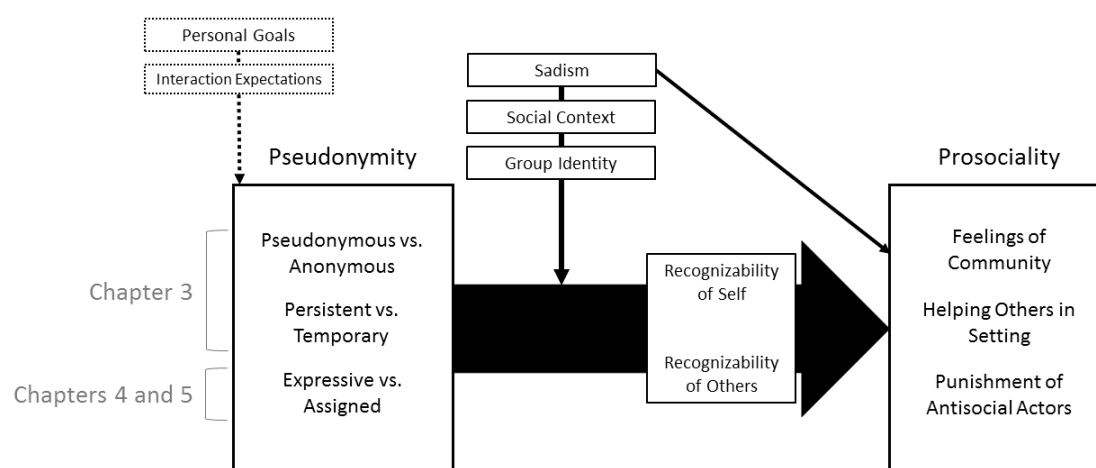


Figure 1.1. A schematic representation of the conceptual model, and the contributions of dissertation chapter research to relevant aspects of the model.

The research presented in this dissertation investigates this conceptual model systematically. The contribution of each chapter in the dissertation to each aspect of the model is depicted in Figure 1.1. Chapter 2 (Pseudonymity, Identity, and Individuation) reviews the existing literature and outlines specific theoretical expectations for pseudonymity and identity. Chapter 3 (Mediating Effects of Recognizability on the Prosocial Impact of Pseudonyms) compares pseudonymous settings to anonymous settings, and settings with persistent pseudonyms to settings with temporary pseudonyms, in terms of their effects on feelings of recognizability and prosocial behavior; it also includes participant sadism as a moderating variable. Chapter 4 (Effects of Identity Expressiveness on Prosociality) investigates a complementary question to Chapter 3 by considering the same outcomes in situations comparing self-expressive pseudonyms to pseudonyms that are assigned to users. Chapter 5 (Interactive Effects of Expressive Pseudonymity and Group Identity on Prosociality) tests the experimental manipulations of Chapter 3 in combination with contextual clues that indicate group membership or emphasize individuality among users. Chapter 6 (Implications and Future Directions) is an integrative summary of the dissertation results, implications, limitations, and directions for future research.

In investigating pseudonymous interactions, it is important first to examine how pseudonymity and anonymity differentially affect users' feelings and behavior, and whether temporary and persistent pseudonymity differ in the degree to which they are similar to or different from anonymity. More specifically, I aim to determine whether pseudonymous interactions online form a separate class of interactions from anonymous ones, with psychological processes and expectations that are entirely different from those

involved in anonymous interactions. Alternatively, the two types of interactions may be similar along a continuum of differentially-recognizable interactions. Distinguishing the effects of pseudonymity from anonymity is a focus of my dissertation research and informs my conceptual model.

Therefore, to develop the distinction between anonymity, temporary pseudonymity, and persistent pseudonymity in my model, as well as to form expectations for the psychological impact of using pseudonyms more generally, I will next consider existing literature and theories on online anonymous and pseudonymous interaction. From others' findings, I will create a unified series of expectations for the psychological effects of using persistent pseudonyms and temporary pseudonyms, relative to anonymity. I will then use those general expectations to develop more specific expectations for experimental manipulations and outcomes, which will, in turn, serve to help me develop the experiments presented in the rest of the dissertation.

Chapter 2:

Recognition, Individuation, and Identity in Online Pseudonymous Contexts

The explosion in popularity of the Internet has produced a drastic restructuring of social interaction. Internet-hosted spaces, such as instant messaging programs and social media, are capable of mediating interactions that have previously been conducted in-person (Erwin, Turk, Heimberg, Fresco, & Hantula, 2004; Pierce, 2009). The increased availability of Internet-capable devices, such as computers and smartphones, has opened the possibility of social interaction online to a wider subset of the population than ever before; even people who are homeless make extensive use of social networking sites (Guadagno, Muscanell, & Pollio, 2013). From May 2008 to May 2013, use of social networking sites among Internet users in the United States increased from 29% to over 72% (Duggan & Smith, 2014). While these spaces often serve as nexuses for positive and constructive social interaction, with users forming close relationships through the use of social networking tools online (Chayko, 2014), online settings can also foster negative and antisocial behavior among users (Suler, 2004). Understanding the factors that influence interactions between users on social media and in other social spaces online, both with respect to how users make use of website features and media that form interaction contexts, and also how users form novel contexts by using features and media in unconventional ways, is critical for forming expectations of how users will interact with each other, and media itself, as online contexts continue to grow and evolve.

Social psychological perspectives on online behavior have a strong foundation in the understanding of anonymous settings, particularly in the domain of social identity (see Postmes, Spears, & Lea, 1998). For example, when people feel more anonymous—

compared to more personally identifiable—they conform less to group opinions when responding to opinion questions (see Stowell, Oldham, & Bennett, 2010), are less likely to help others (Dovidio, Piliavin, Schroeder, & Penner, 2006), and are more likely to disclose personal information (Joinson, 2001). The present work extends this framework to a less traditional area of focus: non-anonymous interactions.

Although many processes in in-person interaction—such as effects of anonymity versus personal recognizability—may apply to electronically-mediated communication, social media and similar online social spaces may involve distinct forms of identity. In this chapter of my dissertation, I consider how pseudonymity—that is, using a self-designed name that is generally different from one’s real name and may be used either temporarily or consistently—may relate to electronically-mediated social interactions in unique and important ways. In particular, I explore how the persistence of a pseudonym—whether it is temporary or enduring—may influence the extent to which one’s presence online becomes an “extension” of oneself. Furthermore, a user’s perceptions of other people in such a setting, as formed by information shared through social media or similar website features, may also influence their behavior. Theoretically, existing psychological theory on the nature of personal identity can provide conceptual insight into behavior in pseudonymous Internet settings, and studying the dynamics of such behavior can inform and further shape psychological theories of personal identity and media interaction.

I first discuss the features of social settings online that may affect users’ sense of self online—that is, the extent to which users feel that their personal standards and values are salient—and the consequences of having a stronger or weaker sense of self in these

online social interactions. I then compare online contexts in which users make up pseudonyms (often referred to as screennames) to contexts in which a person is completely anonymous and discuss the distinctive qualities and consequences of using pseudonyms. After that, I consider the potentially reciprocal effects of how persistent pseudonyms may reflect and sometimes shape identity online. My theoretical framework and resultant hypotheses form clear expectations for future research in increasingly-common pseudonymous online settings, which are frequently used for everyday interactions both within and between social groups, as well as for understanding the roles identity processes play in shaping such interactions.

The Classic View: Anonymity and Deindividuation

Previous research on Internet-based interactions, particularly that preceding the popularization of social media, focused on the negative effects of users' feelings of anonymity—the belief that one's identity is unknown to others (Joinson, 2001)—and deindividuation—the personal experience of a weakened sense of identity relative to social pressures (Lee, 2006). Specifically, anonymity and deindividuation were often blamed for Internet-based malfeasance such as harassment and bullying (i.e., “trolling”; see Hardaker, 2010; Shin, 2008; Suler, 2004). Research has found that, for instance, anonymity can encourage users to behave with less prosociality than is often found in face-to-face contexts (Santana, 2014). Furthermore, feeling deindividuated can lead to disinhibition—that is, a relative lack of behavioral inhibition—online (Suler, 2004), which may increase the rates of harmful behavior or decrease the rates of prosocial behavior relative to non-anonymous contexts. However, such antagonistic behavior has also been found to directly reflect users' pre-existing sadistic tendencies rather than being

a pure product of deindividuated interaction in an Internet social space; that is, those who behave with malicious intent on the Internet also tend to do so in the physical world (Buckels, Trapnell, & Paulhus, 2014).

The Social Identity model of Deindividuation Effects (SIDE) theory (Postmes et al., 1998; Postmes, Spears, Sakhel, & de Groot, 2001) was developed to predict how deindividuation would affect users in computer-mediated communication. This framework posits that users experience an increase in group identity strength, rather than a decrease in individual identity strength. Thus, anonymous or deindividuated users online, provided they do not have a personal tendency to perform acts of cruelty, may tend to adhere more closely to expectations of how their group should act in the setting, which may occasionally be negative.

Moreover, although both anonymity and deindividuation are related to a loss of identity online, and thus are often grouped together in explanations of Internet behavior, the two are conceptually distinct and have different consequences. For instance, anonymity has benefits for some users: Users often prefer withholding some personal information online, including on social media such as Facebook (Young & Quan-Haase, 2013), for the sake of privacy and personal protection (Buchanan, Paine, Joinson, & Reips, 2007). Feeling anonymous can increase disclosure of personal information (Joinson, 2001) and make users feel more certain and satisfied in online interactions (Tanis & Postmes, 2007). Relatively anonymous settings online can provide a safe environment for self-disclosure of deeply personal information, and rates of self-disclosure increase when users feel more anonymous (Joinson, 2001). Such intimate acts of self-disclosure appear most often in very particular social settings online; certain

website communities and social networks, such as PostSecret (postsecret.org)—a website on which people can read others’ submitted secrets—and the link-sharing social media website Reddit have social norms for such behavior, even for sharing secrets that users do not share in person (Culén, Finken, & Gasparini, 2014; Leavitt, 2015). By comparison, feeling deindividuated increases compliance with social norms over one’s own values (Reicher, Spears, & Postmes, 1995) and encourages a mindset of categorizing others and oneself into groups (that is, it makes social-group aspects of one’s identity more salient), while being anonymous has no such effect (Lea, Spears, & de Groot, 2001).

Furthermore, while anonymity can bring about deindividuation, people can also feel deindividuated without being strictly anonymous. For example, in a physical setting, when researchers measured deindividuation-related disinhibition among children wearing Halloween costumes, membership in a group of trick-or-treaters—that is, a situation in which group membership is salient—had disinhibition effects independent of children’s perceived anonymity (Diener, Fraser, Beaman, & Kelem, 1976). Furthermore, people can feel anonymous without feeling deindividuated in computer-mediated communicative contexts. For example, a set of research studies (Joinson, 2001) demonstrated that anonymous computer-mediated communication increased rates of self-disclosure, and that this tendency was heightened when users were made more aware of themselves (by seeing a video feed of themselves on the computer screen, intended to increase private self-awareness, a measure of feelings of awareness of oneself in a setting, and thereby of individuation; see Prentice-Dunn & Rogers, 1980) and lessened when users were made less aware of themselves (by watching cartoons on the computer screen, intended to decrease private self-awareness). This finding suggests that private self-awareness, or

deindividuation, can be manipulated independently of public self-awareness—that is, perceived anonymity or recognizability in the setting (Joinson, 2001). The separability of anonymity and deindividuation is investigated in Chapter 3 of my dissertation.

Augmenting the Classic View: Pseudonymity

Social psychology has focused on anonymity versus personal identifiability in face-to-face interactions, with deindividuation likely to occur when people feel anonymous. However, computer interactions commonly occur in which people are represented online using pseudonyms. Pseudonyms are self-designed or chosen identifiers that are different from one's real name. For example, users may adopt screennames (self-made identifying pseudonyms by which the users are referred to in interactions), which make them anonymous to others (who do not know their true identities) while maintaining the personal experience of being individuated. Such pseudonyms are often reflective of their users, serving as a way for one to provide a "first impression" to others (Zhao, 2005), and thereby, for one to form first impressions of others in turn. Furthermore, these names may become more identifiable over time, provided they are used consistently in the setting, as a corpus of posts and other actions become tied to a particular pseudonym. This feeling of being individuated, even when relatively anonymous because of a pseudonym, systematically affects online behavior. Users who feel more identifiable behave more prosocially (Santana, 2014), while increasing a sense of deindividuation by changing accounts and pseudonyms reduces cooperation online (Feldman & Chuang, 2005).

In the case of pseudonymity, then, I expect that pseudonyms can serve a function of protecting one's identity from others—thereby acting as a form of anonymity in some

settings—while still allowing a user to be and feel somewhat recognizable to others, particularly if the individual uses the same pseudonym regularly in these interactions. That is, an online context in which pseudonyms are required could serve as a setting in which users are still anonymous, in the sense that their behavior cannot easily be tied to their real-world identities, but in which users are nonetheless individuated through a unique, descriptive form of identification. In such a case, I would expect that rather than a pseudonym being easily discarded—a digital “Halloween mask”—a non-deindividuating pseudonym would act as a reflection of users in the computer-mediated setting and make them more aware of themselves, and potentially others who are also using such pseudonyms, as individuals. Pseudonyms may also serve to individuate users because the act of creating a pseudonym may be a form of self-expression in and of itself, which could also lead users in the computer-mediated setting to be more aware of themselves as individuals. In Chapter 3 of my dissertation, I consider the potentially different effects of participating online under conditions of anonymity, a temporary pseudonym (which will be used in only a single online exchange), or a persistent pseudonym (which will be used across multiple interactions) on participants’ feelings about the interaction and responses to others involved in the online interaction.

Although there are a large number of opportunities for one to remain anonymous and deindividuated on the Internet, most people generally present themselves online in ways that are consistent with feeling individuated, while often maintaining a degree of anonymity in the setting. For instance, in circumstances in which people feel relatively safe under anonymity, they tend to be more forthcoming about aspects of their personal identity that may be hidden in in-person interactions to avoid social stigma or for personal

safety, such as their sexuality (McKenna & Bargh, 1998). Furthermore, lesbian, gay, bisexual, transgender, and questioning/queer (LGBTQ) Internet users may engage with other users in terms of their sexual or gender identities, such as by teaching questioning users and allies about LGBTQ issues (Fox & Ralston, 2016). I hypothesize that one way that users may remain relatively anonymous while also expressing such identities is through the use of pseudonyms. Because pseudonyms are self-designated names, they have the potential to connect users to a particular identity, especially if that identity is expressed through the pseudonym. For instance, in previous research studying expression of gender and sexuality in teens online, pseudonyms in online chat settings were used to express users' genders, and users who stated their genders engaged in interactions that expressed their sexuality—such as entering a private chat room together with a user of the same or a differing gender (Subrahmanyam, Greenfield, & Tynes, 2004).

Pseudonymity and Behavior

The properties of anonymity, deindividuation, and identity, which I have described previously, suggest systematic ways that anonymity, deindividuation, and pseudonymity can relate to one another to shape users' behavior in online settings. In a fully individuated setting (such as a setting in which one is using a unique and persistent pseudonym, recognized by others), because personal identity may be predominantly salient through an increased personal connection to one's pseudonym, I expect that one would have a strong sense of self, feel recognizable to others, and would prioritize one's own values over those of the group (Hitlin, 2003; Piliavin & Callero, 1991). By contrast, in other settings, such as those in which others are highly recognizable to oneself and a group identity is known to be shared with others, feelings of group identity may primarily

determine how people perceive, feel about, and behave toward others in that online context. Studies in this dissertation (specifically, Studies 3 and 4, presented in Chapters 4 and 5) independently manipulate individuating information and recognizability of participants and other users to investigate their independent and joint effects on participants' perceptions of themselves and others. One of the factors that is manipulated in order to alter the perceived recognizability of self and others is the type of pseudonym participants use in the experiment.

The study of pseudonymous spaces as unique environments in their own right is growing in relevance with the rise of social media. The use of pseudonyms online has become extremely common, particularly on social media websites such as tumblr (tumblr.com), YouTube (youtube.com), and Twitter (twitter.com). For example, on YouTube, users can upload and share videos to a wide audience, as well as comment on others' videos, under a pseudonym that also serves as the name of their video "channel" (Lange, 2007), while Twitter allows users to create and share short posts either under a pseudonym or under one's real name (Gruzd, Wellman, & Takhteyev, 2011). Thus, it is valuable to develop a new approach of considering online identity that focuses primarily on pseudonymity.

Moreover, previous models that focus on deindividuated interactions regardless of anonymous status, such as the Social Identity model of Deindividuation Effects (SIDE; see Postmes, Spears, & Lea, 1998), may offer valuable insights. For instance, the SIDE model posits that, rather than becoming less sensitive to all social norms when in a crowd, anonymous people actually become more susceptible to group norm influences when they share a group identity, because the accessibility of a relevant group identity

increases to subsume existing individual identities. Furthermore, the SIDE model proposes that the extent to which a person becomes “lost in the crowd” depends on the individuating information available in the setting. For instance, users in an experimental anonymous interaction who have their pictures taken and who expect that these pictures will be displayed to others in the interaction become less deindividuated than do users who do not have their pictures taken (Postmes, Spears, & Lea, 2002).

However, while the SIDE model provides clear expectations for anonymous individuals, it does not address situations in which individuals may be only *partially* anonymous, such as in conditions where people are using pseudonyms. In such contexts, it is unclear whether the model would consider a pseudonym to be individuating information available from the otherwise-anonymous setting, or if pseudonymity would serve to create a different kind of setting altogether, with different effects on social identity. Moreover, current research remains unclear on how one’s considerations of others as anonymous or relatively identifiable in such a setting may affect one’s behavior. Therefore, a new approach that expands upon anonymity-specific models is needed. My approach synthesizes understandings of anonymous interactions with understandings of personal identity, in order to illuminate pseudonymous contexts and other situations where people may be variably recognizable and individuated.

Although the use of pseudonyms to express and individuate the self online has been discussed to some extent in previous literature (see Ma & Agarwal, 2007; Turkle, 1995), the potential effects of pseudonymity, both related to feelings of anonymity and feelings of deindividuation, have not yet been fully considered. In particular, in addition to offering a more private alternative to using one’s real name online, pseudonymity may

provide an opportunity for both personal identity processes and specific interpersonal expectations to come into play in an online setting, in manifestations that are uniquely different from in-person settings. The use of pseudonyms in interactions online (particularly when people use the same pseudonyms across interactions) may supply users both with an opportunity to form opinions of and expectations for a specific, recognizable interaction partner. Additionally, pseudonyms—and especially regularly-used pseudonyms—may provide a source of personal individuation in the online setting that can become an extension of their own values and knowledge, all while keeping users relatively anonymous. These processes may have a profound impact on users' behavior online, particularly in encouraging users to behave more civilly, constructively, and prosocially than in completely anonymous and deindividuated settings.

In other words, one's experience of acting with or on pseudonymous others—rather than completely anonymous others—may promote seeing people in the setting, including oneself, as individuals, rather than as faceless members of relevant groups. This proposition is based on the results of studies of behavior in anonymous ingroup and intergroup contexts, in which people who are identifiable to ingroup audiences, but not outgroup audiences, describe outgroup members in more stereotypical terms (see Douglas & McGarty, 2001). It also builds upon studies of sharing personal information with strangers, in which people display more selflessness toward strangers after receiving a personal disclosure (Huneke & Pinel, 2016). Both anonymous group contexts and personal disclosure with strangers inform users' expectations for how pseudonyms may foster positive behavior through interpersonal individuation.

Persistent Pseudonymity

To contextualize the discussion of pseudonyms, I first discuss pseudonymous settings. By the nature of how they identify users, pseudonymous settings fall in the space between complete anonymity and the use of one's real name, and between being completely deindividuated and being completely individuated. Furthermore, the persistence of such pseudonyms strongly affects the degree to which pseudonymous user behavior differs from purely deindividuated user behavior in particular. In contexts in which pseudonyms can be easily discarded and replaced, malicious users can reduce the likelihood of users behaving cooperatively by creating new pseudonyms to escape punishment for past misbehavior (Feldman & Chuang, 2005). In settings with non-persistent pseudonyms, users also report trusting other users less and may endorse strategies that penalize supposed newcomers (Pater, Nadji, Mynatt, & Bruckman, 2014; Resnick, 2001). If many of the observed pseudonyms are unfamiliar and quick to change, and an unfamiliar pseudonym has a high chance of being a misbehaving user in "disguise" (such as in a technique known as "sockpuppeting," in which one user has many usernames; Firer-Blaess, 2011), then users may not trust pseudonyms to be reflective of an individual's self. Such a low-trust situation would likely increase the tendency for users in the setting to immediately punish inappropriate behavior by others—rather than attempting to teach or rehabilitate—and decrease the tendency for users to divulge personal information about themselves, their values, and their interests.

In contrast to interactions in settings with easily-discarded pseudonyms, interactions in settings with persistent pseudonyms often assume a very different pattern with respect to user investment. In these settings, users manage their reputations, using strategies such as the careful selection of positive aspects of themselves to emphasize, as

found in research on German social media users and their self-presentation choices (Krämer & Winter, 2008). Users also follow agreed-upon social expectations, such as treating other players politely in online role-playing games by welcoming them to common interaction areas and keeping track of whom the other players have interacted with previously (Martey & Stromer-Galley, 2007). Moreover, users may form deep interpersonal bonds on social media, such as online forums, particularly when given the opportunity to create a detailed personal profile and contribute to the online community. For instance, in a survey of two online communities, Ma and Agarwal (2007) found that online settings' support of persistent user labeling (i.e., persistent pseudonyms) contributed to greater user satisfaction and increased the extent to which users shared their knowledge with others, compared to settings in which there were no persistent pseudonyms.

The extent to which users engage with others in an online setting, along with the extent to which they see their online presence as part of their identity, predicts the extent to which they contribute knowledge in a given online setting (Kim, Zheng, & Gupta, 2011). Such findings are similar to situations in which online communication is used to supplement face-to-face interaction, such as when discussion boards are used to augment in-class discussions in instructional settings, in which the sense of community engendered by the online setting predicts student satisfaction with the class as a whole (Drouin, 2008). Thus, users seem to assign value both to their pseudonyms (perhaps particularly strongly if they see their pseudonyms as expressive of their identity) and to the actions they undertake while using these pseudonyms, in ways that are similar to those employed by people who also know each other in person. Moreover, by virtue of

recognizability, one's use of a pseudonym embeds oneself and one's actions into a network of interacting users (many or all of whom also have pseudonyms), and the amount of time spent interacting in such a community may further serve to influence one's behavior in the setting. Furthermore, because individuals often expect that others' experiences are similar to their own (a phenomenon known as egocentric bias; see Epley, Keysar, Van Boven, & Gilovich, 2004), even a passing awareness of one's own valuation of one's pseudonyms may influence one to form expectations for how others may act regarding their own pseudonyms. Combined with the increased tendency of people to help others altruistically when others are more recognizable (Kogut & Ritov, 2005) or merely have the potential to be recognizable (that is, people expect they may eventually have this person identified to them; Small & Loewenstein, 2003), situations in which users both have persistent pseudonyms and expect others to have persistent pseudonyms may promote more prosocial behavior than either situation would alone. Recognizability is experimentally manipulated in Chapters 3, 4, and 5, and it is investigated for its effects on prosocial attitudes and behaviors.

Pseudonymity and Identity Expressiveness

In addition to providing the opportunity to create and maintain a reputation online, persistent pseudonyms also have the potential to create situations analogous to in-person settings in which people acquire new personal identities, and these personal identities formed online appear to strongly influence behavior. When forming personal identities in face-to-face settings, sets of behaviors related to a role are first performed for proximate reasons, such as building social capital with friends or peers, but over time serve to form both community ties with others and a source of self-definition (see Piliavin

& Callero, 1991). Because these identities apply to a particular purpose, such as being a volunteer or a donor for an organization, they are bound to the context in which they are created and, over time, also become tied to personal values (Hitlin, 2003).

Extending the same principles to online interactions suggests that if Internet users engage in online settings in ways that are relevant to their already-existing personal identities (such as through pseudonyms that express such identities), this engagement may facilitate the creation of an online identity. Such an expectation seems to be supported by online behavior. For instance, in the case of users who hold marginalized sexual and ideological identities, joining an Internet community for such identities can allow them an opportunity to express normally-concealed aspects of self in a safe online space, while still remaining relatively unidentifiable in terms of face-to-face information. In some cases, this claiming of identity online helps users to “come out” in in-person contexts (McKenna & Bargh, 1998). In an experimental context, pairs of online users given the opportunity to express such “true selves” (selves with qualities they would like to express, but usually feel they cannot) in computer-mediated communication liked each other more than did dyads that communicated in person, which often inhibits true-self communication due to social evaluative concerns (Bargh, McKenna, & Fitzsimons, 2002).

In situations where a personal identity is not salient, such as when users do not have individuating pseudonyms, group (rather than personal) identity may be primarily salient. Deindividuated settings on the Internet involve an increase in group identity strength (Postmes et al., 1998), and this may have different effects on behavior than does a salient personal identity. While group pressures may lead to behavior that is considered

negative in an intergroup context (e.g., stereotyping; Douglas & McGarty, 2001), such behavior may also lead to greater acceptance within the group, and thus serve as a productive strategy in homogenous contexts. Moreover, group pressure need not necessarily lead to destructive behavior; for instance, when a presumed ingroup member objects to the stereotyping of an outgroup online, people are more likely to join in and object themselves (Duchscherrer & Dovidio, 2016), and people are more receptive to the positive effects of intergroup contact in computer-mediated communication when their own group identity has been made salient (Alvídrez, Piñeiro-Naval, Marcos-Ramos, & Rojas-Solís, 2015). Therefore, when examining the effects of a salient identity on the behavior of Internet users, it is important to note which group and individual norms are relevant in the setting. Recognizability and individuation are manipulated independently, and investigated for interactive effects on prosocial and antisocial behavior, in Chapter 5.

Potential Moderators: Personality Variables, Social Context, and Identity Salience

With respect to users' ability to become individuated or recognizable in an online setting, it is possible that users' personality characteristics may influence their likelihood of choosing to make use of features such as persistent pseudonyms. For instance, research on malicious behavior online suggests that individuals who are high in "Dark Tetrad" personality traits, particularly Machiavellianism (having a manipulative personality; Paulhus & Williams, 2002) and sadism (enjoying causing others pain; Buckels, Jones, & Paulhus, 2013), are more likely to engage in inflammatory or cruel behavior online (Buckels, Trapnell, & Paulhus, 2014). While another Dark Tetrad personality trait, narcissism (particularly grandiose narcissism: a sense of self-superiority and importance) has also been tied to negative online behavior (see Buckels et al., 2014), its effects are

focused more on self-presentation habits than on the quality of interactions with other users (for example, self-promotion in photos and text posts; see Gnambs & Appel, 2018; Mehdizadeh, 2010). In my dissertation, I focus primarily on sadism, due to its role in encouraging cruel behavior (as opposed to manipulative or self-aggrandizing behavior) online. Specifically, I anticipate that users high in sadism may prefer to remain deindividuated or unrecognizable online in order to avoid social pressure or punishment for hostile behavior (rather than for the ease of manipulating others, as could be the case for Machiavellianism, although this is somewhat more difficult to measure). Through this motivation, users high in such personality traits may resist connecting their actions online to their identity. Interactive effects of sadism with recognizability and individuation are investigated in Chapter 5.

Furthermore, the context in which users employ a “verified identity” (whether a real name or a pseudonym tied to personal information for site administrator use) can affect its effectiveness in regulating user behavior. Research in South Korea of posts made under a short-lived identity verification law for political comments online suggests that mandatory identification did not improve user behavior (e.g., rates of “flaming” comments) relative to anonymous commenting, but that *voluntary* disclosure of identifying information by users did improve user behavior (Cho & Kwon, 2015). Other research has found, through a linguistic analysis of article comments on TechCrunch.com, that while verifying a user’s identity seems to engender comments that are more cogent (i.e., higher on a linguistic index of readability) compared to pseudonymous or anonymous accounts, pseudonymous accounts also display a high level of positive behavior on the site. For instance, comments left by pseudonymous accounts

tend to use fewer hostile words than do comments from anonymous accounts and some identity-verified accounts (i.e., accounts verified through the Disqus login service; Facebook accounts not verified by email), and pseudonymous users tend to remain engaged on the website for a longer period of time than do anonymous users and users identified through Disqus (Omernick & Sood, 2013). In a personal identity sense, disclosures of identifying information that are not tied to a user's active desire to connect their online presence to their identity may not provide all of the benefits of establishing a personal identity online (particularly in enforcing a personal standard of behavior), while appearing superficially similar. Thus, it is important for research to address how the use of pseudonyms creates outcomes different from those created by people using their "real names" online.

The opportunity to interact with others, or lack thereof, may further contribute to the effectiveness of pseudonyms in regulating behavior. In situations in which users are relatively unable to interact directly with others, such as through holding conversations, even persistent pseudonyms may not be entirely effective in curtailing harmful behavior. For example, YouTube, a site on which people may upload and comment on videos, provides relatively little opportunity to hold conversations with other users, particularly when comment volume is large, as on popular videos; furthermore, rates of inflammatory or otherwise offensive behavior are high (Moor, Heuvelman, & Verleur, 2010). Similarly, news article comment sections also provide relatively little ability to hold conversations with other commenters compared to a typical social media site; rather than receiving a notification that another person has replied to their comment, users must often revisit the site and check manually to see if their comment has received replies, an effort which

requires a high level of engagement (Weber, 2014). News comment sections also experience a high rate of inflammatory comments, even when participants use “real names” through a service such as Facebook (see Omernick & Sood, 2013); thus, even signaling a person’s physical-world identity may be relatively ineffective in reducing antisocial behavior in such settings.

It is possible that users could find the lower frequency of direct responses in such a setting to be ostracizing, as they may feel ignored; such experiences of ostracism online can motivate people to compensate emotionally by using more inflammatory language than they would otherwise (Williams et al., 2002). Even if a given user does not become hostile when ostracized, that user may expect, through egocentric bias (see Epley et al., 2004), that other commenters could also feel ostracized, and may also believe that such a state is more likely to encourage harmful behavior in others than in themselves (Duchscherer & Dovidio, 2017). A given user may thereby interpret a setting with a low frequency of direct responses as being one in which cooperation is difficult. When people enter situations with potential cooperative or competitive responses, such as a “prisoner’s dilemma” game, they may preemptively respond negatively in anticipation of competition if they perceive the situation as being one in which cooperation is difficult (Glöckner & Hilbig, 2012). In the case of online interaction, users may expect that anonymity will make other people behave more negatively, even if they believe it does not affect them personally (Duchscherer & Dovidio, 2017), and may be motivated to respond to others in a defensive or socially-cold manner. Such beliefs and behavior, if they extend to pseudonymous situations in which conversation is difficult, could result in

a vicious cycle that reinforces negative and hostile behavior in settings with limited conversational capacity.

Although the context in which users interact online is an important factor in determining user prosociality, the content with which users are engaging in such comment sections, such as the topic of a news article or the subject of a video, can also affect the prosociality of users in that online setting. For example, comments made on a memorial video online about a mass shooting at an elementary school displayed markedly less hostility and more compassion than did comments on other online videos focused on distressing news, such as destructive hurricanes (Miller, 2015). In the context of my theoretical framework, it is possible that both the context and content of the online setting (e.g., judgment by users of whether or not others will engage with them in conversation; whether or not the content is especially worthy of being treated seriously) may affect the degree to which users personally connect to the situation; if they are using a persistent pseudonym, such a feeling of connection may prompt the engagement of a relevant personal identity.

In addition to extrinsic features—generally, features of a website—that make users feel individuated or recognized in a given online setting, such as persistent pseudonyms and website features for holding conversations, intrinsic motivations unique to a user's internal experience, such as a user's values and goals, may also influence behavior. For instance, users who are well-established in a community may translate a personally-held value of support for open-source software into a variety of prosocial, altruistic, and community-building activities on a programming forum, through helping other users and developing software for free (Sproull, Conley, & Moon, 2005). In such

settings, users may also engage with others in the situation in a way that reflects a desire to connect in a genuine and empathic fashion: building friendships and relationships for mutual benefit, in the form of a social network (Ganley & Lampe, 2009). They may even act in ways that incur personal cost, such as risking vulnerability through self-disclosure for the purposes of strengthening trust (Henderson & Gilding, 2004), even though they remain relatively anonymous in the setting. Consistent with this understanding, a preliminary study (Wirth & Guadagno, 2015) found that gamers who reported being motivated to connect with others in the game also reported more self-disclosure. It is possible that this tendency to self-disclose could extend to other situations in which one makes oneself vulnerable for the benefit of personal relationships, such as defending another person online from harassment, or by taking a considerable amount of one's time and resources to help another person with a problem.

In summary, my analysis suggests that features of online community websites that allow a user to create a personal and persistent expression of the self also permit users to recognize themselves and others—for instance, through the personal creation of a pseudonym, and, potentially, a corpus of posts and actions connected to the pseudonym in various online settings, that provides a user with a distinct expression of self in a context where individuals are otherwise relatively unrecognizable (Cornetto & Nowak, 2006; Hassa, 2012). Such recognizability would thus tend to promote prosocial behavior both through users' actions being tied to the self and through users being able to recognize others as people who can be helped (see Burnham, 2003; Schwartz & Gottlieb, 1980). Users with persistent pseudonyms may even become more individuated—despite relative anonymity—and act in accordance with internalized norms and values, a pattern

that is more consistent with the acquisition of a personal identity (Hitlin, 2003).

Therefore, the ability of users to pick a pseudonym that is persistent across interactions, as a contextual feature, may be an especially strong determinant of users' social behavior online.

Implications and Future Directions

The ubiquity of online social interaction today makes interactions that do not take place in person more common than ever before. Understanding the psychological processes that shape the nature of online interactions can therefore inform both theories relating to social relations and policy and practice in online settings. Although past research on social identity processes online has produced models for how anonymous people interact with one another (e.g., SIDE; Postmes et al., 1998), many online venues involve pseudonymous, rather than anonymous, communication. Consequently, I have offered a complementary approach, based on social and personality psychology, new media research, and communication research, that serves to translate existing social identity theories into the pseudonymous online domain.

In particular, I hypothesized that pseudonymity may provide an opportunity for both personal valuation and personal identity processes to come into play in an online setting, in manifestations that differ from in-person settings. For example, although users may be hostile in certain anonymous settings (Santana, 2014), anonymity online can also prompt self-disclosure and vulnerability to a greater extent than users experience in their everyday lives (Culén et al., 2014). The use of a pseudonym online may act as a source of personal expression that becomes an extension of their values and knowledge, such as in the case of open-source community members who help other users and share their

knowledge for free (Sproull et al., 2005). Therefore, the amount of time a user spends acting under a particular pseudonym—how persistent the pseudonym is in the setting—may be a significant factor in determining user behavior.

A more comprehensive understanding of the effects of pseudonymity on social interaction in online spaces, as well as pseudonymity's potential to facilitate personal identity formation online, has far-reaching implications for policy, accessibility, and safety online. The features present on websites that host online social interactions play a large role in determining the nature of the interactions practiced in them; this may be particularly true in the case of pseudonyms. While settings with non-persistent pseudonyms often lead to cultures of mistrust, persistent pseudonyms are more likely to prompt strategies of reputation management, the upholding of social norms, and acting in line with one's own values. Persistent pseudonyms allow people to cultivate a reputation and accrue social capital, but they are especially valuable because they provide people with the opportunity to treat their online personas as extensions of themselves—that is, as personal identities. For example, when people use pseudonyms that are persistent, compared to using temporary pseudonyms or being anonymous, they report being more satisfied with their experience online and share their knowledge with other users (Ma & Agarwal, 2007); knowledge sharing online may be indicative of greater personal identification with one's online presence (Kim et al., 2011).

However, if persistent pseudonyms may be used to more strongly remind users of their personal values when in online settings, it is also possible that those with malicious intent may take advantage of pseudonymity's absence to gradually convert other users to a particular unsavory cause. That is, skilled manipulators and those well-versed in the

norms of online interaction may use others' experiences of being anonymous or pseudonymous against them. Given the recent rise of social media use for explicitly political purposes (for instance, for organizing protests or spreading information about political campaigns; see Boulianne, 2015), the process of converting users to a harmful political cause clearly has implications beyond online interactions and into the physical world. For example, members of extremist groups, such as White supremacists, have turned to online venues to recruit and radicalize (that is, increase the extremity of beliefs such that they justify intergroup violence; McCauley & Moskalenko, 2008) vulnerable or interested Internet users (Holt, Freilich, & Chermak, 2017). The anonymous website 4chan, in particular its politics-centered /pol/ forum, serves as a relatively safe organizing and recruitment center for White supremacists due to regular deletion of on-site activity, lax social norms against hateful speech, and anonymous interaction (Hine et al., 2017). Anonymous users may even organize hate-speech activities online with other anonymous users through 4chan, in which the group of users will travel to another site to harass others on a large scale, an activity known as "raiding" (De Cristofaro, 2016; Hine et al., 2017). It is possible that 4chan's reputation as a popular venue for White supremacist activity may encourage those interested in joining White supremacist movements to visit the site, which may further encourage those looking to recruit others online to focus their efforts there.

Recruiter tactics may exploit the features of group dynamics online to radicalize users more efficiently than is generally possible in physical settings. In anonymous contexts, one's ties to one's personal values may become comparatively weaker, and one may align more with relevant group values in the setting (i.e., one may become

deindividuated; Postmes et al., 1998); for instance, a White person may unconsciously align slightly more with the values of White supremacy while engaging with others in a setting where such views are common (and presumably held by fellow White users). Because personal identity may become uncertain in anonymous contexts, users may seek out salient and distinctive groups in a given setting as a source of norms and values, particularly groups with strong ethnocentric norms, such as many extremist groups (Hogg, 2014). Furthermore, in settings in which one is less recognizable, one may feel less of a desire to confront others with objectionable opinions or protect vulnerable people from harassment, possibilities which are tested in Studies 1 and 2 of this dissertation (Chapter 3). In contrast, the typical pseudonymous context contains a cue for users—their pseudonym—that may serve to remind them of their identity and values, as well as to provide a measure of identifiability and accountability for actions that are undertaken in the pseudonymous setting. Research in Chapter 5 of this dissertation explores the extent to which providing group information to users in a pseudonymous context can promote group-based behavior, particularly among those who already strongly identify as a member of a particular group. The results of these studies may have implications for how websites provide identifying information about a person to other users online.

The effects of pseudonymity on interaction online are also important to consider when designing other policies meant to improve interpersonal behavior in a given online setting. While some websites have attempted to force users to use their “real” names when making accounts or usernames, both empirical research (see Cho & Kwon, 2015; Omernick & Sood, 2013) and the theoretical analysis I present suggest that requiring real

names, rather than allowing pseudonyms, would not improve behavior on a given social website over and above pseudonyms to an extent that would justify the increased privacy and safety risks of using one's real name online. It is worth noting that pseudonymity does not *eliminate* cyberbullying, but such harassment also happens in online settings that use real names (such as Facebook; Debatin et al., 2009).

In contrast to real-name settings, however, pseudonymity and its inherent variability in making users identifiable can reveal strategies that malicious users—who prefer not to be identified—use to harass others. For instance, Twitter user accounts are given a default avatar if one is not chosen by the user, and malicious users often keep this default avatar; in response, Twitter has implemented a feature that allows users to prevent those with default avatars from responding to their posts (Alba, 2017). Other strategies, such as privacy settings that allow only chosen users to view one's posts or prevent submissions from anonymous users, can further serve to curtail harassment online, both in pseudonymous settings and real-name settings.

Importantly, because hostility in online settings is often directed toward members of disadvantaged or vulnerable groups, such as women (Cote, 2017; Massanari, 2017), members of the LGBTQ community (Blumenfeld & Cooper, 2010), members of racial minority groups (Hughey & Daniels, 2013), and those who are mentally or physically disabled (Wells & Mitchell, 2014), interventions that reduce interpersonal hostility online—such as requiring persistent pseudonyms rather than anonymous accounts—can improve the accessibility of online spaces for those who would otherwise be unwelcome, or even unsafe. Because social websites are often an integral part of everyday social interaction, and because meaningful, positive social interaction is essential for health

(Uchino, Cacioppo, & Kiecolt-Glaser, 1996), improving the experience of using such websites for all people can serve to improve quality of life overall.

In conclusion, existing psychological theory can provide insight into pseudonymous interactions online, and features of such interactions can be used to further develop psychological theories of Internet-based personal identity and media psychology. Because users who create persistent pseudonyms online generally behave more prosocially than do users who create temporary pseudonyms or who interact anonymously (as examined in Studies 1 and 2, Chapter 3), I expect that over time, a persistent pseudonym becomes an instantiation of a user's personal identity online. Through this expression of self, especially through the use of expressive pseudonyms (as examined in Studies 3 and 4, Chapters 4 and 5) users may come to value the reputation of their online identity, which could provide further motivation to maintain a pattern of positive behavior and offset potential negative effects of online disinhibition. Users may also use the assumed-persistent pseudonyms of others as scaffolding for understanding other users as individuals in the online setting, rather than as faceless members of a crowd, which can promote empathy (as examined in Studies 4 and 5, Chapter 5). My review and analysis lay the groundwork for future studies on the impact of persistent pseudonyms online, as well as the effectiveness of persistent-pseudonym and real-name policies in improving user behavior.

Chapter 3:

Mediating Effects of Recognizability on the Prosocial Impact of Pseudonyms

Although there has been considerable attention devoted to researching antisocial behavior, such as trolling (see Buckels, Trapnell, & Paulhus, 2014), prosocial behavior is also prevalent online. Prosocial behavior involves actions oriented toward benefiting others (Eisenberg & Miller, 1987). Online (internet) prosocial behavior may include, for example, helping someone who requires assistance in an online setting, or volunteering useful information to an online community (Sproull, Conley, & Moon, 2005). Online prosocial behavior may also involve actions to punish antisocial behavior (as in altruistic punishment; Fehr & Gächter, 2002). The two studies in this chapter investigate how prosocial behavior online may be influenced through the use of personal identifiers in a social setting.

Translating psychological processes into online behavior has prompted researchers to develop theories specific to online social behavior, primarily in the context of anonymous settings. Anonymity is a state in which a person feels unidentifiable, whether that is through being visually unseen (visual anonymity) or through having one's verbal communication untraceable back to oneself (discursive anonymity; Scott, 2004). Anonymity can have two conceptually distinct consequences, one related to one's own sense of self and the other involving beliefs about how others perceive them.

In terms of one's sense of self, anonymity may make individuals feel more as if they are a member of a crowd or overarching group rather than a singular person. Thus, making people believe that they are anonymous may lead them to feel deindividuated (Postmes, Spears, & Lea, 1998). Deindividuation is a state of awareness in which one

loses a sense of individuality or self-awareness relative to the sense of one's group identity (Reicher, Spears, & Postmes, 1995), and it has been operationalized as one's lack of internal awareness of how one's own characteristics relate to a given setting (i.e., as a state of low private self-awareness; see Prentice-Dunn & Rogers, 1982). Greater feelings of deindividuation, reflected in lower private self-awareness, have been related to weaker application of personal standards for prosocial behavior (Froming, Nasby, & McManus, 1998; Scheier & Carver, 1981), relative to situations in which people feel more privately self-aware. To the extent that an online setting deindividuates users, such as by having them use temporary identifiers or by having them be anonymous, it could encourage users to behave less prosocially than they would otherwise.

Anonymity may also play an important role with respect to one's beliefs about others' perceptions. Anonymous individuals believe that observers view them as less distinguishable from others—that is, less recognizable. Users who are less recognizable to others may thereby feel safer from reputational damage or reprisal due to harmful behaviors; such a situation may lead to anonymous people feeling disinhibited from factors that generally encourage prosocial behavior (Suler, 2004).

Although individuals may participate in online interactions in anonymous ways, they may also use identifiers that are different than the formal names they use in legal transactions and in face-to-face social interactions. Such an identifier could take the form of a pseudonym—an identifier, usually self-designed, that acts as a name and is generally different from one's "real name." In contrast to the facelessness of anonymity, pseudonyms are usually reflective of their users, and they may provide a way for users to

express themselves to others (Zhao, 2005). For example, a person who likes dogs and who was born in the year 1984 might use the pseudonym “doglover84” online.

Pseudonymous interactions—situations online in which one may use a pseudonym—may differ from anonymous interactions in several ways. The ability of users to possess identifiers that are potentially personally-expressive, rather than users being anonymous, could serve the purpose of providing individuation and, under some conditions, recognizability. Increased feelings of recognizability tend to increase helping behavior, relative to situations in which people feel unrecognizable (Schwartz & Gottlieb, 1980). Additionally, to the extent that using a pseudonym online, while still protecting an individual’s actual personal identity, may be uniquely reflective of some aspect of the person, people who use a pseudonym online may feel a stronger sense of personal awareness (i.e., feel less deindividuated) than when they are anonymous. Furthermore, pseudonymity is flexible in its provision of recognizability to its users through being either persistent or temporary. For example, a person may use the same pseudonym over an extended period of time (a persistent pseudonym) or may use a given pseudonym for only a short period of time, and may periodically switch pseudonyms for different needs (thereby using multiple temporary pseudonyms). To the extent to which people use the same pseudonym more often in online interactions across time, they may feel more personally recognizable, at least in that online social context. Moreover, the expectation that others online may also have persistent pseudonyms could increase a user’s perceptions of others as recognizable as well.

The potential of pseudonyms to provide differing levels of recognizability can lead to two distinct sets of expectations. First, pseudonymity might differ from anonymity

in that it could be instantiated as a less extreme version of anonymity, with milder effects on behavior that become more extreme as pseudonyms become more temporary and users thereby become less recognizable. In such a case, behavior under a temporary pseudonym might not be significantly different from behavior under anonymity. It is possible that noticeable effects on behavior and attitudes could only appear for persistent pseudonyms used over an extended period of time. Furthermore, in this case, the extent to which behavior in pseudonymous conditions differed from that seen under conditions of anonymity would likely be mediated by the extent to which pseudonyms made users feel recognizable.

Second, pseudonymity could instead involve distinct psychological processes that could make interactions in pseudonymous settings, including temporary pseudonymous settings, distinct from interactions in anonymous settings. For instance, having even a temporary form of identification by which a user could be recognized could motivate people to behave as if they could be recognized or remembered by others—such as by being more helpful or civil—compared to situations in which they believe they are unrecognizable. Having a temporary form of identification could also serve to make users feel more individuated than they would in an anonymous setting. In this second case, behavior of people even in situations using temporary pseudonyms would be expected to differ markedly from behavior observed in anonymous settings. In either case, having a persistent pseudonym would serve to increase perceptions of one's own recognizability, relative to anonymity.

It is possible that manipulating the extent to which Internet users feel recognizable in an online setting—through persistent or temporary pseudonyms, for instance—may

prompt them to feel they have a greater or lesser opportunity to create a long-lasting or identifiable presence while interacting with others. In settings where the opportunity to create an identifiable presence is low, and users thus feel relatively unrecognizable or anonymous, they may act less civilly and less prosocially. This result has been found in studies of online settings with high anonymity; for instance, online newspaper comment boards that allow anonymity tend to have a much greater proportion of uncivil comments than do similar comment boards that do not allow anonymous comments (Santana, 2014). A similar effect on behavior has also been found in online settings where users have relatively few opportunities to express personal aspects of themselves (Ma & Agarwal, 2007), which suggests that opportunities for self-expression and self-disclosure online may also make users feel more recognizable. Thus, having a pseudonym that one perceives to be personally expressive might serve to prompt more prosocial behavior than would anonymity or would a pseudonym that is not personally expressive.

The two studies presented in this chapter shared the goal of distinguishing the effects of anonymity from pseudonymity in online behavior (Study 1), as well as between temporary and persistent pseudonymity (Studies 1 and 2). Specifically, in the case of Study 1, participants under anonymity, temporary pseudonymity, or persistent pseudonymity created forum posts in response to a supposed confederate in need of help, and their helping behavior and reported attitudes were compared between conditions. Study 2 examined further the differences between participants' behavior under temporary and persistent pseudonymity by including a manipulation of participants' perceptions of others' pseudonyms. Both studies investigated the potential for participants' perceptions

of recognizability, either of self or of others, to act as mediators for participants' behavior.

Study 1

Study 1 was an experiment designed to test participants' behaviors and attitudes while interacting with others online under conditions of persistent pseudonymity, temporary pseudonymity, or anonymity. Comparisons among these three conditions can help determine the extent to which making someone identifiable through a pseudonym may motivate changes in feelings, impressions of the setting, or behavior. Temporary pseudonymity may make one recognizable only in a very specific context, because after an interaction the pseudonym will be discarded. By contrast, persistent pseudonymity makes one recognizable across contexts, and anonymity makes one unrecognizable; thus, the study was designed to examine how behavior under contingent recognizability is similar to or different from behavior under constant recognizability and unrecognizability. The results of this study were intended to clarify the influence of recognizability on the observed behavioral differences between pseudonymous and anonymous Internet users found in previous research (Omernick & Sood, 2013), as well as the extent to which temporary pseudonymity influences behavior similarly to or differently from persistent pseudonymity and anonymity.

The experimental procedure in Study 1 used a time-delayed communication setting commonly found online: that of a forum or message board, on which one person can begin a topic on a matter of interest, and others can reply in the form of a series of publicly-visible and persistent comments. This setting was also useful for the experimental manipulation in that replies to a forum topic often have easily-visible

pseudonyms tied to the user who created a given reply, but in certain settings respondents may also be anonymous if they so choose. Furthermore, because of the time delay in communication, this setting was modified to act as a false interaction setting; that is, participants read fictional topics and replies that had supposedly been created by previous participants. This static setting allowed for control of the environment viewed by participants, while still providing them the illusion of interacting with others. Participants were selected from an age range typical of the Millennial generation at the time the study was performed (18 to 36 years old; Dimock, 2019) to ensure that most participants were familiar with the type of online interaction being simulated for the study. Participants were given one pseudonym in the persistent pseudonym condition, or two different pseudonyms, one for each interaction) in the temporary pseudonym condition.

The setting that was portrayed as an online forum that contained two forum topics in which participants could choose to interact: (a) a topic thread in which their prosocial behavior would be observed through a task of helping others, and (b) a filler task of telling jokes, which was designed to create a positive social context but not one in which participants engage directly in a prosocial behavior to benefit another, specific person. The order in which participants visited the two threads was recorded, with visiting the thread of the person needing help first being interpreted as displaying a higher priority of helping others. Participants' responses to the help thread were recorded and coded both for providing a solution to the problem and for providing emotional support.

Overall, I predicted that because users who have the opportunity to express themselves and be recognized by others feel more positively toward others (Ma & Agarwal, 2007) and behave more civilly (Santana, 2014), participants using a

pseudonym, either temporary or persistent, would exhibit more prosocial behavior (i.e., would show a greater priority to help and would be more likely to provide a solution or emotional support) than would participants who feel anonymous. I hypothesized that this effect could occur for two reasons. One potential reason is that having a pseudonym, which is a personal identifier, may make participants feel more individuated than having an identifier that is not personally meaningful, as in the anonymous condition (Ma & Agarwal, 2007; Zhao, 2005); greater feelings of individuation (reflected in greater feelings of private self-awareness; Joinson, 2001) tend to promote more prosocial behavior (Froming et al., 1998). A second reason is that, because pseudonyms are online identifiers that can make users feel more recognizable to others relative to anonymity, and this greater feeling of recognizability could more strongly motivate prosocial behavior, relative to anonymity (which tends to encourage more selfish behavior; see Burnham, 2003; Schwartz & Gottlieb, 1980). In this case, stronger perceptions of recognizability between temporary pseudonymity and anonymity conditions would mediate greater prosocial behavior under pseudonymity than under anonymity. In addition, because people who use the same pseudonym across time (a persistent pseudonym) tend to feel that they are more recognizable to others (Cornetto & Nowak, 2006; Hassa, 2012), I anticipated that participants in the persistent pseudonym condition would be more likely to behave prosocially than those in the temporary pseudonym condition. Thus, to the extent that pseudonyms are self-expressive can promote prosocial behavior by individuating participants, making them feel more recognizable, or both.

In terms of the competing expectations for temporary pseudonyms—whether they would act as an intermediate point between persistent pseudonyms and anonymity, or

whether they would act more like persistent pseudonyms and unlike anonymity—I expected that temporary pseudonymity would be more similar to persistent pseudonymity, and that temporary pseudonymity would significantly differ from anonymity in its effects on users.

Overall, this study serves as a basic test of the overarching hypotheses, as well as an establishment of an experimental paradigm to be used in studies that are subsequently presented in this dissertation.

Method

Participants. Participants were recruited from Amazon’s Mechanical Turk (MTurk) service to take part in a study on “how Millennials interact online” in which they would supposedly be interacting with other participants on a separate forum website after answering a few survey questions. A power analysis using G*Power (Faul, Erdfelder, Lang, & Buchner, 2007) estimated that for a medium effect size of .25 in logistic regression and an experimental manipulation involving three conditions, the experiment required a total sample of 210 participants. After excluding data from participants who did not complete the study, the sample was comprised of 201 participants on MTurk (73 male, 126 female) from the ages of 18 to 36 (based on an age range for Millennials provided by Pew, 2017; mean age = 28.43, SD = 4.70; 76.6% White, 6.5% Black, 4.5% East Asian, 4.0% Hispanic/Latino/a, 2.0% South Asian, 0.5% Pacific Islander, 6.0% multiracial/mixed-race/other).

Procedure

Upon entering the study, participants learned that they would be taken to an “external website” that was hosting a forum setting for study participants. Participants

were told that they were going to complete two interactions on the forum website. One of these interactions was scripted to provide participants with the opportunity to behave prosocially; the other interaction was designed to be a filler task that involved social exchange but did not overtly involve a helping opportunity. In line with this explanation, participants learned that they would be leaving the website hosting the study to do another activity. Participants then clicked a button on the study website page that would supposedly take them to the forum website, where they believed they would interact with other study participants.

After entering what they believed was a separate website, participants were randomly assigned to one of three conditions, based on the type of identifier they received for the purposes of the study. The type of identifier was varied to manipulate participants' perceived recognizability in the setting, and thereby to affect their feelings and behavior. Participants were either given a single random pseudonym (e.g., SoundChronicle, Pixelgo, CookieSnowboard; generated on spinxo.com and selected for high likability in pretests; see Supplemental Materials) that they were instructed to use throughout the study (i.e., for both the study-relevant and the filler interaction; persistent pseudonym condition; $N = 77$); or they were told their pseudonym was temporary and were given a new pseudonym after completing their first interaction (temporary pseudonym condition; $N = 55$); or they were given a seven-digit ID number to write down and were told to input "no pseudonym" in all pseudonym fields, for the purposes of anonymity (anonymous condition; $N = 69$). The participants in this last group were given a number to remember until the end of the study to compensate for any depletion or

distraction effects that might occur for participants who had to remember a pseudonymous designation for themselves.

In order to allow participants the opportunity to choose between interacting with others in a manner that was focused on helping others and interacting in a more neutral manner, participants were shown a webpage containing two forum threads: one in which someone was asking for help, and one in which people were telling jokes. The former thread had a subject line that indicated that a person was requesting help with a computer problem (“Can anyone help me with a computer problem?”; the experimentally-relevant help thread), and the latter had a subject line indicating it was a thread in which people could tell jokes to each other (“Does anyone have jokes to share?”; a filler thread). To provide the illusion of a larger study forum, the selection provided to participants was framed as being a subset of nine total forum threads, the rest of which were not being displayed to the participant. There was no specific information given about the size of the group interacting on the forum. The supposed posters in the threads had pseudonyms chosen from the same pool of names as those given to participants. The order of these threads was counterbalanced, and participants were allowed to choose which thread they wanted to enter first. Participants had to enter one of the two threads presented to them in order to proceed with the study. Whether participants entered the help thread or the filler thread first was recorded as a measure of a participants’ priority for helping others, associated with prosociality.

For the topic thread in which participants had the opportunity to behave prosocially by helping someone else, participants encountered a situation in which a supposed other participant was having difficulty with a relatively complicated computer

problem: the other participant had deleted a file important for the installation of the program. The proper solution to this problem, that the supposed participant would need to reinstall the program, was designed to be relatively difficult, but not impossible, for study participants to learn or to know already. Providing the proper solution to the person in need of help was, therefore, supposed to require a moderate amount of effort, including independent research or searching on the part of the participant. The task was designed to be somewhat challenging in order to serve as a better measure of participants' motivation to help; engaging in assistance that is relatively costly for the benefactor (e.g., involving greater personal effort or time) is generally more indicative of prosocial motivation (see Batson, 2016).

After reading the existing posts on a given message board thread, participants had the opportunity to respond to the thread themselves. Participants' responses to the help thread were coded in two subsets by three raters unaware of condition (two of whom rated the entirety of a given subset, and the third of whom resolved disputed ratings; subset one: $\chi^2(1, N = 361) = 278.17$, contingency coefficient = .660, 94.20% initial agreement; subset two: $\chi^2(1, N = 34) = 30.22$, contingency coefficient = .686, 98.53% initial agreement). Responses were rated on two prosocial criteria: whether the response provided a correct solution to the problem in the help thread (i.e., a solution that would enable the other user to fix the computer problem, rather than very general advice such as "try restarting your computer," unhelpful comments, or harassment), and whether the response provided sympathy or well-wishes (e.g., "sorry that happened to you," "good luck"). I included the latter set of behaviors in analysis as an indication of prosocial

emotional support that could be provided even if the participant did not have the time, ability, or motivation to find a helpful answer to the computer problem itself.

Upon submission of their responses, participants were redirected “back to the survey” to complete a questionnaire on their experiences, to measure the various ways in which the experimental manipulation was expected to influence participants’ feelings and perceptions. In order to measure the extent to which the experimental manipulations influenced participants’ perceptions of themselves and others in the forum environment, participants completed a questionnaire of self-report measures based on the relevant dependent variables in the reviewed literature. Because the hypotheses were such that participants’ assignment of pseudonyms—or lack thereof—would influence their perceptions of themselves and their attitudes, the questionnaire included measures of recognizability, disinhibition, altruism, and deindividuation. Private self-awareness acted as a proxy measure for deindividuation, a methodology that has been used in previous studies on deindividuation to measure its effects on perceptions of self (Joinson, 2001; Prentice-Dunn & Rogers, 1982); participants were considered to be more deindividuated when they were focused less on private aspects of themselves. Because the hypotheses also included that participants’ pseudonym condition would influence their perceptions of their own behavior and the surrounding environment, the questionnaire included measures of self-reported knowledge contribution and altruism, as well as sense of community on the forum overall.

Because the hypothesized effects also included the extent to which users came to identify with the pseudonyms they received, the questionnaire also contained a measures, on which participants indicated their agreement on scales ranging from 1 (*not at all*) to 6

(*very much*), of participants' sense of personal expressiveness of their identifier (e.g., "On the forum, I felt like my pseudonym/ID number reflected some aspect of me online," "I think my screenname/number is reflective of me in some way"; $\alpha = .92$), personal recognizability (e.g., "I believed I was identifiable to other users on the forum," "I believed I had a distinguishing characteristic that allowed other forum users to identify me"; $\alpha = .69$), disinhibition (e.g., "It is easier to connect with others online than talking in person"; "There are no rules online, therefore you can do whatever you want"; $\alpha = .53$; Udris, 2014), and deindividuation (operationalized as private self-awareness, e.g., "On the forum, I was generally very aware of myself and of my own perspective and attitudes," "Rather than thinking about myself on the forum, my mind was distracted by my surroundings" reverse-scored; $r[198] = .319$; Joinson, 2001).

To measure the impact of the experimental manipulation on participants' prosocial motivations and relationship to others, participants also completed measures on altruism (e.g., "I behaved in a caring way toward others on the forum," "I was considerate of others' feelings on the forum"; $\alpha = .73$; Rushton, Chrisjohn, & Fekken, 1981), knowledge contribution ("I contributed knowledge to the online forum community," "I took an active part in the community of the online forum"; $r[197] = .63$), and sense of community ("To what extent, if at all, did you ever have a sense of 'being there with other people' in this community?", "To what extent, if at all, did you have a sense that you were together with other people on the forum?"; $r[198] = .85$). In addition, participants completed a demographic questionnaire.

Results

The measures of interest for the present experiment represented three categories of responses hypothesized to vary as a function of the manipulation of participant identifiability (anonymous, temporary pseudonym, persistent pseudonym). One set of measures was designed to assess participants' psychological states: feelings of recognizability, perceived personal expressiveness of the online identifiers, self-reported levels of disinhibition, and deindividuation (operationalized as level of private self-awareness; Joinson, 2001). A second category of measures included participants' reports of their relationship with others in the setting: self-reported sense of community, knowledge contribution, and altruism. The third type of response examined represented observations of participants' helping behavior: participants' preference to visit the help thread first, presentation of a solution to the forum poster in need of help, and offer of emotional support to the person posting the message.

Correlations among continuous measures of psychological states appear in Table 3.1. The bivariate relationships between the relevant continuous dependent variables were largely positive and significant, with the exception of disinhibition and private self-awareness, which had nonsignificant relationships with perceived expressiveness, altruism (for disinhibition), recognizability (for private self-awareness), and each other.

Table 3.1. Bivariate correlations between the continuous dependent variables.

Correlations							
	Disinhibition	Private Self-Awareness	Recognizability	Perceived Expressiveness	Sense of Community	Knowledge Contribution	Altruism
Disinhibition		.122	.190**	.108	.253**	.157*	.121
Private Self-Awareness			.103	.133	.172*	.200**	.259**
Recognizability				.392**	.290**	.161*	.203**
Perceived Expressiveness					.327**	.186**	.164*
Sense of Community						.500**	.448**
Knowledge Contribution							.624**
Altruism							
** $p < .01$							
* $p < .05$							

Participants' self-reported disinhibition was correlated positively with some measures of prosociality, specifically knowledge contribution and sense of community, as well as with sadism. This positive correlation between disinhibition and the prosociality measures is inconsistent not only with my hypotheses but also with the results of previous research showing that disinhibition, generally, is associated with antisocial or uncivil behavior, and it is only rarely associated with prosocial behavior (see Dovidio et al., 2006; Suler, 2004; Udris, 2014). To provide additional insight into these relationships, I separated the disinhibition measure into its component subscales: (a) benign disinhibition (e.g., "It is easier connecting with others online than talking in person," $\alpha = .50$) and toxic disinhibition (e.g., "It's easier to write insulting things online because there are no repercussions," $\alpha = .56$), as in the originally-published work (Udris, 2014). Benign disinhibition involves a feeling of freedom to express oneself in an honest way in order to

connect with others, regardless of differences in status in face-to-face interactions; toxic disinhibition involves performing rude behaviors or harassment toward others online because of a perceived or expected lack of repercussions (Suler, 2004). The subscales were confirmed in my data by factor analysis (Principal Component Analysis, Varimax rotation), which provided a two-factor solution that explained 53.35% of the variance in responses. The two factors contained the benign disinhibition and toxic disinhibition questions, respectively, with all items loading above .60 on their respective factors after Varimax rotation. There was a significant positive correlation between the two subscales, $r(194) = .17, p = .018$. I then examined the bivariate correlations of these subscales with the other self-report measures.

Benign disinhibition was positively correlated with feeling that one's pseudonym was personally expressive, $r(189) = .16, p = .028$; self-reported knowledge contribution, $r(193) = .23, p = .002$; sense of community, $r(194) = .23, p < .001$; and altruism, $r(193) = .25, p < .001$. Toxic disinhibition was positively correlated with sense of community, $r(196) = .18, p = .012$, but also with sadism, $r(195) = .34, p < .001$. Thus, it appears that the correlation of the overall disinhibition measure with knowledge contribution is largely explained by the benign disinhibition subscale, the correlation of the overall disinhibition measure with sadism is largely explained by the toxic disinhibition subscale, and the correlation with knowledge contribution is explained by both.

Table 3.2. Bivariate correlations between disinhibition subscales and dependent variables of interest in Study 1.

Correlations								
	Benign Disinhibition	Toxic Disinhibition	Private Self-Awareness	Recognizable Self	Perceived Expressiveness	Sense of Community	Knowledge Contribution	Sadism
Benign Disinhibition		.168*	.112	.138	.159*	.228**	.225**	.053
Toxic Disinhibition			.082	.115	.026	.179*	.024	.340**
** $p < .01$								
* $p < .05$								

Given the potentially positive impact of benign disinhibition, such as feeling more open to communicate with others online, and the negative impact of toxic disinhibition, such as finding it easier to harass others online, the observed bivariate correlations are generally consistent with the subscales. The exception to this pattern is toxic disinhibition's positive correlation with sense of community, which remains inconsistent with previous research and my hypotheses. It is possible that the meaning of sense of community may differ for people in a way associated with their level of benign or toxic disinhibition. Given the general finding of a positive relationship between benign disinhibition and prosociality, sense of community may represent positive social connection for people high in benign disinhibition. By contrast, given toxic disinhibition's moderate correlation with sadism, toxic disinhibition's relationship to sense of community may not necessarily be beneficial. Rather, participants high in toxic disinhibition may see harassing others online as an activity essential to online social engagements. The conceptual distinction between benign and toxic disinhibition and my empirical findings showing different associations with them suggests the value of considering these different forms of disinhibition separately in future research.

Point-biserial correlations between the dichotomous behavioral measures and the continuous self-report measures were also explored, and they are reported in Table 3.3. Correlations were mixed, with participants' tendency for helping first generally positively related to self-report measures of feeling a sense of community, contributing knowledge, acting altruistically, and feeling disinhibited; helping first was not related to the other self-report measures. Providing a solution to the user's computer problem was also positively correlated with knowledge contribution and self-reported altruism; however, providing emotional support was not. It is possible that because most of the emotional support messages were comprised of apologies (indeed, providing emotional support was negatively related to providing a solution, suggesting that some participants apologized in lieu of knowing the solution), this tendency was rather unrelated to whether or not participants felt they had contributed to a community. Disinhibition was negatively related to providing emotional support, and perceived expressiveness was positively related to providing emotional support. Neither private self-awareness nor perceptions of being recognizable related significantly to the behavioral measures.

Table 3.3. Chi-square contingency coefficients between the dichotomous behavioral measures, and point-biserial correlations between the dichotomous behavioral measures and the continuous self-report measures.

Contingency Coefficients			
	Helping First	Providing Solution	Emotional Support
Helping First		.296**	.003
Providing Solution	.310**		.140*
Emotional Support			
Correlations			
Disinhibition	.154*	.121	-.169*
Private Self-Awareness	.057	.047	.039
Recognizability	.075	.041	.012
Perceived Expressiveness	.125	.062	.195**
Sense of Community	.186**	.081	.036
Knowledge Contribution	.153*	.286**	-.046
Altruism	.142*	.220**	.014
** $p > .01$ * $p > .05$			

Differences among the three participant identifiability conditions for the measures of psychological states and relationship with others (continuous dependent variables) were initially tested with a one-way multivariate analysis of variance (MANOVA, Pillai's Trace). In addition, *a priori* orthogonal multivariate contrasts examined whether (a) the anonymous condition differed from the two pseudonymous conditions combined (+2 -1 -1), and (b) whether the temporary and persistent pseudonym conditions differed (0 +1 -1). Univariate tests for each variable considered in a multivariate analysis are also

reported. The results of these analyses are summarized in Table 3.4. The effects for helping behavior measures, which had dichotomous responses (yes or no), were assessed only at the univariate level overall and for *a priori* contrasts (using chi-square tests). The results for the helping measures also appear in Table 3.4.

Table 3.4. Means, proportions, and statistical significance of relevant dependent measures.

Dependent Measure	Anonymous	Temporary Pseudonym	Persistent Pseudonym	One-Way ANOVA	Anon vs. Pseud	Temp vs. Pers
	Mean (SD)	Mean (SD)	Mean (SD)	$F(2, xx), p, \text{partial } \eta^2$	$F(1, yy), p, \text{partial } \eta^2$	$F(1, yy), p, \text{partial } \eta^2$
Psychological States (MANOVA)				$F(8, 360) = 2.15, p = .031, \text{partial } \eta^2 = .046$	$F(4, 180) = 3.41, p = .010, \text{partial } \eta^2 = .070$	$F(4, 117) = .99, p = .415, \text{partial } \eta^2 = .033$
Disinhibition	3.01 (.92)	2.74 (.75)	3.02 (.80)	$F = 2.18, p = .116, \text{partial } \eta^2 = .022$	$F = .81, p = .368, \text{partial } \eta^2 = .004$	$F = 4.00, p = .048, \text{partial } \eta^2 = .031$
Private Self-Awareness	4.14 (1.29)	4.42 (1.30)	4.45 (1.15)	$F = 1.31, p = .219, \text{partial } \eta^2 = .013$	$F = 2.61, p = .108, \text{partial } \eta^2 = .013$	$F = .02, p = .884, \text{partial } \eta^2 < .001$
Recognizability	2.28 (1.28)	2.47 (1.24)	2.70 (1.22)	$F = 2.06, p = .130, \text{partial } \eta^2 = .021$	$F = 3.06, p = .082, \text{partial } \eta^2 = .016$	$F = 1.09, p = .299, \text{partial } \eta^2 = .009$
Perceived Expressiveness	1.43 (.85)	2.02 (1.38)	1.93 (1.21)	$F = 4.82, p = .009, \text{partial } \eta^2 = .048$	$F = 9.49, p = .002, \text{partial } \eta^2 = .047$	$F = .15, p = .696, \text{partial } \eta^2 = .001$

Dependent Measure	Anonymous	Temporary Pseudonym	Persistent Pseudonym	One-Way ANOVA	Anon vs. Pseud	Temp vs. Pers
	Mean (SD)	Mean (SD)	Mean (SD)	$F(2, xx), p, \text{partial } \eta^2$	$F(1, yy), p, \text{partial } \eta^2$	$F(1, yy), p, \text{partial } \eta^2$
Relationship to Others (MANOVA)				$F(6, 384) = 2.32, p = .033, \text{partial } \eta^2 = .035$	$F(3, 192) = 3.21, p = .024, \text{partial } \eta^2 = .048$	$F(3, 124) = 1.41, p = .242, \text{partial } \eta^2 = .033$
Sense of Community	2.73 (1.43)	2.82 (1.53)	3.34 (1.47)	$F = 3.60, p = .029, \text{partial } \eta^2 = .035$	$F = 3.12, p = .079, \text{partial } \eta^2 = .016$	$F = 3.91, p = .050, \text{partial } \eta^2 = .029$
Knowledge Contribution	3.91 (1.35)	4.32 (1.26)	4.66 (1.19)	$F = 6.49, p = .002, \text{partial } \eta^2 = .062$	$F = 10.64, p = .001, \text{partial } \eta^2 = .051$	$F = 2.47, p = .119, \text{partial } \eta^2 = .019$
Altruism	3.93 (1.03)	4.00 (1.13)	4.32 (1.02)	$F = 2.79, p = .064, \text{partial } \eta^2 = .028$	$F = 2.61, p = .108, \text{partial } \eta^2 = .013$	$F = 2.87, p = .093, \text{partial } \eta^2 = .022$
	Proportion as percent	Proportion as percent	Proportion as percent		χ^2, p	χ^2, p
Helping Behavior	N/A	N/A	N/A		N/A	N/A
Helping First	27.54%	23.64%	40.26%		$\chi^2 (1, N = 201) = .71, p = .400$	$\chi^2 (1, N = 132) = 3.99, p = .046$
Providing Solution	44.12%	50.00%	59.21%		$\chi^2 (1, N = 198) = 2.27, p = .132$	$\chi^2 (1, N = 130) = 1.08, p = .298$
Emotional Support	11.76%	29.63%	21.05%		$\chi^2 (1, N = 198) = 4.57, p = .032$	$\chi^2 (1, N = 130) = 1.25, p = .263$

Psychological states. A MANOVA testing the effect of the three experimental conditions (anonymous; temporary pseudonym; or persistent pseudonym) on the measures of disinhibition, private self-awareness, recognizability, and perceived expressiveness was significant. As indicated in Table 3.4, tests of univariate effects revealed a statistically significant effect for participants' reported perception of personal expressiveness, such that the anonymous condition was reported to be less personally expressive than either the temporary pseudonym condition or the persistent pseudonym

condition; the latter two conditions were reported to be similarly personally-expressive. The effects for private self-awareness, recognizability, and disinhibition were not significant.

Next, using planned orthogonal contrasts, multivariate tests were conducted on (a) whether the anonymous condition differed from the two pseudonymous conditions combined and (b) whether the temporary pseudonym and persistent pseudonym conditions differed. With respect to the first orthogonal contrast, the anonymous condition significantly differed from the two pseudonymous conditions. Univariate effects for this contrast (see Table 3.4) were significant only for perception of personal expressiveness and for sense of recognizability. For perception of personal expressiveness, the effect was such that participants in the anonymous condition ($M = 1.43$, $SE = .14$) felt their ID numbers were less expressive of themselves than participants in the two pseudonymous conditions combined felt about their pseudonyms ($M = 1.97$, $SE = .10$). For participants' sense of recognizability, there was a marginally-significant effect such that participants in the anonymous condition ($M = 2.28$, $SE = .15$) felt somewhat less recognizable than did participants in the two pseudonymous conditions combined ($M = 2.61$, $SE = .11$).

With respect to the second orthogonal contrast that compared the persistent pseudonymous condition to the temporary pseudonymous condition, the multivariate test was not significant; as presented in Table 3.4, there was, however, a statistically significant univariate effect such that participants in the persistent pseudonym condition reported feeling more disinhibited than did participants in the temporary pseudonym

condition. The effect between pseudonymous conditions was in the opposite direction from what was hypothesized.

Relationship to others. A MANOVA testing the overall effect of the identifiability manipulation for the effects of sense of community, knowledge contribution, and altruism revealed an effect of experimental condition, Pillai's Trace $F(6, 384) = 2.32, p = .033$, partial $\eta^2 = .035$. As indicated in Table 3.4, univariate ANOVAs for each component individually revealed statistically-significant effects of knowledge contribution and sense of community across all three experimental conditions. For knowledge contribution, the means were such that participants in the anonymous condition reported the least knowledge contribution, participants in the temporary pseudonym condition reported somewhat more knowledge contribution than did those in the anonymous condition, and participants in the persistent pseudonym condition reported the most knowledge contribution. For sense of community, the means were such that participants in the anonymous and temporary pseudonym conditions reported similar levels of sense of community, while participants in the persistent pseudonym condition reported higher levels of sense of community than the other two conditions. The differences between conditions for altruism were not significant. These effects were examined through the planned orthogonal contrasts.

A MANOVA contrast testing the difference between the anonymous condition and the two pseudonymous conditions combined revealed a significant effect, Pillai's Trace $F(3, 192) = 3.21, p = .024$, partial $\eta^2 = .048$. A univariate ANOVA comparing the anonymous condition to the two pseudonymous conditions combined on knowledge contribution revealed a statistically-significant effect: Participants in the anonymous

condition ($M = 3.91$, $SE = .15$) reported contributing more knowledge than did participants in the pseudonymous conditions ($M = 4.52$, $SE = .11$). There were no significant differences between the anonymous condition and the two pseudonymous conditions for participants' reported sense of community or reported altruism.

A MANOVA comparing the persistent pseudonymous condition and the temporary pseudonymous condition did not reveal a significant effect, Pillai's Trace $F(3, 124) = 1.41$, $p = .242$, partial $\eta^2 = .033$. However, a univariate ANOVA revealed a significant effect for participants' reported sense of community, such that participants in the persistent pseudonym condition felt more of a sense of community than did participants in the temporary pseudonym condition (see Table 3.4 for means).

Overall, the main differences in the measures for participants' relationship to others appear to be arising in the comparison between the anonymous condition and the pseudonymous conditions, and appear to be especially strong with respect to participants' reported knowledge contribution.

Forum thread helping behavior. The data were tested for order effects to investigate whether participants' behavior in the help thread varied by whether they entered the help thread or the joke thread first; there were no significant order effects. Next, chi-square tests were performed for each relevant coded helping behavior, both across all experimental conditions and between the two orthogonal contrasts. Participants' likelihood of visiting the help thread first (rather than going to the joke thread first), likelihood of expressing emotional support (such as through sympathy or well-wishes) in the help thread, and likelihood of providing a solution to the problem presented in the help thread were compared for all three conditions, then between the

pseudonymous and anonymous conditions, and between the persistent pseudonym and temporary pseudonym conditions.

The chi-square test across the three experimental conditions for entering the help thread first was marginally significant, $\chi^2 (2, N = 201) = 4.83, p = .089$. The percentage of participants in each group who entered the help thread first (see Table 3.4) were such that participants were approximately as likely to enter the help thread first when in the anonymous or temporary pseudonym conditions, but participants in the persistent pseudonym condition were more likely to enter the help thread first than were participants in the other two conditions. An a priori chi-square test comparing the persistent and temporary pseudonym conditions revealed a significant effect of experimental condition, such that participants in the persistent pseudonym condition (40.26%) were significantly more likely to enter the help thread first than were participants in the temporary pseudonym condition (23.64%). A chi-square test comparing the pseudonymous and anonymous conditions did not reveal a significant effect. There were also no interactions found between participants who entered the help thread first and participants who entered the help thread second by experimental condition, so the data were collapsed across order of entering the help thread.

Comparing the three experimental conditions on providing a solution to the person requesting assistance in the help thread did not reveal significant differences, $\chi^2 (2, N = 198) = 3.34, p = .188$. Similarly, participants' likelihood of offering a solution to the help thread problem did not significantly differ between the pseudonymous and anonymous conditions. However, the trend was such that participants in the pseudonymous conditions (55.38%) tended to be somewhat more likely to offer a

solution in the help thread than were participants in the anonymous condition (44.12%). There was no significant difference between the persistent pseudonym and temporary pseudonym conditions.

However, the differences between conditions on expressing emotional support to the person posting the message were statistically significant, $\chi^2 (2, N = 198) = 6.01, p = .049$. The percentages of participants providing emotional support per group (see Table 3.4) were such that participants in the anonymous condition were least likely to provide emotional support, while participants in the temporary pseudonym condition were most likely; participants in the persistent pseudonym condition fell between the other two groups in their likelihood of providing emotional support. The contrast comparing the anonymous condition to the two pseudonymous conditions revealed a significant effect, such that participants in the pseudonymous conditions (24.62%) were significantly more likely to offer emotional support than were participants in the anonymous condition (11.76%). There was no significant difference between the persistent pseudonym and temporary pseudonym conditions.

Overall, it appears that pseudonyms provide some motivation over anonymity in promoting prosocial behavior online, such that pseudonymous participants were significantly more likely than were anonymous participants to offer emotional support to someone in need of help, and may have been somewhat more likely to offer a useful solution to the person's problem. The type of pseudonym used also seems to influence behavior, but in a different pattern; although participants in the temporary and persistent pseudonym conditions did not significantly differ in the responses they left in the help thread, participants in the persistent pseudonym condition did appear to show a greater

priority for helping others than did participants in the temporary pseudonym condition. It is possible that further manipulation of the types of pseudonyms given to participants may reveal differences in the responses given to someone in need of assistance.

Discussion

On the whole, the results of Study 1 demonstrate a pattern of social benefits promoted by giving participants persistent pseudonyms rather than temporary pseudonyms. Persistent pseudonyms produced a stronger sense of community in the online setting relative to temporary pseudonyms. However, both persistent and temporary pseudonyms appear to promote more prosocial feelings and behavior than does having participants remain anonymous. Pseudonymity, in general, encouraged more knowledge contribution, eagerness to help others, and willingness to provide emotional support to someone in need of help, relative to anonymity.

One possible interpretation for differences in the effects of the conditions – one that I originally hypothesized – is that participants would feel more individuated when they are given a pseudonym over being anonymous, and that greater individuation would relate to more prosocial responses. However, there were no significant differences between the two pseudonymous conditions compared to the anonymous condition in private self-awareness (used as a measure of feelings of individuation; Joinson, 2001; Prentice-Dunn & Rogers, 1982), or disinhibition. Nevertheless, at least partially supportive of predictions, a greater sense of private self-awareness was correlated with increased sense of community, knowledge contribution, and altruism. Although all three self-reported prosocial orientation measures were significantly positively related to entering the helping thread first, there was not a direct relationship between private self-

awareness and other behavioral measures. Thus, although the data are suggestive, there was not strong and consistent support that pseudonyms elicit more prosocial behavior than to identifiers that protect anonymity because they individuate people more.

A second explanation that was pursued by Study 1 for the effect of pseudonyms on behavior relative to anonymity was that pseudonyms might make participants feel more recognizable to others than would an anonymous identifier. Participants reported feeling somewhat, but not significantly ($p = .08$) more recognizable in the pseudonymous conditions than in the anonymous condition, and recognizability did not differ as a function of whether a pseudonym was temporary or persistent. Recognizability was positively related to self-reports of sense of community, knowledge contribution, and altruism, but it did not predict any of the behavioral prosocial measures. While still not conclusive, the findings suggest that feeling more distinguishable or distinctive to others may play a role in how prosocially people perceive they act when they have a pseudonym rather than are anonymous in online interactions. It is possible that having a stronger experimental manipulation of recognizability, or a more sensitive measure of recognizability, may reveal aspects of recognizability that relate more strongly to participants' prosocial behavior.

Perceived personal expressiveness of an identifier, which I expected to relate to feelings of individuation and/or recognizability, also appeared to relate to prosociality. Participants in pseudonymous conditions rated their identifiers as being more personally-expressive than did participants in the anonymous condition (who were assigned ID numbers). A greater sense of personal expressiveness of one's identifier was correlated with a stronger sense of community, more knowledge contribution, and more self-

perceived altruism. Although all three self-reported prosocial orientation measures were significantly positively related to entering the helping thread first, the only direct relationship between a behavioral measure and one's own presence on the forum (one's individuation, recognizability, or the extent to which one was expressed by one's identifier) was the correlation between self-expressiveness and emotional support. Perceived expressiveness of the identifier was also, as anticipated, moderately correlated with recognizability ($r = .39$), but it was not correlated with private self-awareness. Thus, whereas perceived expressiveness may have conceptual links to both individuation and recognizability, empirical evidence demonstrates a more substantive connection to feelings of recognizability.

Although the precise mechanisms for the effects found in Study 1 remain unclear, relatively consistent differences between the anonymous condition and the pseudonymous conditions can be drawn overall. For the self-report measures of feelings of personal expressiveness of pseudonym and knowledge contribution, both pseudonymous conditions differed from the anonymous condition, and participants in both pseudonymous conditions displayed more prosocial behaviors than did participants in the anonymous condition. Thus, it appears that having a pseudonym—even a temporary pseudonym—may promote prosocial feelings and behavior over being anonymous. In addition, participants with persistent pseudonyms actually reported feeling more disinhibited than did participants with temporary pseudonyms, a finding that contradicts research on disinhibition in anonymous contexts. This could be a chance finding, but disinhibition as a whole was also correlated positively with feeling recognizable, and benign disinhibition in particular was correlated positively with

prosocial feelings such as sense of community and knowledge contribution. The overall pattern suggests that, under the right circumstances, people could feel particularly motivated to be prosocial to the extent that the pseudonyms being used give them a sense of 1) both themselves and others being recognizable and 2) themselves and others sharing an experience or having a shared identity that overrides in-person hierarchies or expectations. Such results suggest that pseudonymity should be treated as a context separate from anonymity online.

There are three limitations of Study 1 that would be valuable to address in further work on the effects of pseudonymity on prosocial behavior. One limitation of Study 1 is methodological. In Study 1, participants were assigned a pseudonym rather than creating or choosing one, which limits the potential of pseudonyms to be expressive of the self or to make a person feel readily recognizable to others or individuated. It is possible that the assigned pseudonyms were not particularly individuating or notable, even if participants felt the pseudonyms were somewhat more personally-expressive than were anonymous numbers; the means for personal expressiveness remained well below the scale midpoint for the pseudonymous conditions (see Table 3.4). Perhaps allowing participants to choose pseudonyms, rather than dictating to them what their pseudonyms will be, would further increase feelings of personal expressiveness and also influence participants' feelings of individuation and recognizability. Therefore, subsequent studies should seek to create a design that allows users some choice as to their pseudonyms, perhaps by choosing from a selection of pretested pseudonyms.

A second limitation of Study 1 is empirical. Even for the significant effects obtained in Study 1, the effect sizes were not as large as expected—consistent with small

effect sizes, not medium—so the experimental design may have been somewhat underpowered for testing the effect. Thus, subsequent studies should seek replication of the main findings of Study 1 using designs with greater statistical power, in addition to expanding upon its manipulation and examination of recognizability. Study 2, which included a procedure in which participants were able to choose a pseudonym, pursued the role of recognizability in influencing online prosocial behavior. Subsequent studies could also include a helping measure that is less dependent on participants' pre-existing knowledge than is a thread on computer troubleshooting; Studies 3 through 5 address this concern.

A third limitation of Study 1 is theoretical. Study 1 focused on and assessed the impact of personal recognizability, which was expected to be a function of whether participants were assigned a temporary or a persistent pseudonym. Because people tend to project their own experiences and perspectives onto others (see Epley et al., 2004), it is further possible that participants with temporary or persistent pseudonyms would also assume that other participants in their online context would have the same type of pseudonym—temporary or persistent—that they had. That is, participants with temporary pseudonyms may also have expected that others in the forum setting also had temporary pseudonyms, and participants with persistent pseudonyms may have expected that others also had persistent pseudonyms. One consequence of this process is that the manipulation of temporary versus persistent pseudonyms could potentially affect feelings of personal recognizability (which was measured in Study 1) and others' recognizability (which was unmeasured) in parallel ways. In addition to greater feelings of personal recognizability promoting greater prosocial behavior (Schwartz & Gottlieb, 1980), perceptions that

others were more recognizable can, independently, affect prosocial responses. For example, previous research has demonstrated that even merely knowing that a person in need of help will potentially be identifiable, without knowing any personal information about the individual, can increase expressions of caring and helping behavior (Small & Loewenstein, 2003). Study 2 thus further investigated how information that one's own pseudonyms or others' pseudonyms were temporary or persistent could affect prosocial behavior separately or jointly.

Study 2

Study 2 was designed to investigate participants' perceptions of others' recognizability as well as their own recognizability as potential mechanisms for the effects of persistent versus temporary pseudonymity on prosociality found in Study 1. Although Study 1 measured the extent to which participants felt personally recognizable, it did not directly assess their perceptions of the recognizability of others in the setting. It is possible that participants' perceptions of others as recognizable could have influenced their behavior. For instance, the state of being recognizable to others as a helpful person could encourage reciprocity (Kafashan, Sparks, Griskevicius, & Barclay, 2014), which could then be received from a recognizable target. Alternatively, participants in the persistent pseudonym condition could have been more likely to prioritize helping others than were participants in the temporary pseudonym condition due to an interest in increased recognizability for its own sake, perhaps in the interest of establishing trust and potential friendship (see Henderson & Gilding, 2004). Relatedly, people tend to be more likely to offer aid when there is a recognizable person in need of help (Kogut & Ritov,

2005), and this tendency could become more instantiated online through persistent pseudonymity.

Study 1's overall effects between its persistent versus temporary pseudonym conditions, as well as previous research on pseudonymous online interactions, served to inform the expectations for Study 2. In Study 1, it was found that participants with persistent pseudonyms, compared to those who had temporary pseudonyms, reported feeling more of a sense of community with others and were more likely to prioritize helping others. These effects are consistent with established research: In settings with non-persistent pseudonyms, users report trusting other users less and may endorse strategies that penalize supposed newcomers (Pater, Nadji, Mynatt, & Bruckman, 2014; Resnick, 2001). Furthermore, Ma and Agarwal (2007) found that online settings' support of persistent user labeling (i.e., persistent pseudonyms) contributed to greater user satisfaction and increased the extent to which users shared their knowledge with others, compared to settings in which there were no persistent pseudonyms.

In addition to finding pseudonyms fulfilling in some respects, users seem to assign importance both to their pseudonyms and to the actions they undertake while using these pseudonyms. For instance, the extent to which users engage with others in an online setting, along with the extent to which they see their online presence as part of their identity, predicts the extent to which they contribute knowledge in a given online setting (Kim, Zheng, & Gupta, 2011). Moreover, by virtue of recognizability, a persistent pseudonym embeds its user and the user's actions into a network of interacting users (many or all of whom also have pseudonyms). Because the recognizability of a persistently-pseudonymous user increases over time through interacting with others, the

amount of time a user spends interacting in such a community may further serve to influence the user's behavior in the setting. Furthermore, because individuals often expect that others' experiences are similar to their own (a phenomenon known as egocentric bias; see Epley et al., 2004), users being aware of how persistent pseudonyms may influence their behavior could influence that user in forming expectations for how others may act regarding pseudonyms. For instance, if users expect that persistent pseudonyms might motivate them to act more prosocially because they will be able to be recognized later, then they might also expect that others with persistent pseudonyms could feel more recognizable and act more prosocially.

Study 2 employed a 2 x 2 design in which the manipulations were designed to vary, independently, the degree to which participants felt recognizable and believed others were recognizable in the same forum setting as Study 1. I manipulated whether participants entered the forum setting while either given one pseudonym (persistent pseudonymity) or two pseudonyms, one for each part of the task (temporary pseudonymity), and then they were told either that others on the forum would be using one pseudonym (persistent pseudonym) or two different pseudonyms (temporary pseudonyms) in their exchanges. I also modified the original design of the forum setting to address the limitation of Study 1 of giving people a pseudonym without any choice of their own, and I removed pseudonyms with the potential to be especially alienating or identifying for certain participants (for example, by containing gender-related words such as "chick," "girl," or "gent"), so that engagement would remain more consistent across participants in a given experimental condition. As in Study 1, the measures of interest

were participants' psychological states, their reports of their relationship with others in the setting, and their helping behavior.

Overall, this study was conducted to replicate the findings of Study 1 with respect to the relationship between persistent or temporary pseudonymity and positive behaviors online, and to investigate how perceptions of others as recognizable or unrecognizable also influenced positive behaviors. The study also examined the potential of participants' private self-awareness and disinhibition to act as mediators for the effects of pseudonymity on prosociality found in Study 1. The first two proposed mediators were motivated by expectations related to perceptions of recognizability on behavior, while the latter two proposed mediators were motivated by expectations related to disinhibition. Because my experimental manipulation was designed to manipulate recognizability more directly, I expected mediation via recognizability would be more likely in this study.

In addition to the general expectations from the findings of Study 1 that participants with persistent pseudonyms would report feeling more of a sense of community and would prioritize helping more than would participants with temporary pseudonyms, I further expected, due to the capability of persistent pseudonyms to refer to participants across multiple interactions, that participants with persistent pseudonyms would feel more recognizable than would participants with temporary pseudonyms (Cornetto & Nowak, 2006; Hassa, 2012). In addition, I anticipated, because others being persistently pseudonymous may encourage the expectation that others will be referenced consistently across interactions, that participants would find others with persistent pseudonyms to be more recognizable than others with temporary pseudonyms. Furthermore, I expected that participants' greater helping behavior when they themselves

were under persistent rather than temporary pseudonymity would be mediated by greater feelings of personal recognizability, and that participants' greater likelihood of helping others with persistent, rather than temporary, pseudonyms would be mediated by stronger impressions of others as recognizable (as has been found in previous research on recognizable others; Schwarz & Gottlieb, 1980).

Method

Participants. Participants were recruited from Amazon's Mechanical Turk (MTurk) service to take part in a study on "how Millennials interact online," in which they would supposedly be interacting with other participants on a separate forum website after answering a few survey questions. A power analysis using G*Power (Faul et al., 2007) focused on replicating the difference in visiting the help thread first between the persistent and temporary pseudonym conditions in Study 1 (Odds Ratio: .46, $\Pr(Y=1 | X=1) H_0 = .313$, α error probability = .05, Power = .85) projected a required sample size of 272 participants. After excluding data from participants who did not complete the study, the sample was comprised of 248 participants (110 male, 136 female) from the ages of 18 to 36 (based on an age range for Millennials provided by Pew, 2017; mean age = 29.17, SD = 4.52; 77.42% White/European-American, 4.03% Hispanic/Latino/a, 4.44% Black/African-American, 4.03% East Asian, 1.61% South Asian, 1.21% Native American/American Indian, 6.45% multiracial/mixed-race/other).¹ As in Study 1, the sample focused on participants from the Millennial generation, to ensure that most participants were familiar with the type of online interaction being simulated for the study.

Procedure

As in Study 1, after completing a certificate of informed consent for a study described as observing “how Millennials interact online,” participants learned that they would be taken to an “external website” that was hosting a forum setting for study participants. Participants were told that they were going to complete two interactions on the forum website. In reality, they were still completing forms on the website hosting the study, and their activity was recorded for analysis; the cover story was presented to reduce the likelihood that participants would respond as if they were still being monitored by the experimenter. In line with the cover story that participants would be leaving the website hosting the study to do another activity, participants next clicked a button on the study website page that would supposedly take them to the forum website, where they believed they would interact with other study participants.

After entering what they believed was a separate website, participants were randomly placed into one of four conditions in a 2 x 2 design, based on how many pseudonyms they received for the purposes of the study (one or two, for persistent or temporary pseudonymity, respectively), and how many pseudonyms they thought others on the forum site had received (similarly, one or two for persistent or temporary pseudonymity). In a change from Study 1, participants in this study were allowed to pick a pseudonym from a random three-item subset of the pseudonym list, rather than being assigned pseudonyms, in order to better preserve participant agency in the setting. Participants were either allowed to pick a single random pseudonym (excluding those pseudonyms that used gendered words; see Supplemental Materials) that they were instructed to use throughout the study (self-persistent pseudonym conditions); or they were told their pseudonym was temporary and were allowed to pick a new pseudonym

after completing their first interaction (self-temporary pseudonym conditions). They were also told either that other participants had persistent pseudonyms (other-persistent pseudonym conditions) or temporary pseudonyms (other-temporary pseudonym conditions), and this manipulation was crossed with the participants' pseudonym condition (self-persistent, other-persistent $N = 59$; self-persistent, other-temporary $N = 64$; self-temporary, other-persistent $N = 57$; self-temporary, other-temporary $N = 68$).

As in Study 1, in order to allow participants the opportunity to choose between interacting with others in a manner that was focused on helping others and interacting in a more neutral manner, participants were shown a webpage containing two forum threads: one in which someone was asking for help, and one in which people were telling jokes. The former thread had a subject line that indicated that a person was requesting help with a computer problem ("Can anyone help me with a computer problem?"; the experimentally-relevant help thread), and the latter had a subject line indicating it was a thread in which people could tell jokes to each other ("Does anyone have jokes to share?"; a filler thread). To provide the illusion of a larger study forum, the selection provided to participants was framed as being a subset of nine total forum threads, the rest of which were not being displayed to the participant. There was no specific information given about the size of the group interacting on the forum. The supposed posters in the threads had pseudonyms chosen from the same pool of names as those given to participants. The order of these threads was counterbalanced, and participants were allowed to choose which thread they wanted to enter first. Participants had to enter one of the two presented threads to proceed with the study. Whether participants entered the help thread or the filler thread first was recorded as a measure of a participants' priority

for helping others, associated with prosociality. As in Study 1, the choice between entering the help thread and entering the joke thread was meant to control for a general desire to act positively or cheer up others, in order to address more directly the desire to help with a particular problem requiring the sharing of knowledge.

After reading the existing posts on a given message board thread, participants then had the opportunity to respond to the thread themselves. Participants' responses to the help thread were coded by three raters unaware of the condition (two of whom rated the entirety of the dataset, and the third of whom resolved disputed ratings; $\chi^2(1, N = 486) = 208.30$, contingency coefficient = .548, 81.89% initial agreement) on two prosocial criteria: whether the response provided a correct solution to the problem in the help thread (i.e., a solution that would enable the other user to fix the computer problem, rather than very general advice such as "try restarting your computer," unhelpful comments, or harassment), and whether the response provided emotional support through sympathy or well-wishes (e.g., "sorry that happened to you," "good luck"). The latter set of behaviors were included in analysis as an indication of prosocial emotional support that could be provided even if the participant did not have the time, ability, or motivation to find a helpful answer to the computer problem itself.

Upon submission of their responses, participants were redirected "back to the survey" to complete a questionnaire on their experiences, to measure the various ways in which the experimental manipulation was expected to influence participants' feelings and perceptions, using many of the same measures as those in Study 1. In order to measure the extent to which the experimental manipulations influenced participants' perceptions of themselves and others in the forum environment, this questionnaire included measures,

for which participants indicated their agreement on scales ranging from 1 (*not at all*) to 6 (*very much*), of personal expressiveness of pseudonym (e.g., “On the forum, I felt like my screenname reflected some aspect of me online,” “I think my screenname is reflective of me in some way”; $\alpha = .94$), personal recognizability (e.g., “I believed I was identifiable to other users on the forum,” “I believed I had a distinguishing characteristic that allowed other forum users to identify me”; $\alpha = .66$), others’ recognizability (“I expected that users using a certain screenname in one place on the forum would also use it in other places on the same forum”; “I believed that others on the forum would switch to a different screenname with each post they made” reverse-scored; $r[241] = .307$), disinhibition (e.g., “It is easier to connect with others online than talking in person”; “There are no rules online, therefore you can do whatever you want”; $\alpha = .55$; Udris, 2014), deindividuation (operationalized as private self-awareness, e.g., “On the forum, I was generally very aware of myself and of my own perspective and attitudes,” “Rather than thinking about myself on the forum, my mind was distracted by my surroundings” reverse-scored; $r[244] = .277$; Joinson, 2001), altruism (e.g., “I behaved in a caring way toward others on the forum,” “I was considerate of others’ feelings on the forum”; $\alpha = .72$; Rushton, Chrisjohn, & Fekken, 1981), knowledge contribution (“I contributed knowledge to the online forum community,” “I took an active part in the community of the online forum”; $r[241] = .553$), and sense of community (“To what extent, if at all, did you ever have a sense of ‘being there with other people’ in this community?”, “To what extent, if at all, did you have a sense that you were together with other people on the forum?”; $r[243] = .79$). Participants also completed a demographic questionnaire, including items on their gender and age.

I hypothesized that Study 2 would largely replicate the effects of Study 1, such that participants with persistent pseudonyms would behave more prosocially overall toward others on the forum than would participants with temporary pseudonyms. Specifically, I predicted that participants with persistent pseudonyms would report feeling a greater sense of community and feeling more recognizable, would report behaving more altruistically, and would respond to the help thread in ways that were more helpful than would participants in the temporary pseudonym conditions. I further hypothesized, due to effects found in prior research such that people are more likely to help more recognizable others (Kogut & Ritov, 2005), that there would be main effects of others' pseudonymity such that other-persistent pseudonym conditions would show the same pattern relative to other-temporary pseudonym conditions.

Additionally, I hypothesized that participants' pseudonym persistence and their perception of others' pseudonym persistence would interact, such that participants would show the most helping behaviors, and report the greatest sense of community and altruism, in the condition where both participants' and others' pseudonyms were said to be persistent.

An expectation arose from the mediation model in Study 1 that in Study 2, participants' increase in helping behavior in situations where they or others were given persistent pseudonyms would be mediated by an increase in perceptions of themselves or others, respectively, as more recognizable. These mediators were expected to be parallel rather than serial; that is, each would act independently of the other.

Results

In analyzing participants' self-report responses, the measures of particular theoretical interest for the experiment involved participants' perceptions of identifiability: (a) their own recognizability, (b) the recognizability of others, and (c) participants' perception of their pseudonyms as being personally-expressive. Behavioral measures, also of theoretical interest, focused on participants' prosocial behavior, as in Study 1: participants' likelihoods (a) of visiting the help thread first, (b) of providing a solution to the forum poster in need of help, and (c) of providing emotional support to the poster. Other self-report measures of interest involved participants' relationship to others: their sense of community and knowledge contribution. Participant deindividuation (operationalized as private self-awareness) was given consideration due to its established role in psychological processes online. Also analyzed were self-reported levels of disinhibition and altruism. Indirect effects were also tested in line with the hypothesis that participants would display more helping behaviors when other users had persistent pseudonyms than when other users had temporary pseudonyms because they would feel that other supposed participants were more recognizable in those conditions. There were no significant or systematic main effects or interactions involving gender of the participant, so the participant gender was not included as a factor in subsequent analyses.

Correlations among continuous measures of psychological states appear in Table 3.5. The bivariate relationships between the relevant continuous dependent variables were largely positive and significant, with the exception of participants' perceptions of recognizability of themselves and others, which were positively correlated with some self-reports and uncorrelated with others. Also of note is that perceived expressiveness of pseudonym and private self-awareness were not correlated, as in Study 1.

Table 3.5. Bivariate correlations between the relevant continuous dependent variables.

Correlations						
	Recognizable Self	Recognizable Others	Perceived Expressiveness	Private Self-Awareness	Sense of Community	Knowledge Contribution
Recognizable Self		-0.03	.416**	-0.004	.217**	0.074
Recognizable Others			-0.001	.134*	0.022	0.091
Perceived Expressiveness				0.042	.346**	.271**
Private Self-Awareness					.179**	.167**
Sense of Community						.552**
Knowledge Contribution						
** $p < .01$						
* $p < .05$						

Included below are the bivariate correlations of benign and toxic disinhibition with dependent variables of interest in Study 2, with a focus on replications of previous disinhibition results. As found in Study 1, benign disinhibition was positively and significantly correlated with perceived expressiveness, sense of community, and knowledge contribution. In Study 2, it was also correlated with a sense of being recognizable, which was not found in Study 1. Consistent with Study 1, toxic disinhibition was positively correlated with sadism. Inconsistent with the finding of Study 1, toxic disinhibition was not significantly positively correlated with sense of community in Study 2. In addition, toxic disinhibition was found to be negatively correlated with perceptions of others' recognizability, which was not investigated in Study 1.

Table 3.6. Bivariate correlations between disinhibition subscales and dependent variables of interest in Study 2.

Correlations									
	Benign Disinhibition	Toxic Disinhibition	Private Self-Awareness	Recognizable Self	Recognizable Others	Perceived Expressiveness	Sense of Community	Knowledge Contribution	Sadism
Benign Disinhibition		.200**	-.128*	.215**	.048	.264**	.285**	.242**	.039
Toxic Disinhibition			-.099	.078	-.156*	.089	.075	.021	.426**
** $p < .01$									
* $p < .05$									

Point-biserial correlations between the dichotomous behavioral measures and the continuous self-report measures were also explored, and they are reported in Table 3.7. Participants' self-report measures were generally uncorrelated with their behavior; however, perceptions of others as recognizable were positively correlated with providing a solution and were marginally positively correlated with prioritizing helping first ($p = .091$). Perceptions of oneself as recognizable, finding one's pseudonym personally-expressive, and feeling a sense of community were all uncorrelated with the behavioral measures.

Table 3.7. Chi-square contingency coefficients between the dichotomous behavioral measures, and point-biserial correlations between the dichotomous behavioral measures and the continuous self-report measures.

Contingency Coefficients			
	Helping First	Providing Solution	Emotional Support
Helping First		.309**	.133*
Providing Solution	.309**		.211**
Emotional Support			
Correlations			
Recognizable Self	.048	-.070	-.059
Recognizable Others	.110	.160*	.048
Perceived Expressiveness	.040	.046	-.048
Private Self-Awareness	-.189**	-.032	-.005
Sense of Community	-.020	.018	.037
Knowledge Contribution	.043	.219**	-.025
** $p < .01$			
* $p < .05$			

The effects of the two experimental manipulations and their interaction on the three identifiability measures were initially tested using a 2 (participants' pseudonym persistence) x 2 (others' pseudonym persistence) multivariate analyses of variance (MANOVA, Pillai's Trace) for the measures of perceptions of identifiability and relationship with others (continuous dependent variables). Univariate tests for each variable considered in a multivariate analysis were also reported. The results of these analyses are summarized in Table 3.8. The effects for helping behavior measures, which had dichotomous responses (yes or no), were assessed only at the univariate level overall,

using binomial logistic regression to accommodate tests of moderation.³ The results for the helping measures also appear in Table 3.8.

Table 3.8. Means, proportions, and statistical significance of relevant dependent measures.

Dependent Measure	Self Temp, Other Temp	Self Temp, Other Pers	Self Pers, Other Temp	Self Pers, Other Pers	Effect of Self-Persistence	Effect of Other-Persistence	Self x Other Interaction
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	$F(y, xx), p, \text{partial } \eta^2$	$F(y, xx), p, \text{partial } \eta^2$	$F(y, xx), p, \text{partial } \eta^2$
Identifiability Measures (MANOVA)					$F(3, 232) = 3.68, p = .013, \text{partial } \eta^2 = .045$	$F(3, 232) = 2.16, p = .094, \text{partial } \eta^2 = .027$	$F(3, 232) = .62, p = .605, \text{partial } \eta^2 = .008$
Recognizable Self	2.62 (1.21)	2.47 (1.13)	3.04 (1.24)	2.93 (1.17)	$F(1, 232) = 8.69, p = .004, \text{partial } \eta^2 = .036$	$F(1, 232) = .87, p = .353, \text{partial } \eta^2 = .004$	$F(1, 232) = .02, p = .676, \text{partial } \eta^2 = .001$
Recognizable Others	4.08 (1.31)	4.51 (1.07)	4.36 (1.26)	4.66 (1.08)	$F(1, 232) = 1.83, p = .177, \text{partial } \eta^2 = .008$	$F(1, 232) = 4.83, p = .029, \text{partial } \eta^2 = .020$	$F(1, 232) = .18, p = .672, \text{partial } \eta^2 = .001$
Perceived Expressiveness	2.22 (1.41)	2.16 (1.25)	2.71 (1.63)	2.31 (1.33)	$F(1, 232) = 2.87, p = .092, \text{partial } \eta^2 = .012$	$F(1, 232) = 1.56, p = .213, \text{partial } \eta^2 = .007$	$F(1, 232) = .94, p = .334, \text{partial } \eta^2 = .004$
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	$F(y, xx), p, \text{partial } \eta^2$	$F(y, xx), p, \text{partial } \eta^2$	$F(y, xx), p, \text{partial } \eta^2$
Private Self-Awareness (ANOVA)	4.10 (1.27)	4.22 (1.25)	4.37 (1.24)	4.19 (1.26)	$F(1, 242) = .58, p = .448, \text{partial } \eta^2 = .002$	$F(1, 242) = .02, p = .881, \text{partial } \eta^2 < .001$	$F(1, 242) = .83, p = .362, \text{partial } \eta^2 = .003$
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	$F(y, xx), p, \text{partial } \eta^2$	$F(y, xx), p, \text{partial } \eta^2$	$F(y, xx), p, \text{partial } \eta^2$
Relationship to Others (MANOVA)					$F(2, 235) = .73, p = .485, \text{partial } \eta^2 = .006$	$F(2, 235) = .47, p = .625, \text{partial } \eta^2 = .004$	$F(2, 235) = 1.91, p = .150, \text{partial } \eta^2 = .016$
Sense of Community	3.35 (1.31)	3.35 (1.55)	3.58 (1.40)	3.56 (1.43)	$F(1, 236) = 1.09, p = .298, \text{partial } \eta^2 = .005$	$F(1, 236) = .01, p = .916, \text{partial } \eta^2 < .001$	$F(1, 236) = .02, p = .902, \text{partial } \eta^2 < .001$
Knowledge Contribution	4.22 (1.17)	4.35 (1.22)	4.46 (1.18)	4.13 (1.23)	$F(1, 236) = .01, p = .938, \text{partial } \eta^2 < .001$	$F(1, 236) = .55, p = .457, \text{partial } \eta^2 = .002$	$F(1, 236) = 2.86, p = .092, \text{partial } \eta^2 = .012$

Dependent Measure	Self Temp, Other Temp	Self Temp, Other Pers	Self Pers, Other Temp	Self Pers, Other Pers	Effect of Self-Persistence	Effect of Other-Persistence	Self x Other Interaction
	Proportion as percent	Proportion as percent	Proportion as percent	Proportion as percent	Exp(B), <i>p</i>	Exp(B), <i>p</i>	Exp(B), <i>p</i>
Helping Behavior							
Helping First	29.41%	31.58%	19.05%	36.36%	Exp(B) = .81, <i>p</i> = .593	Exp(B) = .41 , <i>p</i> = .037	Exp(B) = 2.19, <i>p</i> = .174
Providing Solution	47.06%	54.39%	49.21%	50.91%	Exp(B) = 1.15, <i>p</i> = .713	Exp(B) = .93, <i>p</i> = .854	Exp(B) = .80, <i>p</i> = .662
Emotional Support	14.71%	19.30%	15.87%	23.64%	Exp(B) = .77, <i>p</i> = .576	Exp(B) = .61, <i>p</i> = .291	Exp(B) = 1.18, <i>p</i> = .802

Identifiability measures. A MANOVA testing the effect of the 2 (participants' pseudonym persistence) x 2 (others' pseudonym persistence) manipulation on the measures of perceptions of one's own recognizability, perceptions of others' recognizability, and perceived personal expressiveness of one's pseudonyms revealed a significant result. As indicated in Table 3.8, the overall MANOVA displayed a significant main effect of participants' pseudonym persistence on the multivariate identifiability measure, such that participants who had persistent pseudonyms felt that they and others were more recognizable and self-expressed overall, compared to participants who had temporary pseudonyms.

Univariate tests within the model were performed for each constituent dependent variable. As indicated in Table 3.8, there was a significant main effect of participants' pseudonym persistence on their perceptions of their own recognizability, such that participants with a persistent pseudonym ($M = 2.98$, $SE = .11$) reported feeling more recognizable than did participants with temporary pseudonyms ($M = 2.55$, $SE = .11$). There was also a significant main effect of others' pseudonym persistence on participants' perceptions of others' recognizability, such that participants reported

perceiving that others were more recognizable when others had persistent pseudonyms ($M = 4.58, SE = .11$) than when others had temporary pseudonyms ($M = 4.22, SE = .10$). There were no significant main effects or interactions by experimental condition for participants' perceptions of their pseudonyms as personally-expressive. However, there was a marginal main effect of participants' pseudonym persistence, such that participants with persistent pseudonyms ($M = 2.51, SE = .13$) found their pseudonyms to be somewhat more personally-expressive than did participants who had temporary pseudonyms ($M = 2.19, SE = .13$).

Private self-awareness. A univariate ANOVA in a 2 (participants' pseudonym persistence) x 2 (others' pseudonym persistence) design was performed for participants' self-reported private self-awareness, which served as a proxy measure for deindividuation. As indicated in Table 3.8, there were no significant differences by experimental condition, all $ps > .36$. This finding is consistent with Study 1, which found no differences between its pseudonymous conditions for private self-awareness.

Relationship to others. A MANOVA testing the effect of the 2 (participants' pseudonym persistence) x 2 (others' pseudonym persistence) manipulation on the measures of sense of community and knowledge contribution was not significant.

Univariate tests within the model were performed for each constituent dependent variable. For participants' reported sense of community, contrary to the findings in Study 1, the univariate test of participant pseudonym persistence by others' pseudonym persistence did not reveal any significant main effects or interactions, all $ps > .23$. Given that, in comparison to Study 1, it appears that participants with temporary pseudonyms felt a greater sense of community in this study (Study 1: $M = 2.82, SE = .20$; Study 2: M

$= 3.35$, $SE = .13$; $t(176) = 2.24$, $p = .026$), it is possible that providing participants with information about others' pseudonyms may have primed participants with temporary pseudonyms to feel a stronger sense of community than they would have otherwise.

As indicated in Table 3.8, there were also no significant main effects or interactions for knowledge contribution, all $ps > .09$. This finding is consistent with Study 1.

Forum thread helping behavior. Binary logistic regressions investigating the 2 (participants' pseudonym persistence) \times 2 (others' pseudonym persistence) effect of the experimental manipulations on whether or not participants went to the help thread first revealed a main effect of others' pseudonym persistence, such that participants were less likely to go to the help thread first when others had temporary pseudonyms (24.43%) than when others had persistent pseudonyms (33.93%). No other main effects or interactions were significant, all $ps > .17$. This result suggests that participants were more motivated to help when others on the forum would be recognizable to them later.

Analyses of expressions of emotional support (e.g., "sorry that happened to you," "good luck") and providing the correct solution to the problem in the help thread (i.e., a solution that would enable the other user to fix the computer problem, rather than very general advice, such as "try restarting your computer," unhelpful comments, or harassment) did not yield any main effects or interactions by condition, all $ps > .59$. It was not expected that these measures would necessarily display the same patterns of effects as other measures of helping (such as entering the help thread first), but the lack of effects indicates that additional fine-tuning of the manipulations and measures is likely necessary.

Tests for indirect paths. In order to test the possibility that participants' helping behaviors were influenced indirectly by changes in the extent to which they felt they themselves were recognizable, the extent to which they felt their pseudonym was personally-expressive, or the extent to which they felt others were recognizable, analyses were conducted to find indirect paths between the identifiability measures and the helping behavior measures. Analyses used the PROCESS macro (Hayes, 2017) Model 4 and 5000 bootstraps.

First, models containing all three identifiability measures were tested for each experimental manipulation (participants' pseudonym persistence and others' pseudonym persistence) and for each helping behavior measure. These tests revealed an indirect effect of others' identifiability on whether participants offered a helpful solution in the help thread between the other-persistent and other-temporary conditions, Indirect Effect = $-.0974$, 95% CI $[-.2602, -.0108]$. As illustrated in Figure 3.1, the effect was such that participants were less likely to offer a helpful solution when they were told that others had temporary pseudonyms, in a way that was related to them perceiving others as being less recognizable in the other-temporary conditions.²

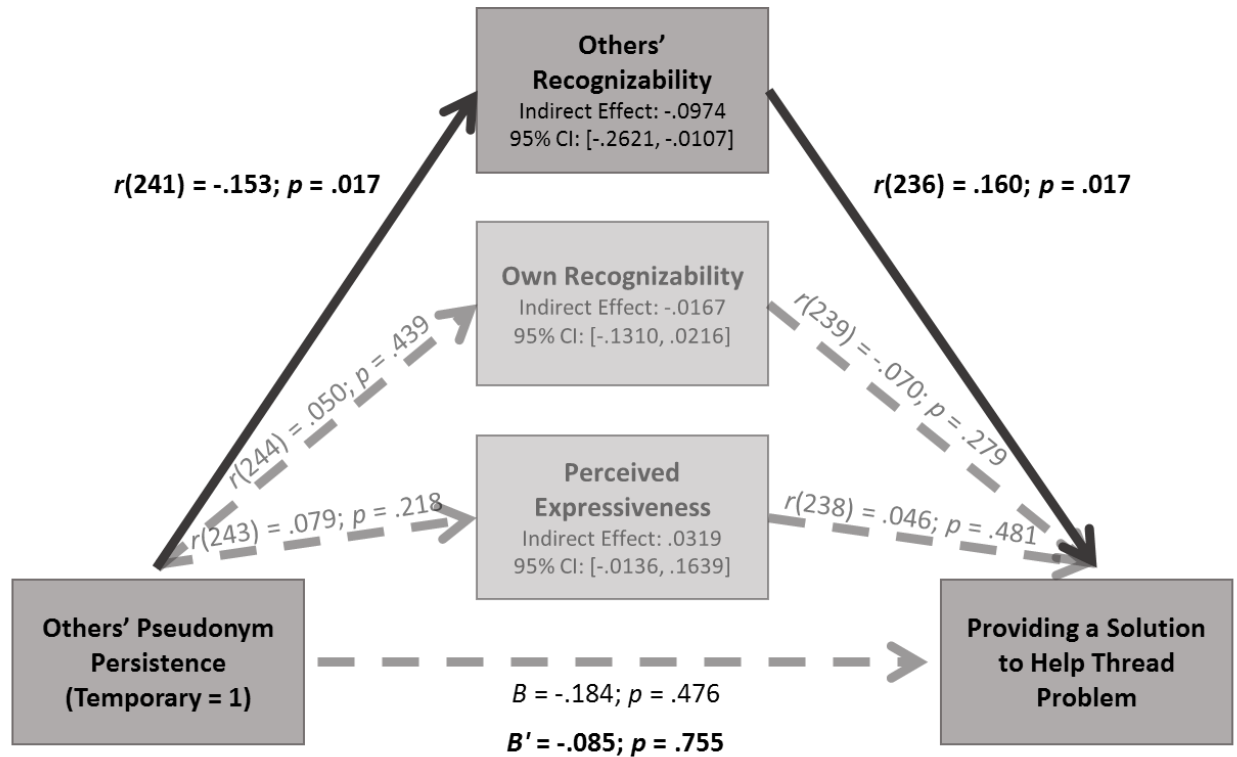


Figure 3.1. Illustration of the indirect paths model for others' pseudonym persistence and participants' likelihood of providing a solution in the help thread. The indirect paths tested in parallel were perceptions of others' recognizability, perceptions of one's own recognizability, and perceived expressiveness of one's pseudonyms.

The test for indirect paths for the self-persistent and self-temporary conditions revealed a similar but nonsignificant effect of others' identifiability on offering a helpful solution, Indirect Effect = -.0698, 95% CI [-.2135, .0053], such that participants may have been less likely to help when they had temporary pseudonyms because they also perceived others as being less recognizable.³

Other indirect paths of note also involved participants' perceptions of others' recognizability, in the same direction as the aforementioned paths, for whether participants entered the help thread first. As illustrated in Figure 3.2, participants in the other-temporary conditions may have been somewhat less likely to enter the help thread

first because they perceived others as being less recognizable, Indirect Effect = $-.0744$, 95% CI = $[-.2568, .0066]$.

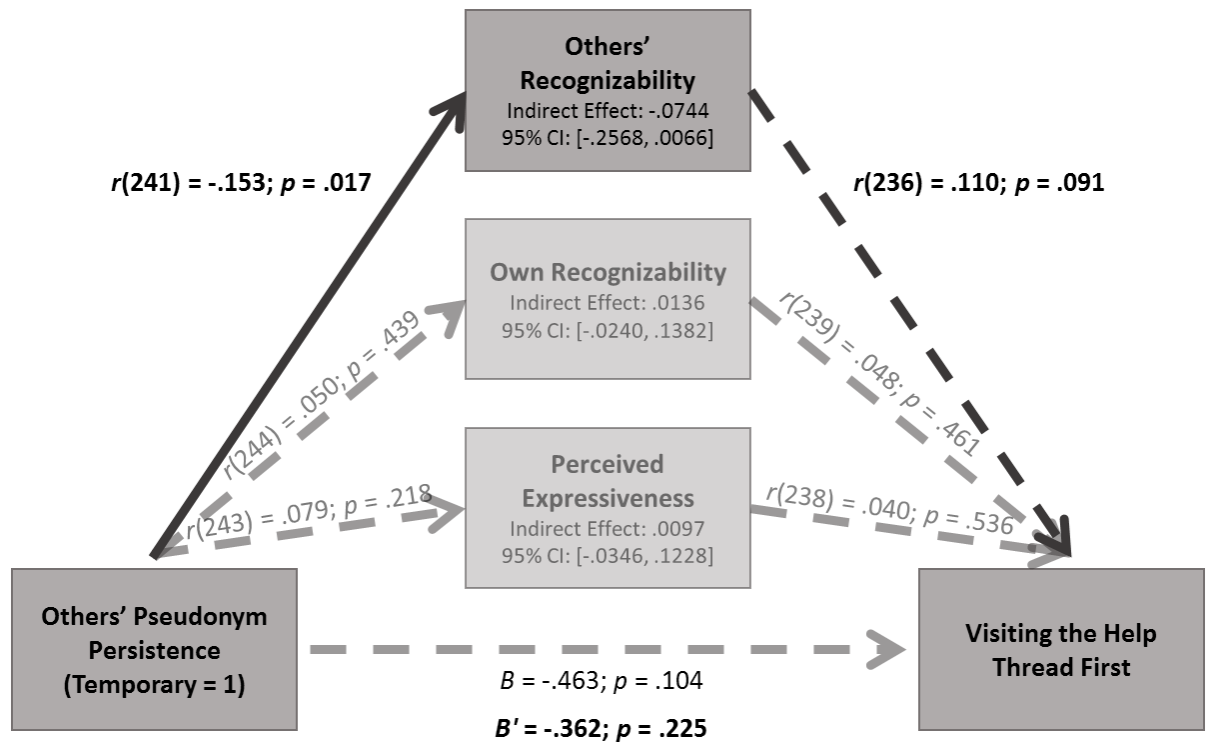


Figure 3.2. Illustration of the indirect paths model for others' pseudonym persistence and participants' likelihood of visiting the help thread first. The indirect paths tested in parallel were perceptions of others' recognizability, perceptions of one's own recognizability, and perceived expressiveness of one's pseudonyms.

Furthermore, participants may have been less likely to enter the help thread first in the self-temporary conditions because they also perceived others as being less recognizable, Indirect Effect = $-.0570$, 95% CI = $[-.2145, .0043]$. These effects and their confidence intervals did not change substantially when the paths for others' recognizability were analyzed with the other identifiability measures in parallel.

There were no indirect paths of note for whether participants provided emotional support by experimental condition, and perceptions of participants' own identifiability did not seem to indirectly influence participant behavior by experimental condition.

Thus, participants' expectations that others will be recognizable seem to influence helping behavior to some extent, particularly in whether or not participants provide solutions to others' problems, and perhaps also whether or not participants prioritize helping others. Even in cases where there was no direct effect of experimental condition on participant behavior—such as between the other-persistent and other-temporary conditions on offering a helpful solution in the help thread—participants whose perceptions of others as recognizable were altered seemed to vary their behavior accordingly, such that when they perceived others to be less recognizable, they were less likely to offer help or prioritize helping. This effect appeared to remain consistent regardless of whether perceptions of others as recognizable were altered by a direct manipulation (telling participants that others had persistent or temporary pseudonyms) or by participant inference from their own state of recognizability (whether they themselves had persistent or temporary pseudonyms).

Discussion

In Study 2, participants' perceptions of their own recognizability and the recognizability of others were influenced by the types of pseudonyms they were given. Participants saw themselves as being more recognizable when they were given persistent pseudonyms rather than temporary pseudonyms, and they saw others as being more recognizable when they were told that others had persistent, compared to temporary, pseudonyms. This study also showed that participants were more likely to prioritize helping others by entering the help thread first when they were told that others had persistent pseudonyms, compared to when others had temporary pseudonyms. Perceptions of others as being more recognizable mediated this effect, such that

participants who were told that others had persistent pseudonyms were motivated to prioritize helping others because they felt that others were more recognizable, relative to participants in the conditions where others had temporary pseudonyms. Overall, this study serves as a partial replication of Study 1.

However, some effects found in Study 1 did not replicate. Contrary to predictions, I did not find effects of participants' pseudonym persistence for participants' reported sense of community, altruism, or helping behavior on the forum. It is possible that aspects of this study that differed from Study 1, such as giving participants a choice of pseudonyms or telling participants about how others were experiencing the forum setting, may have affected their perceptions of and feelings toward others. For example, telling participants how others experienced the forum setting may have influenced sense of community by reminding participants that others were going through an experience largely similar to their own, which perhaps could limit the impact of temporary versus permanent pseudonyms in Study 2 relative to Study 1. Consistent with this interpretation, feelings of being a community were generally stronger in Study 2 than in Study 1.

The mediation analyses in Study 2 provide insight into the mechanisms by which persistent pseudonyms influence helping behavior. Specifically, participants are influenced by their perceptions of others' recognizability in addition to their own. Thinking that others were more recognizable—as in situations in which participants expected other users to have persistent pseudonyms—was strongly linked to participants' likelihood of visiting the help thread first, but also explained the greater likelihood of participants displaying helping behaviors when they themselves were more recognizable. That is, it appears that participants are more likely to help others when they can both

recognize in subsequent interactions the person whom they had helped, and perhaps also when they are pseudonymous instead of anonymous, or when they have a persistent pseudonym instead of having a temporary pseudonym. These results are consistent with previous research that indicates that people help more when they are assisting a recognizable other (Kogut & Ritov, 2005), and the results parallel research that indicates that people help more when they feel more recognizable (Burnham, 2003). Thus, forum users seem to be influenced both by the altruistic and reputational aspects of helping others online.

General Discussion

Study 1 and Study 2 both suggest that the effects of having a pseudonym, compared to being anonymous, or having a persistent versus temporary pseudonym, influence prosocial behavior primarily by affecting perceptions of recognizability rather than by affecting feelings of deindividuation, at least as measured by private self-consciousness. However, Study 1 and Study 2 differed in the effects they found of pseudonyms on perceptions of personal recognizability. Study 1 found an effect of pseudonym persistence on helping behavior, but not an influence of pseudonym persistence on perceptions of one's own recognizability, while Study 2 found an effect of pseudonym persistence on perceptions of one's own recognizability, but not an effect on helping behavior. Study 2 also found stronger and mediating effects with respect to perceptions of others' recognizability. It is possible that methodological differences between Study 1 and Study 2—such as varying personal pseudonym persistence in Study 1 in comparison to juxtaposing it with others' pseudonym persistence in Study 2—gave different cues to participants. In particular, because participants received no information

about other participants in Study 1, they may have assumed that others were in the same pseudonymous situation as they themselves were (i.e., anonymous, persistent pseudonym, or temporary pseudonym), and their assumptions about others' recognizability may have influenced their behavior, leading to a measured effect of participants' own pseudonym condition on behavior that may have actually been based in their anticipation of others' pseudonym condition. Alternatively, it is possible that the stronger impact of others' recognizability in Study 2 washed out the effect of personal pseudonym persistence on helping found in Study 1, if it did exist in Study 2.

Both Study 1 and Study 2 manipulated pseudonym persistence over two interactions, with pre-selected pseudonyms for participants to use. Thus, the differences between being anonymous, temporarily pseudonymous, and persistently pseudonymous are relatively minimal in the experimental design, especially compared to online settings, in which persistent pseudonyms may be used over a very large quantity of interactions over an extended period of time (see Ma & Agarwal, 2007). I believe, therefore, that these studies are relatively conservative tests of the hypothesis that persistent pseudonyms will lead to more positive behavior online, relative to temporary pseudonyms or anonymity.

However, the studies are not without their limitations. Primarily, the extent to which persistent pseudonyms made participants feel more recognizable than temporary pseudonyms was found in Study 2 but not in Study 1. This difference may have resulted from Study 2's manipulation making recognizability more salient by addressing others' recognizability as well as that of the participants. To enhance the impact of manipulations of temporary versus persistent pseudonyms, future research should employ persistent

pseudonymity that take place over more than two interactions. Additionally, the helping behaviors measured are relatively limited in scope because they tend to reflect participants' pool of knowledge in addition to their inclination to provide assistance, and also do not measure any of participants' anticipated behavior in future interactions. Studies in subsequent chapters address both of these points by introducing an optional third interaction on the forum, as well as measuring additional helping behaviors in a more nuanced paradigm.

Because the behavioral effects that were found in Study 1 and Study 2 were also mediated by perceptions of recognizability, further research should seek to manipulate other factors that may influence participants' perceived recognizability of themselves and others. Moreover, because the present studies were performed with participants of a restricted age range (that of the Millennial generation), further research should be performed with participants of a larger age range, particularly because older adults may use social websites differently than younger people do, such as by using a smaller range of available media types in self-expression or by befriending members of a larger age range (see Pfeil, Arjan, & Zaphiris, 2009). Research on the topic of expressive pseudonyms would serve to complement the findings of the present studies by addressing a separate proposed mechanism for how pseudonymity may encourage prosocial behavior: that pseudonyms serve to remind users of important or relevant aspects of themselves (Zhao, 2005), and thereby may bring personal behavioral standards and self-consistency to mind (Hitlin, 2003). Manipulation of pseudonym conditions along these lines may also address the limitation that even participants with persistent chosen pseudonyms felt relatively unrecognizable (that is, the participants' mean recognizability

was below the scale midpoint). Having participants design pseudonyms with a specific amount of personal expressiveness could allow participants to feel more strongly that others on the forum are recognizing *them*, rather than simply noticing a person using a pseudonym.

In the case of comparing personally-expressive pseudonyms to non-expressive pseudonyms, it is possible that personally-expressive pseudonyms could serve to individuate users in a way that non-expressive pseudonyms—even unique non-expressive pseudonyms—may not. Picking a pseudonym that is in some way expressive of or reflective of the self may serve to activate aspects of identity that are otherwise made somewhat less accessible when interacting with others online: for example, one’s own personal beliefs and standards, over and above the increased power of group identity online (as hypothesized in the SIDE model; Postmes, Spears, & Lea, 1998). In such a case, using more personally-expressive pseudonyms could encourage participants to behave more prosocially than they would when using non-expressive or merely unique pseudonyms.

Furthermore, using a personally-expressive pseudonym may make participants feel more recognizable than using merely a unique pseudonym. Although both pseudonyms could potentially be easily distinguished from others’ pseudonyms, a personally-expressive pseudonym could be reflective of “truer” aspects of its user than a merely unique pseudonym would be. For example, a personally-expressive pseudonym could be used to express “true self” aspects (qualities a person would like to express, but feel they usually cannot; Bargh, McKenna, & Fitzsimmons, 2002) online, a context in which a person may feel less inhibited from disclosing such aspects of self (Culén,

Finken, & Gasparini, 2014; Suler, 2004). It is possible that choosing pseudonyms that express deeper aspects of self may make users feel more strongly that others can recognize them online for being authentically and truly themselves—that others may be able to recognize them by expressed aspects of personality or interests that would otherwise be less accessible.

Overall, the results of Study 1 and Study 2 have important theoretical implications for understanding and regulating social interaction online. In particular, the studies' results shift the focus of behavior online from perceptions of the self to perceptions of others; participants seemed primarily motivated by perceptions of *others* as recognizable, rather than by the state of being recognizable themselves. In Study 2, participants' perceptions of others as recognizable mediated their priority in helping others and their likelihood of providing help. Even in Study 1, in which participants' perceptions of others were not measured, participants' own feelings of recognizability did not influence their prosocial behavior, which was nonetheless somewhat improved by the state of having a pseudonym rather than being anonymous, and by having a persistent pseudonym rather than a temporary one. Given this shift from focusing on a user's internal state to their perceptions of others as a factor in prosocial behavior online, it is important for future research to illuminate the mechanisms by which pseudonymity lends perceived recognizability to others.

The results of Study 1 and Study 2 are also useful from a practical standpoint. For example, social website policy may be informed by the result that finding others recognizable leads to increased prosocial behavior. Because anonymity has previously been implicated in discouraging prosocial behavior and encouraging antisocial behavior

online (see Suler, 2004), some websites have responded by requiring users to provide their real names or other forms of “identity verification” when interacting with others (see Cho & Kwon, 2015). However, the findings of the two studies in this chapter would seem to indicate that simply having users act under a pseudonym, rather than being anonymous, could serve to increase the amount of prosocial behavior on a given online platform, and that having users act under a persistent pseudonym could be particularly effective in this regard. Using persistent pseudonyms online, rather than real names or other sensitive personal information, could strike a balance between the recognition required for prosocial behavior and the privacy often required for safety online.

In conclusion, this chapter of my dissertation provides initial evidence that pseudonyms may represent a particular form of identifier online that can, relative to anonymity, promote more prosocial orientations toward others (Study 1), particularly when they are persistent identifiers rather than temporary (Studies 1 and 2). The two experiments in this chapter, in contrast to the process emphasized in earlier models of online interaction (i.e., SIDE; Postmes, Spears, & Lea, 1998), did not find evidence that feelings of deindividuation (operationalized as private self-awareness; Joinson, 2001) or conceptually-related influences (disinhibition; Udris, 2014) played a role in these effects. Instead, having a persistent, compared to temporary, pseudonym tended to produce stronger feelings of recognizability of the self to others, and perceiving others as having a persistent, rather than temporary, pseudonym made participants believe that others were more recognizable. Although manipulations of temporary versus persistent pseudonyms for both self and others did affect prosocial behavior through the recognizability of others, recognizability of the self had inconsistent relationships with prosocial

perceptions and actions. Thus, it is likely that additional factors are likely affected by pseudonymity, and that these elements may play a more important and consistent role in online prosociality. In the next chapter, I examine a more nuanced set of helping behaviors—those involved in confronting antisocial agents—and aspects of pseudonyms that aim to relate perceived expressiveness and recognizability under persistent pseudonymity.

Footnotes

¹ Due to an error in the website hosting my survey, participants were collected in two samples (sample 1: 42 participants, 17 male, 24 female, 1 other; mean age = 28.98, $SD = 4.30$; sample 2: 206 participants, 93 male, 112 female, 1 other; mean age = 29.21, $SD = 4.57$). The two samples did not differ significantly on any dependent variables, so they have been merged.

² This effect held when including only others' recognizability in the indirect path model, Indirect Effect = $-.1040$, 95% CI $[-.2579, -.0155]$.

³ This effect did not change in significance when including only others' recognizability in the indirect path model, Indirect Effect = $-.0726$, 95% CI $[-.2210, .0032]$.

Chapter 4:

Effects of Persistent Pseudonym Type on Perceptions of Self and Others (Study 3)

The experiments described in Study 1 and Study 2 were designed to investigate whether pseudonymity, and especially persistent pseudonymity, would make participants feel more recognizable, and that this greater feeling of recognizability would motivate an increase in prosocial behavior. In Study 1, I found that pseudonymous participants were significantly more likely than were anonymous participants to offer emotional support (and marginally more likely to offer a solution) to someone in need of help, and participants in the pseudonymous conditions of self-reported more prosocial motivations than did participants in the anonymous condition. In Study 2, participants with persistent pseudonyms reported feeling more recognizable than did participants with temporary pseudonyms, and participants reported perceiving that others were more recognizable when others had persistent pseudonyms than when others had temporary pseudonyms. The study presented in this chapter, Study 3, investigated how different qualities of persistent pseudonyms affect participants' psychological states and ultimately their online social behavior.

Study 3 focused on more nuanced aspects of pseudonyms than did Study 1 and Study 2 in the previous chapter. It explored, compared to a control condition in which participants have a persistent pseudonym that was designed to individuate them (a pseudonym using letters and numbers from their birth year and name in an unrecognizable fashion), the effect of a pseudonym that contains personally-relevant information or one that is also personally relevant but also is designed to be expressive of oneself.

When objects become perceived as uniquely representative of an individual, a person places greater value on them. Simply perceiving oneself to have ownership over an item in this way can prompt people to like the item more (Beggan, 1992) and to place more value on it (Morewedge, Shu, Gilbert, & Wilson, 2009). I thus explored whether a pseudonym that is created to be uniquely associated with a participant would be valued more than one that contains information unique to the individual but in an unrecognizable form. It is also possible that assigning greater subjective value, or worth, to one's pseudonym would be positively correlated with prosocial feelings and behavior. To the extent to which people are more motivated to maintain an image that has greater personal value, they may engage more in prosocial behavior, because such actions are socially valued and can be instrumental for managing (Krämer & Winter, 2008) and protecting or enhancing one's reputation (particularly if one is connected strongly to an identifier and feels proud of it; van Leeuwen, van Dijk, & Kaynak, 2013).

Pseudonyms may not only be constructed to be personally distinctive but also to express specific personal qualities. Expressiveness of a pseudonym is defined as the extent to which users feel that the pseudonym not only uniquely represents them but also communicates personal aspects or qualities of the user to others (Zhao, 2005). Users may see the expressiveness of their pseudonyms as a form of self-disclosure, even if such pseudonyms do not actually convey detailed or sensitive information to others (as found in studies of asymmetric insight; Pronin, Fleming, & Steffel, 2008; Pronin, Kruger, Savtisky, & Ross, 2001). A pseudonym that is personally expressive thus may have effects beyond one that distinguishes the user—but not in a way that is personally representative, and possibly beyond one that is uniquely representative—for at least two

reasons. First, it may have even stronger associations with the self than a uniquely representative pseudonym because a personally expressive pseudonym could be used to express “true self” aspects (qualities a person would like to express, but feel they usually cannot; Bargh, McKenna, & Fitzsimmons, 2002) online, and thus be valued more highly. Second, because a personally expressive pseudonym is designed to communicate aspects of the self to others, it may lead to greater feelings of recognizability to others than might a pseudonym that primarily conveys distinguishing information or one that is designed to uniquely represent the user. It is possible that using an identifier that is seen as more self-disclosing or that is seen as making one more recognizable could promote more prosocial feelings and behavior than an identifier that is not self-disclosing.

The present study also explored the recognizability of others in online prosociality. Study 2 found that participants reported perceiving that others were more recognizable when others had persistent pseudonyms than when others had temporary pseudonyms. Moreover, participants were less likely to offer a helpful solution in the forum thread when they were told that others had temporary pseudonyms than when they believed others had persistent pseudonyms, in a way that was related to them perceiving others as being less recognizable when others had temporary pseudonyms than when others had persistent pseudonyms. A similar but marginal effect existed such that participants in the conditions in which others had temporary pseudonyms may have been somewhat less likely to enter the help thread first than were participants in the conditions in which others had persistent pseudonyms because they perceived others as being less recognizable when others had temporary pseudonyms. Although the present study includes only persistent pseudonyms, the results of Studies 1 and 2 suggest that the

recognizability of others and prosociality measures may be correlated across the three conditions in Study 3.

In Study 3, participants received one of three sets of instructions for constructing a pseudonym. In all of the conditions, the pseudonym was a persistent one, to be used across a number of online interactions. In a control condition that included information about themselves but not presented in a way that was personally descriptive, participants were asked to make a pseudonym using letters and numbers from their birth year and name but in an unrecognizable fashion (the *information* pseudonym condition). This information thus distinguished participants from others but not in a way that was strongly personally meaningful, given its jumbled nature. In a condition that was designed to be more personally reflective, participants were instructed to construct a pseudonym that represented them as uniquely as possible (the *unique* pseudonym condition), which was expected to be somewhat personally meaningful but primarily identifiable. In the third condition, participants were told to create a pseudonym that was as personally expressive as possible (the *expressive* pseudonym condition), which was expected to be strongly personally meaningful. The extent to which participants felt individuated was assessed, as in Studies 1 and 2, using the private self-awareness scale (Joinson, 2001), as well as how recognizable participants felt they were to others and how recognizable others were to them. In addition, I measured the subjective worth of the pseudonym to participants and how personally expressive participants believed the pseudonym was. Feelings of prosociality included experiencing a sense of community and contributing knowledge to others.

In addition to choosing to enter a help thread first and providing emotional support (measures from Studies 1 and 2), prosocial behavior was measured through whether participants chose to engage in an additional interaction in the help thread, and through whether participants chose to confront a person who harassed another person in the thread. The helping behaviors measured in Studies 1 and 2 may have been limited in scope because they tended to reflect participants' pool of knowledge (specifically, that of computer troubleshooting) in addition to their inclination to provide assistance. Thus, engaging in an additional interaction and confronting a harasser were included to address additional aspects of helping behavior (e.g., Pierce & Amato, 1980). Confronting a harasser in the thread was included as a measure of altruistic punishment, in which a person punishes an antisocial actor even though enacting such punishment is potentially costly for them (Fehr & Gächter, 2002). In the case of confronting a harasser online, one risks experiencing reprisal from the harasser for no material gain. Engaging in an additional interaction was included as a measure of investment in the interaction, such that one may wish to provide follow-up advice without necessarily providing costly emotional support or confrontation.

Study 3 serves a practical purpose in addition to a conceptual one: that of making the settings addressed in the experimental manipulation more directly relevant to the settings experienced by regular Internet users. Unlike in Study 1, Internet users do not often have pseudonyms assigned to them, nor do they usually need to select such pseudonyms from a list, as in Study 2. Rather, pseudonymous users online often use self-designed pseudonyms that are distinguishing or descriptive of the self in some fashion (Zhao, 2005). Thus, the experimental setting in Study 3 may be more fully generalizable

to real settings online that are the settings used in Studies 1 and 2, described in the previous chapter of this dissertation.

One set of hypotheses for Study 3 relates to the effects of the manipulation of pseudonym type to the measures relating to the worth of the pseudonym to the participant, the perceived expressiveness of the pseudonym, and how personally recognizable participants felt. Because they are likely to be perceived as more personally associated (Morewedge et al., 2009), pseudonyms in both the unique pseudonym condition (in which participants are told to make a pseudonym that is as unique as possible) and the expressive pseudonym condition (in which participants are instructed to make a pseudonym that is expressive of themselves) were expected to be rated as worth more than pseudonyms in the information pseudonym condition (in which participants designed pseudonyms using a few letters and numbers from their name and birth year but in an unrecognizable form).

Whereas the unique and expressive pseudonym conditions may be perceived as having more worth to participants, the expressive pseudonym condition, because of the explicit communicative aspect of the instructions, was expected to be rated higher in personal expressiveness than the unique pseudonym condition. Moreover, unique pseudonyms are also expected to be rated as being more expressive than information pseudonyms because the pseudonym reflects uniqueness in a personally meaningful way. Participants' feelings of recognizability were expected to follow the same pattern as their evaluations of their pseudonyms as being personally-expressive, given both previous research that suggests that pseudonyms that are seen as more expressive are also seen as more self-disclosing (Pronin et al., 2008) and the moderately-sized correlations between

expressiveness and perceptions of one's own recognizability in Study 1 ($r = .39$) and Study 2 ($r = .42$).

The second set of hypotheses, of primary interest in Study 3, concerned the effects of pseudonym type on prosocial feelings (sense of community and knowledge contribution) and prosocial behavior (entering the help thread first, replying twice to the help thread, providing emotional support to the author, and confronting the harasser). To the extent that more prosociality predicted by greater subjective worth of a pseudonym (hypothesized to be greater in the expressive and unique pseudonym conditions than in the information pseudonym condition), and feelings of expressiveness and personal recognizability (expected to be higher in the expressive pseudonym condition than the personal and information pseudonym conditions), I predicted that the highest level of prosociality would be displayed by participants in the expressive pseudonym condition, an intermediate level would occur in the unique pseudonym condition, and the lowest level in the information pseudonym condition. Because the behavioral measures addressed different aspects of prosociality, I expected them to be only somewhat correlated and for effects found in one behavioral measure not to necessarily appear in the others.

Method

Participants. Participants were recruited from Amazon's Mechanical Turk (MTurk) service to take part in a study on "online interaction" in which they would supposedly be interacting with other participants on a separate forum website after answering a few survey questions. The final sample for Study 3 included 230 participants

(93 men, 137 women; mean age = 37.40, $SD = 12.06$; 79.57% White, 8.70% Black, 4.35% Latino/a, 2.61% East Asian, 2.61% South Asian, 2.17% multiracial/other).

Procedure

After completing the consent form, participants were randomly assigned to receive one of three sets of instructions for creating a pseudonym (a “screenname”) to be used later in the study. In one condition, participants were asked to create a pseudonym for information that was self-relevant but presented in a way that was not personally familiar or meaningful. In this *information pseudonym condition*, participants were asked to make a pseudonym using letters and numbers from their birth year and name in an unrecognizable fashion ($N = 54$). In a second condition, the *unique pseudonym condition*, participants were instructed to create a pseudonym that was “as unique as possible” ($N = 93$). In a third condition, the *expressive pseudonym condition*, participants were instructed to create a pseudonym that was “as expressive of [themselves] as possible” (expressive pseudonym condition, $N = 83$). (See Supplementary Materials for full details and all measures.) The information pseudonym condition was designed to control for the relevance of the information contained in the pseudonym to the participant (as information being minimally relevant can still have psychological impact—see Pelham, 1991), while communicating limited meaningful information about the participant. The unique and expressive pseudonym conditions are distinct from each other in that the latter is personalized and reflective of the user’s self-concept, whereas the former is distinguishing but less reflective of self-concept.

In line with the cover story that participants would be leaving the survey to do another activity, participants next clicked a button on the survey page that would

supposedly take them to a forum website where they would interact with other study participants. The webpage, and the materials presented in it, represented the next stage of the experimental procedure.

On the forum webpage, participants were given a choice of two threads to enter. In a change from Studies 1 and 2, in this study I investigated a different helping paradigm that was less contingent upon participants' pre-existing computer knowledge by instead having a supposed other participant request help with a rough essay draft containing many elementary errors, as used by Harber (1998) in studies on critical feedback.

In accordance with this paradigm, one of the threads had a subject line that indicated that a person was requesting help proofreading an essay ("Can anyone help me proofread my essay?"; the experimentally-relevant help thread), and, as in the previous studies, the other forum thread was associated with a subject line indicating it was a thread in which people could tell jokes to each other ("Does anyone have jokes to share?"; a filler thread). The essay provided in the help thread was one of two excerpts from Harber's (1998) critical feedback essay stimuli, written at a college level, but containing many elementary errors in spelling, grammar, sentence structure, and paragraph organization. The essays were on the topics of parental controls and global warming, assigned randomly to participants and then collapsed into one condition, so that overarching opinions on one topic did not strongly influence the results. I chose this essay stimulus to be more accessible to participants who were relatively unfamiliar with technological troubleshooting than was the computer-help paradigm of Studies 1 and 2. I recorded whether participants entered the help thread or the filler thread first as a measure of a participants' priority for helping others.

When participants entered the help thread (as either the first or second thread they chose), as in Study 3, they saw two previous responses to the thread: one unhelpful (a supposed participant saying they could not help) and one mildly-helpful (another supposed participant recommending that the essay writer fix a few common grammatical errors). These responses were added to provide the impression of a greater number of participants interacting with the study, given feedback from a small number of participants in Study 1 and Study 2 that mentioned the previous forum threads appeared too short to be realistic. Participants were then given a chance to respond to the thread themselves. However, given the findings of Study 1 and 2 that revealed no major differences in the types of help thread responses across pseudonymous conditions, and given that all pseudonymous conditions in this study were persistent, the responses of interest for analysis were actually produced at the next step of the procedure.

After submitting their reply and answering an attention-check measure, participants who had just responded to the help thread were told they had been “randomly selected” to return to the thread, and that they could reply again, or they could opt out by leaving the response section blank. In order to maintain the cover story that study participants were engaging on a forum with other participants, they were told that other participants may have also responded to the thread while they were writing their original reply. Upon returning to the thread, they saw that another supposed participant had responded to the thread and was harassing the essay poster.

As behavioral measures of prosociality (that is, participants’ tendency to act in ways that benefit forum members other than themselves; Batson & Powell, 2003), I recorded whether participants responded to the thread a second time, and if they did, two

raters unaware of the experimental condition (contingency coefficient = .594, 89.74% initial agreement) recorded whether they confronted the harasser or the harasser's conduct (e.g., by telling the harasser that they were being rude or mean, or by remarking generally to the essay poster that negative comments should be ignored), and whether they encouraged the essay poster in the face of such criticism (e.g., by telling the essay poster not to give up, or that posting the essay for others to critique showed personal awareness and a desire to improve). Disagreements were decided by a third rater unaware of condition. These measures were included in addition to participants' entering the help thread first or second.

As in Studies 1 and 2, the self-report measures of particular theoretical interest for Study 3 concerned participants' perceptions of identifiability, including measures of (a) their own recognizability, (b) the recognizability of others, and (c) participants' perception of their pseudonyms as being personally-expressive. The behavioral measures of primary theoretical interest once again focused on participants' prosocial behavior: participants' likelihoods (a) of visiting the help thread first, (b) of providing a solution to the forum poster in need of help, (c) of providing emotional support to the poster, and (d) of confronting the harasser—either directly or indirectly. Additionally, as in the earlier studies, participants' perceptions of themselves and others were analyzed: participants' sense of community and knowledge contribution (two variables analyzed together to measure participants' relationship to others), and participants' level of deindividuation (operationalized as private self-awareness). Also, to explore how the participants perceived their pseudonyms, a measure was included for participants' subjective worth of their pseudonyms.

After responding to both the help thread and the filler thread, participants were redirected “back to the survey” to complete a questionnaire on their experiences. In order to measure the extent to which the experimental manipulations influenced participants’ perceptions of themselves and others in the forum environment, this questionnaire included measures, for which participants indicated their agreement on scales ranging from 1 (*not at all*) to 6 (*very much*), of personal connection to pseudonym (e.g., “On the forum, I felt like my screenname reflected some aspect of me online”; $\alpha = .93$), personal identifiability (e.g., “I believed I was identifiable to other users on the forum,”; $r[225] = .48, p < .001$), others’ identifiability (e.g., “I expected that users using a certain screenname in one place on the forum would also use it in other places on the same forum”; $r[224] = .14, p = .038$), private self-awareness (e.g., “Rather than thinking about myself on the forum, my mind was distracted by my task and what was going on around me”; $r[227] = .32, p < .001$), knowledge contribution (e.g., “I contributed knowledge to the online forum community”; $r[221] = .57, p < .001$), and sense of community (e.g., “To what extent, if at all, did you ever have a sense of ‘being there with other people’ in this community?”; $r[225] = .81, p < .001$) as in Studies 1 and 2. Furthermore, I included two items measuring the extent to which participants assigned subjective worth to their pseudonym (“I feel like my screenname is worth something to me, even if I can’t define what that is”; “If someone wanted to use my screenname on the forum, they would need to give me something in return”; $r[225] = .38, p < .001$), on the same 1-6 scale as the other items. The questionnaire also included two exploratory measures (see Supplementary Materials). One exploratory measure was the extent to which participants felt they could trust others in the forum setting (four items; e.g., “I think I could feel

comfortable telling members of this forum rather personal things about myself”; “If I had a problem, I expect others on the forum would be willing to help me solve it”; $\alpha = .70$), rated on scales from 1 (not at all) to 6 (very much). The other exploratory measure was the extent to which participants felt similar to others in the forum setting (“To what extent, if at all, did you feel similar to other people on the forum?”; “To what extent, if at all, did you feel that you had similar thoughts and goals to others on the forum?”, $r[225] = .76, p < .001$), on the same 1-6 scale. Participants then completed a demographic questionnaire including items on their age, gender, and race.

Although participants were randomly assigned to each pseudonym condition through a random number generator, conducting the study nonetheless resulted in differential cell size by experimental condition, such that a larger number of participants were placed in the expressive and unique pseudonym conditions relative to the information pseudonym condition. A chi-square goodness-of-fit test comparing the total number of potential participants (including those who did not complete the study) in the information pseudonym condition ($N_0 = 107$), the expressive pseudonym condition ($N_0 = 143$), and the unique pseudonym condition ($N_0 = 148$) to an even distribution revealed the differences to be statistically significant, $\chi^2(2, N = 398) = 7.54, p = .023$. A chi-square goodness-of-fit test comparing the number of participants who completed the study in the information pseudonym condition ($N = 54, 50.47\%$), the expressive pseudonym condition ($N = 83, 58.04\%$), and the unique pseudonym condition ($N = 93, 62.84\%$) to an even distribution was also statistically significant, $\chi^2(2, N = 230) = 10.70, p = .005$. Analysis of the dependent variables proceeded using all available data from participants who completed the study.

Results

Preliminary analyses revealed no systematic effects for participants' gender or age; consequently, gender and age were not included in subsequent analyses.

Furthermore, the order in which participants experienced the two forum threads (the help thread and the filler thread) did not systematically affect the other dependent variables, so the data were collapsed across forum thread order, and participants' order of visiting the forum threads was analyzed only as a dependent variable.

Bivariate correlations were performed to analyze the relationships between the continuous dependent variables of interest, as shown in Table 4.1. Most self-report measures of prosociality were positively correlated with each other. Reporting oneself as feeling recognizable was positively correlated with self-reported prosociality, while reporting that others felt recognizable was less often correlated with prosociality, but it was still positively correlated with knowledge contribution. As found in other studies, perceived expressiveness of one's pseudonym was positively correlated with self-reported prosociality and a sense of being recognizable. Private self-awareness was positively correlated with sense of community and knowledge contribution. Subjective worth of one's pseudonym was positively correlated with feeling recognizable, judging one's pseudonym as being personally-expressive, having a sense of community, and reporting knowledge contribution. On the whole, sense of community, knowledge contribution, perceived expressiveness, and personal recognizability were the dependent variables most strongly and consistently correlated with other self-report measures of prosociality.

Table 4.1. Bivariate correlations between the continuous dependent variables.

Correlations							
	Recognizable Self	Recognizable Others	Perceived Expressiveness	Private Self-Awareness	Sense of Community	Knowledge Contribution	Subjective Worth
Recognizable Self		-.066	.376**	-.031	.302**	.263**	.394**
Recognizable Others			.048	.076	.089	.213**	-.100
Perceived Expressiveness				.114	.295**	.294**	.489**
Private Self-Awareness					.200**	.235**	.057
Sense of Community						.554**	.164*
Knowledge Contribution							.148*
Subjective Worth							
** $p < .01$							
* $p < .05$							

Included below are the bivariate correlations of benign and toxic disinhibition with dependent variables of interest in Study 3, with a focus on replications of previous disinhibition results. As found in Studies 1 and 2, benign disinhibition was positively and significantly correlated with perceived expressiveness and sense of community, although it was not significantly correlated with knowledge contribution. In Study 3, it was also correlated with a sense of being recognizable, which was not found in Study 1 but was found in Study 2. Consistent with Study 1 and Study 2, toxic disinhibition was again positively correlated with sadism in Study 3. Inconsistent with the finding of Study 1, toxic disinhibition was not significantly positively correlated with sense of community in Study 3, nor was it significantly negatively correlated with others' recognizability, as was found in Study 2.

Table 4.2. Bivariate correlations between disinhibition subscales and dependent variables of interest in Study 3.

Correlations									
	Benign Disinhibition	Toxic Disinhibition	Private Self-Awareness	Recognizable Self	Recognizable Others	Perceived Expressiveness	Sense of Community	Knowledge Contribution	Sadism
Benign Disinhibition		.240**	.022	.323**	.050	.153*	.363**	.121	.128
Toxic Disinhibition			-.003	.114	-.117	-.062	-.001	.028	.218**
** $p < .01$									
* $p < .05$									

Contingency coefficients between the behavioral measures and point-biserial correlations between the behavioral measures and self-report measures were also examined, as shown in Table 4.3. The behavioral measures were largely uncorrelated with each other and with the self-report measures, with a few notable exceptions. Perceived expressiveness of participants' pseudonyms was positively correlated with participants' likelihood of providing emotional support to the essay author, and sense of community and knowledge contribution were also positively correlated with providing emotional support. Furthermore, sense of community and knowledge contribution were positively correlated with participants' likelihood of replying twice in the help thread more generally.

Table 4.3. Chi-square contingency coefficients between the dichotomous behavioral measures (contingency coefficients cannot be measured between replying twice and confronting harasser or supporting author, as the latter two items depend upon the first), and point-biserial correlations between the dichotomous behavioral measures and the continuous self-report measures.

Contingency Coefficients				
	Helping First	Replying Twice	Confronting Harasser	Supporting Author
Helping First		.029	.031	.116
Replying Twice				
Confronting Harasser				.091
Supporting Author				
Correlations				
Recognizable Self	.050	.068	-.062	.088
Recognizable Others	.116	.070	.109	.035
Perceived Expressiveness	-.003	.073	.046	.143*
Private Self-Awareness	.041	-.027	.059	.064
Sense of Community	.046	.238**	.129	.237**
Knowledge Contribution	.094	.210**	.130	.215**
Subjective Worth	-.108	.068	.010	.082
** $p > .01$ * $p > .05$				

To parallel analyses performed in Study 2, the effects of the pseudonym manipulation (whether participants had a unique, descriptive, or information pseudonym) on the three identifiability measures were first tested with a one-way (Unique Pseudonym vs. Descriptive Pseudonym vs. Information pseudonym) multivariate analysis of variance (MANOVA, Pillai's Trace). A MANOVA was also performed on the measures chosen in

Study 2 as those concerning relationships with others. Univariate tests for each variable considered in a multivariate analysis were also reported. The results of these analyses are summarized in Table 4.4. The effects for helping behavior measures, which had dichotomous responses (yes or no), were assessed only at the univariate level overall, using binomial logistic regression between pairs of conditions to parallel the analyses in Study 2. The results for the helping measures also appear in Table 4.4.

Table 4.4. Means, proportions, and statistical significance of relevant dependent measures.

Dependent Measure	Unique Pseud	Expressive Pseud	Info Pseud	One-Way ANOVA	Unique vs. Expressive	Information vs. Expressive	Unique vs. Information
	Mean (SD)	Mean (SD)	Mean (SD)	$F(y, xx), p, \eta^2$	$F(y, xx), p, \eta^2$	$F(y, xx), p, \eta^2$	$F(y, xx), p, \eta^2$
Identifiability Measures (MANOVA)				$F(6, 426) = 7.59, p < .001, \text{partial } \eta^2 = .097$	$F(3, 163) = 4.79, p = .003, \text{partial } \eta^2 = .081$	$F(3, 123) = 16.78, p < .001, \text{partial } \eta^2 = .290$	$F(3, 136) = 6.37, p < .001, \text{partial } \eta^2 = .123$
Recognizable Self	3.18 (1.42)	3.45 (1.38)	3.07 (1.35)	$F(2, 214) = 1.07, p = .345, \eta^2 = .010$	$F(1, 165) = 1.18, p = .280, \eta^2 = .007$	$F(1, 125) = 1.92, p = .169, \eta^2 = .015$	$F(1, 138) = .20, p = .657, \eta^2 = .001$
Recognizable Others	4.71 (.97)	4.62 (1.05)	4.23 (1.07)	$F(2, 214) = 3.66, p = .027, \eta^2 = .033$	$F(1, 165) = .43, p = .511, \eta^2 = .003$	$F(1, 125) = 3.87, p = .051, \eta^2 = .030$	$F(1, 138) = 7.51, p = .008, \eta^2 = .050$
Perceived Expressiveness	4.07 (1.60)	4.92 (1.31)	3.23 (1.56)	$F(2, 214) = 20.78, p < .001, \eta^2 = .163$	$F(1, 165) = 13.24, p < .001, \eta^2 = .078$	$F(1, 125) = 45.85, p < .001, \eta^2 = .268$	$F(1, 138) = 10.48, p = .002, \eta^2 = .071$
	Mean (SD)	Mean (SD)	Mean (SD)	$F(y, xx), p, \eta^2$	$F(y, xx), p, \eta^2$	$F(y, xx), p, \eta^2$	$F(y, xx), p, \eta^2$
Relationship to Others (MANOVA)				$F(4, 434) = .83, p = .505, \text{partial } \eta^2 = .008$	$F(2, 166) = 1.00, p = .372, \text{partial } \eta^2 = .012$	$F(2, 129) = .06, p = .944, \text{partial } \eta^2 = .001$	$F(2, 136) = 1.29, p = .278, \text{partial } \eta^2 = .019$
Sense of Community	3.85 (1.47)	3.83 (1.49)	3.94 (1.25)	$F(2, 217) = 1.59, p = .207, \eta^2 = .014$	$F(1, 167) = 1.89, p = .171, \eta^2 = .011$	$F(1, 130) = .11, p = .739, \eta^2 = .001$	$F(1, 137) = 2.56, p = .112, \eta^2 = .018$
Knowledge Contribution	4.69 (1.08)	4.77 (1.08)	4.77 (.93)	$F(2, 217) = .20, p = .817, \eta^2 = .002$	$F(1, 167) = .22, p = .640, \eta^2 = .001$	$F(1, 130) = .03, p = .876, \eta^2 < .001$	$F(1, 137) = .35, p = .557, \eta^2 = .003$

Dependent Measure	Unique Pseud	Expressive Pseud	Info Pseud	One-Way ANOVA	Unique vs. Expressive	Information vs. Expressive	Unique vs. Information
	Mean (SD)	Mean (SD)	Mean (SD)	$F(y, xx), p, \eta^2$	$F(y, xx), p, \eta^2$	$F(y, xx), p, \eta^2$	$F(y, xx), p, \eta^2$
Private Self-Awareness (ANOVA)	4.52 (1.35)	4.61 (1.28)	4.30 (1.07)	$F(2, 226) = 1.02, p = .362, \eta^2 = .009$	$F(1, 173) = .22, p = .639, \eta^2 = .001$	$F(1, 134) = 2.23, p = .138, \eta^2 = .016$	$F(1, 145) = 1.05, p = .307, \eta^2 = .007$
	Mean (SD)	Mean (SD)	Mean (SD)	$F(y, xx), p, \eta^2$	$F(y, xx), p, \eta^2$	$F(y, xx), p, \eta^2$	$F(y, xx), p, \eta^2$
Subjective Worth (ANOVA)	3.29 (1.49)	3.44 (1.40)	2.70 (1.28)	$F(2, 224) = 4.77, p = .009, \eta^2 = .041$	$F(1, 171) = .47, p = .495, \eta^2 = .003$	$F(1, 133) = 9.72, p = .002, \eta^2 = .068$	$F(1, 144) = 5.92, p = .016, \eta^2 = .039$
	Proportion as percent	Proportion as percent	Proportion as percent		Exp(B), p	Exp(B), p	Exp(B), p
Helping Behavior							
Helping First	30.11%	42.17%	38.89%		Exp(B) = 1.693, p = .097	Exp(B) = 1.146, p = .703	Exp(B) = 1.477, p = .277
Responding Twice	61.29%	67.47%	72.22%		Exp(B) = 1.310, p = .394	Exp(B) = .798, p = .556	Exp(B) = 1.642, p = .181
Confronting Harasser	33.33%	40.96%	35.19%		Exp(B) = 1.388, p = .296	Exp(B) = 1.278, p = .498	Exp(B) = 1.086, p = .819
Emotional Support	11.83%	14.46%	20.37%		Exp(B) = 1.260, p = .606	Exp(B) = .661, p = .368	Exp(B) = 1.907, p = .166

Identifiability measures. A MANOVA testing the effect of the experimental manipulation on the measures of perceptions of one's own recognizability, perceptions of others' recognizability, and perceived personal expressiveness of one's pseudonym revealed significant differences among the experimental conditions. As indicated in Table 4.4, the overall MANOVA displayed a significant main effect of the experimental manipulation on the composite measure.

Univariate tests within the model were performed for each constituent dependent variable.¹ As indicated in Table 4.4, there was a significant main effect of the

experimental manipulation on others' recognizability. Planned pairwise comparisons within the MANOVA were such that for others' recognizability, participants in the information pseudonym condition felt that others were less recognizable than did participants in either the unique pseudonym condition, to a statistically significant degree, or the descriptive pseudonym condition, to a marginally significant degree (see Table 4.4 for means and standard deviations). The unique and descriptive pseudonym conditions did not significantly differ from each other.

There was also a significant effect across conditions for the perceived expressiveness of one's pseudonym. As indicated in Table 4.4, for perceptions of expressiveness of one's pseudonym, participants in the descriptive pseudonym condition felt their pseudonyms were more expressive than did participants in the unique pseudonym condition or the information pseudonym condition, and participants in the unique pseudonym condition felt their pseudonyms were more expressive than did participants in the information pseudonym condition, although not to the extent indicated by participants in the descriptive pseudonym condition. It is possible that some of this effect is due to the demand of the original instructions (i.e., to create an expressive pseudonym), but the comparison between the information pseudonym and unique pseudonym remains indicative of the effectiveness of the manipulation.

The univariate tests revealed no differences by experimental condition for participants' feelings of recognizability. Because all pseudonyms in this study were persistent throughout the forum interaction, it is possible that participants felt similarly recognizable regardless of the finer details of their pseudonyms.

Private self-awareness. A univariate ANOVA was performed for participants' self-reported private self-awareness, which served as a proxy measure for deindividuation. As indicated in Table 4.4, there were no significant differences by experimental condition, all $ps > .13$. This finding is consistent with Studies 1 and 2, which found no differences between pseudonymous participants' reports of private self-awareness.

Relationship to others. A MANOVA testing the effect of the experimental manipulation on the measures of sense of community and knowledge contribution was not significant.

Univariate tests within the model were performed for each constituent dependent variable. There were no significant differences by experimental condition for either participants' reported sense of community or reported knowledge contribution, all $ps > .11$.²

Subjective worth. Participants also reported statistically-significant differences in subjective pseudonym worth by condition, such that information pseudonyms were judged to be worth subjectively less than were descriptive pseudonyms or unique pseudonyms³ (see Table 4.4). The descriptive and unique pseudonym conditions did not differ from each other. Taken together with the findings of perceived expressiveness, the results indicate that even though participants judged unique and descriptive pseudonyms to have similar subjective worth, they did not feel that unique pseudonyms were as expressive as descriptive pseudonyms; this suggests that participants' descriptions of their pseudonyms as expressive differ from their perceptions of their pseudonyms' worth.

Forum thread helping behavior. Binary logistic regressions between pairs of experimental conditions revealed that participants were marginally more likely to enter the help thread first when they were using expressive pseudonyms than when they were using unique pseudonyms, $\text{Exp}(B) = 1.693$, $p = .097$. There were no significant differences between the expressive pseudonym condition and the information pseudonym condition, nor between the unique pseudonym condition and the information pseudonym condition, all $ps > .45$.

There were no statistically significant differences by experimental condition in whether participants responded twice to the help thread (i.e., responding again after returning to the thread), all $ps > .18$; in whether participants confronted the harasser, all $ps > .29$; or in whether participants provided emotional support to the original author after seeing the harassment, all $ps > .16$.

Discussion

Overall, the present study revealed a pattern of effects reflecting the intended psychological impact of the type of persistent pseudonym used in the online setting with respect to subjective worth of a pseudonym and perceived personal expressiveness of a pseudonym. Unique and expressive pseudonyms were seen as being worth more to participants and as being more expressive than information pseudonyms. Expressive pseudonyms were also seen as being more personally expressive than were unique pseudonyms.

Inconsistent with expectations, however, unique and expressive pseudonyms did not make participants feel more personally recognizable to others than did information pseudonyms. I found in Studies 1 and 2, described in the previous chapter, that persistent

pseudonyms did make participants feel more personally recognizable to others than did temporary pseudonyms but, perhaps because all three types of pseudonyms considered in Study 3 were of a persistent form, the type of pseudonym did not further affect feelings of personal recognizability in the present study. It is possible that because participants perceived the connection of the elements of their pseudonym, including the information pseudonym, to the self, they may have experienced the “illusion of transparency” (Pronin et al., 2008) and responded as if others would see all three types of pseudonyms as reflective of themselves. Although comparisons across studies should be made with great caution, consistent with this reasoning, the means for personal recognizability in all three conditions of Study 3 (information: $M = 3.07$, $SD = 1.35$; unique: $M = 3.18$, $SD = 1.42$; and expressive: $M = 3.45$, $SD = 1.38$) were considerably higher than when participants believed that their pseudonyms were temporary in Study 2 (temporary pseudonym with others with a temporary pseudonym: $M = 2.62$, $SD = 1.21$; temporary pseudonym with others with a persistent pseudonym: $M = 2.47$, $SD = 1.13$).

I did find in Study 3 that participants in the unique and expressive pseudonym conditions tended to view other users in the thread as more recognizable than did participants in the information pseudonym condition, even though the strings used to identify others in the forum were identical across the conditions. One possible explanation for this effect is that participants expected that others on the forum were also using the same type of pseudonym that they were using (information, unique, or expressive pseudonyms). Because participants could not decipher the connection between the information pseudonym and the personal identity of others on the thread, that information pseudonym was likely seen as less meaningful than the unique and

expressive pseudonyms for recognizing the other individuals on the thread. Unlike Study 2, however, perceptions of the recognizability of others did not correlate systematically with prosociality.

As in Studies 1 and 2, a number of positive point-biserial correlations between self-reported prosociality and prosocial behavior, particularly in the domains of replying twice to the help thread and providing emotional support to the person who wrote the essay, continued to suggest that participants' prosocial feelings were related to their prosocial behavior to some degree, although perhaps not to the same extent as in previous studies. Contrary to the main hypotheses, Study 3 did not demonstrate the anticipated effects across the three types of persistent pseudonyms (informational, unique, and expressive) for prosociality. Specifically, unique and expressive pseudonyms were hypothesized to encourage more prosocial feelings and behavior than were information pseudonyms, and expressive pseudonyms were also hypothesized to encourage more prosocial feelings and behavior than were unique pseudonyms. Neither self-reported prosocial feelings (sense of community or knowledge contribution) nor behavior showed an effect of condition on prosociality, in contrast to the pseudonym condition manipulations in Study 1 and Study 2.

The absence of effects of effects of pseudonym condition manipulation in the present study, which was sufficiently powered statistically (as indicated by effect η^2 s of moderate size when effects did exist), may still be informative to a degree when considered in combination with the results of Studies 1 and 2. In Study 2, the main factor affecting prosocial behavior was whether a pseudonym was temporary or persistent: Participants were more likely to help first when others had persistent pseudonyms than

when others had temporary pseudonyms. In Study 3, the comparisons involved different types of persistent pseudonyms. Indeed, again acknowledging that comparisons between studies should be made cautiously, it is worth noting that self-reported prosociality in Study 3—for example, sense of community (information pseudonym: $M = 3.94$, $SD = 1.25$; unique pseudonym: $M = 3.85$, $SD = 1.47$; expressive pseudonym: $M = 3.83$, $SD = 1.49$)—was also higher than in the anonymous and temporary pseudonym conditions of Studies 1 (anonymous: $M = 2.73$, $SD = 1.43$; temporary: $M = 2.82$, $SD = 1.38$) and 2 (temporary overall: $M = 3.35$, $SD = 1.42$), and even the persistent pseudonym conditions of Studies 1 ($M = 3.34$, $SD = 1.47$) and 2 (persistent overall: $M = 3.57$, $SD = 1.41$). A similar pattern exists for knowledge contribution, but such an increase on that measure could be an artifact of choosing a helping manipulation for the study that required less specific knowledge. The overall pattern for self-reports, along with the finding that the experimental manipulations of Study 3 had their intended psychological effects (particularly on perceptions others' recognizability) but still did not influence prosociality, suggests that the persistence of a pseudonym is more critical for prosociality than is the specific type of persistent pseudonym.

Considering other differences between the results of Study 3 and the results of Studies 1 and 2 can provide insight into the potential mechanisms influencing Study 3. In particular, the correlations between measures of prosocial behavior in Study 3 differed somewhat from those in Study 1 and Study 2. Study 1 and Study 2 found modest but significant correlations between prosocial behaviors in all comparisons but one (between helping first and providing emotional support in Study 1). However, Study 3 displays no such significant correlations. It is possible that the helping paradigm in this study

(helping someone with an essay) led to different responses from participants than the helping paradigm that was used in Study 1 and Study 2 (helping someone with a computer problem). A computer problem may be seen as an issue for which one is less personally responsible—even if it is a result of one’s actions—than errors on an essay and is a problem that is often shared by other members of the online community. Because people generally respond less prosocially toward others who are seen as more responsible for their own problems (Schmidt & Weiner, 1988); people in an online setting may be more willing to help a recognizable user with a computer problem than with essay revisions.

Another difference in the paradigm used in Study 3 compared to that employed in Studies 1 and 2 might also have contribute to the weaker effects observed in Study 3. In particular, the presence of a harasser could raise self-presentation concerns (Krämer & Winter, 2008), such that participants may be concerned about both the impression given to other forum users and to the harasser specifically. Such concerns could be increased in situations of expressive pseudonyms, which are seen as more self-reflective and potentially as a greater form of self-disclosure (Pronin et al., 2008) than are unique or informational pseudonyms, which could limit the positive impact of using more expressive pseudonyms that was found in Studies 1 and 2. Concerns aroused by the presence of a harasser in the online community may also have suppressed the relationships between other psychological states and prosociality across the conditions in the study. This potential suppression effect might help explain why the recognizability of others in Study 3 had a weaker (and nonsignificant) relationship with prosocial behaviors in Study 3 than in Studies 1 and 2.

It is thus possible that modifying the experimental manipulation in a way that more directly and strongly affects the recognizability of others would allow for a replication of the effects for persistent pseudonyms found in Study 2. One method through which others can be made differentially recognizable is by providing individuating information about them, which distinguishes them from each other and thus makes them more individually recognizable (e.g., compared to being simply a member of a group; Pratto & Bargh, 1991). Information that distinguishes an individual from others online is often utilized by internet users to recognize a person across contexts (High, 2015; Roffo, Giorgetta, Ferrario, & Cristani, 2014). Thus, manipulating the type of information provided about others (individuating or non-individuating) should make others seem more or less recognizable in a manner that is somewhat separate from their pseudonyms. In the next chapter of my dissertation, I investigate the separate and interactive effects of information providing individuating or non-individuating about others and differences between having an information or expressive pseudonyms (which differed in participants' perceptions of others' recognizability in Study 3) on prosociality.

In conclusion, the study I described in this chapter (Study 3) manipulated persistent pseudonyms' expressiveness and distinctiveness and examined the effects of persistent pseudonym on participants' perceptions of themselves and others, their self-reported prosocial feelings, and their prosocial behavior. On the whole, participants found expressive and unique pseudonyms to be more personally-expressive and to be worth more than information pseudonyms, and these pseudonyms tended to make others seem more recognizable to participants, but the pseudonym manipulation did not affect participants' prosocial feelings or behavior. It is possible that changes to the forum

helping paradigm in this study (problem with an essay instead of a computer problem, presence of a harasser in the online community) relative to that used in Studies 1 and 2 reduced participants' likelihood of helping and the relationship between factors influenced by the manipulation (expressiveness and worth of the pseudonym and recognizability of others) on prosocial behaviors. To further investigate how pseudonymity can affect prosociality, test the replicability of findings in the first three studies in my dissertation, and better understand the reasons for inconsistent results between Studies 2 and 3, the studies in the next chapter explore how aspects of the pseudonym and additional cues about others or the setting affect the dynamics of online prosocial behavior.

Footnotes

¹ To correct for multiple comparisons, significant differences found in analyses of variance were also analyzed using Tukey HSD.

² Exploratory inclusion of sadism as a covariate in univariate tests of the self-report variables did not reveal any additional main effects, all main effect $ps > .19$.

³ When correcting for multiple comparisons using Tukey HSD, the difference in perceived worth between the information and unique pseudonyms was marginally significant.

Chapter 5:

Interactive Effects of Expressive Pseudonymity and Group Identity on Prosociality

The experiment described in Chapter 4 (Study 3) was designed to investigate whether different types of persistent pseudonyms, such as those that were more unique or more expressive, would encourage more prosocial feelings and behavior than would persistent pseudonyms that were relatively indistinct or unexpressive. The results of Study 3 revealed that although participants rated unique and expressive persistent pseudonyms as being more personally-expressive, as subjectively worth more, and as making others more recognizable than were the unexpressive information pseudonyms, using these pseudonyms did not lead to a greater amount of reported prosocial feelings or prosocial behavior. This chapter presents two studies (Studies 4 and 5) that include additional manipulations and measures designed to examine unaddressed questions remaining from the results of Study 3, especially in the domains of relational prosociality and group dynamics. Study 4 includes an additional manipulation of others' recognizability and a measure of participants' concerns about leaving a good impression on others, and it also investigates participants' levels of everyday sadism (Buckels, Jones, & Paulhus, 2013) as a moderator of prosociality effects. Guided by findings from Study 4, Study 5 manipulates the perceived group membership of participants and includes as behavioral measures other aspects of altruistic punishment (Fehr & Gächter, 2002) besides confronting a harasser, such as reporting the harasser to the experimenters or excluding the harasser from a future interaction.

As in my earlier work, the studies in this chapter examine pseudonymous interactions—situations online in which one may use a self-designed identifier instead of

one's real name—and how these situations may differ from the more-commonly-studied anonymous online interactions. The research described in this chapter further considers the influence of recognizability—both feelings of personal recognizability and the recognizability of others—on how people interact prosocially with others online. The results of all three previous dissertation studies implicate the potential role of recognizability to vary degrees. Study 1 revealed that, compared to anonymous interactions, pseudonymous interactions encouraged both greater feelings of personal recognizability and more prosocial feelings and behavior. Study 2 found that thinking that others were more recognizable was strongly linked to participants' prosocial behavior. Study 3 confirmed the expectation that participants who are given the opportunity to create expressive pseudonyms, as opposed to unique pseudonyms, would feel more recognizable and expect that others with more expressive pseudonyms would be more recognizable, as well. Given the potential for pseudonyms seemingly to influence both the perceived recognizability of the self and of others, but for only recognizability of others to mediate changes in behavior, these two types of recognizability were considered in the research presented in this chapter as two potentially different mechanisms for changing perceptions and behavior online.

Stronger perceptions of other users as being recognizable could serve to motivate prosocial feelings and behavior online because people tend to be more likely to offer help to identifiable victims (Kogut & Ritov, 2005, 2011). The studies presented in this chapter (Studies 4 and 5) differ from Study 3 in their approach to making participants feel that others are recognizable. Both of these studies include some personal or general information about others on the forum, in addition to showing others' pseudonyms. This

information is potentially individuating information (that is, indicative of a person's individual traits or behaviors; Fiske, Lin, & Neuberg, 2018; Pratto & Bargh, 1991), particularly if it involves others' personal characteristics (Krueger & Rothbart, 1988). Individuating information may serve to make others seem more recognizable online, and making others seem more recognizable in this way may encourage prosocial feelings and behavior. Previous research has demonstrated that providing even a small amount of individuating information about others can serve to motivate participants to perceive them as more "human" (that is, as a person possessing an inner mental life; Haslam & Bain, 2007). This process of humanization can encourage providing aid to others (Cuddy, Rock, & Norton, 2007) and responding to their mistakes with friendlier language (Vaes, Leyens, Paladino, & Miranda, 2012; Vaes, Paladino, & Leyens, 2002). Thus, it was expected that presenting participants with individuating information about the others on the forum, such as a personal preference irrelevant to the task (e.g., a preference for one type of food over another), would encourage participants to see others as more recognizable and would promote more prosocial feelings and behaviors than would providing participants with generic information about others (specifically, that they took the study through the same online service).

Whereas Study 4 investigates the role of individuating information and expressive pseudonymity—both factors that emphasize individual, rather than social, identities (Dovidio, Gaertner, Mayville, & Perry, 2013)—Study 5 considers the role of social identity, particularly the strength of participants' ingroup identity with others on the forum. Previous research has shown that salient social identities affect perceptions of other individuals. People ascribe human mental states more strongly to ingroup members

than to outgroup members (Haslam & Loughnan, 2014). Moreover, more strongly-identified ingroup members tend to ascribe less humanity to members of outgroups (Hackel, Looser, & Van Bavel, 2014). It is possible that providing participants with information about others that is related to shared group membership with the participant could serve as a cue for common group membership (Gaertner, Dovidio, Guerra, Hehman, & Saguy, 2016), which in turn could influence participants' prosocial feelings and behavior in the online forum.

An individual difference that I investigated as a predictor in both studies presented in this chapter is that of participants' trait of sadism, which is the tendency to enjoy causing others pain (Buckels et al., 2013). Previous research of harmful behavior online has indicated a particular influence of antisocial personality traits, such as sadism, on harassing others, such that people who score higher on measures of sadism are more likely to harass others online (Buckels, Trapnell, & Paulhus, 2014). The two studies presented in this chapter complement this earlier work on the effects of individual differences in sadism by examining how sadism relates to participants' prosociality. Specifically, I hypothesized that participants higher in sadism would express less prosocial feelings and show fewer prosocial behaviors.

In summary, the two studies in this chapter were designed to investigate and expand upon the forum helping paradigm designed in Study 3. The experiments in this chapter (a) used a more refined manipulation to make others on the forum seem recognizable to participants, (b) included a variety of additional self-report and behavioral measures of prosociality, (c) examined the influences of sadism and group membership on participants' prosocial behavior, and (d) and investigated how these

conflicting pro- and antisocial motivations influence prosociality under persistent pseudonymity. Specifically, in the case of Study 4, participants either using a personally-expressive or non-expressive pseudonym interacted with others in the forum setting, about whom they were provided either individuating or generic information, and their prosocial feelings and behavior were compared between conditions. In Study 5, I investigated the effects of group membership by framing the helping task either as an individualistic or group-related activity. In addition to recording measures of participants' prosociality, Study 5 also used ingroup identification strength as a moderator.

Study 4

The findings of the previous empirical studies in my dissertation (Studies 1, 2, and 3) suggest that participants' perceptions of others as being recognizable online are positively related to participants' prosociality. The strongest evidence for the role of others' recognizability in influencing prosociality was found in Study 2, in which the type of pseudonym assigned to others in the setting (temporary or persistent) affected participants' perceptions of others as recognizable, and this in turn mediated the effect of others' pseudonyms on participants' prosocial behavior. However, this path of mediation was found in a setting in which both the mediator, others' recognizability, and the outcome, participants' prosocial behavior, were assessed at the same time and affected by the same manipulation. Such a design means that the mediation provides only correlational evidence of a link between others' recognizability and participants' prosocial behavior. Spencer, Zanna, and Fong (2005) recommended that correlational mediation evidence be supplemented by experiments designed to manipulate the proposed mediator. Thus, to test this effect more directly, Study 4 manipulated

information about others that makes them more or less recognizable. The experimental manipulation either provided participants with information about others' personal characteristics—in this case, their preferences for one thing over another—that is meant to individuate others (as found in previous research; see Krueger & Rothbart, 1988). Because it provides distinguishing cues (Wilder, 1981), individuating information was expected to make others seem more recognizable, and it was also anticipated to influence participants' prosociality (Kogut & Ritov, 2005).

In addition to manipulating the information that participants received about others in the online setting, I varied type of pseudonym used by participants in Study 4. Specifically, the pseudonym manipulation in Study 4 focuses on contrasting the expressive pseudonym (in which participants created a pseudonym that was “as descriptive of [themselves] as possible”) and information pseudonym (in which participants used a combination of letters from their name and numbers from their birth year to create a pseudonym) conditions from Study 3. Although both information pseudonyms and expressive pseudonyms could potentially help distinguish others in the online forum, an expressive pseudonym could be reflective of “truer” aspects of its user than an information pseudonym would be. A personally-expressive pseudonym could be used to express “true self” aspects (qualities a person would like to express, but feel they usually cannot; Bargh, McKenna, & Fitzsimmons, 2002) online, a context in which a person may feel less inhibited from disclosing such aspects of self (Culén, Finken, & Gasparini, 2014; Suler, 2004). Pseudonyms that are perceived to be more authentic could make others in the forum setting seem more recognizable when it is believed that others are being “expressive” in their pseudonyms. The results from Study 3 supported these

expectations: Expressive pseudonyms were rated as being more personally-expressive than were information pseudonyms, and participants rated others as being more recognizable in the expressive pseudonym condition than in the information pseudonym condition.

The two experimental manipulations in this study, individuating information provided about others and the type of pseudonym used by the participants, were crossed in a 2 x 2 design to investigate potential interactive effects. Previous research has suggested that, in the absence of direct information that identifies others, participants may make assumptions about others that are consistent with their own preconceptions (such as stereotypes), but that even minimal individuating information about others can prevent or reduce such generalizations (Locksley, Borgida, Brekke, & Hepburn, 1980; Rubinstein, Jussim, & Stevens, 2018). As my earlier dissertation studies have shown, in the absence of individuating information about others, participants in pseudonymous online settings may extend expectations of their own pseudonymous condition to others in an egocentric fashion (Epley, Keysar, Van Boven, & Gilovich, 2004; see also Study 1 in Chapter 2 of the present work). Specifically, as a consequence, participants in a previous empirical study of my dissertation (Study 3) believed that others were more recognizable in the condition in which participants had an expressive pseudonym than in the condition in which participants had an information pseudonym, which was an identifier that distinguished the person from others but did not directly represent the participant's identity. However, if participants are provided with individuating details, as in the current study, previous research (Locksley et al., 1980) suggests that such individuating details will take precedence and, regardless of the pseudonym condition that participants are

assigned, others in the forum will be seen as relatively recognizable to the participant. To the extent that perception of others' recognizability mediates prosocial behavior online, as found in Study 2 of my dissertation, I expected that participants in Study 4 would report greater prosociality in the expressive pseudonym condition than in the information pseudonym condition only when they did not also receive individuating details about others.

Specifically, I predicted that participants in the information pseudonym condition would view others as feeling more recognizable and would report more impression concerns, feelings of similarity, knowledge contribution, and sense of community (and consequently more prosocial behavior) when others were introduced with individuating information rather than as generic MTurk workers. By contrast, I predicted that participants in the expressive pseudonym condition (in which the pseudonym itself is expected to be individuating) would show relatively high levels of impression concerns, feelings of similarity, knowledge contribution, sense of community, and prosocial behavior regardless of whether others were introduced with individuating information or as generic MTurk workers. Additionally, I anticipated that participants with expressive pseudonym conditions would report themselves as feeling more recognizable and as having a pseudonym that was more expressive and worth more than would participants with information pseudonyms.

To investigate the possibility that aspects of the experimental manipulation could serve to differentially activate social group concepts for participants (e.g., showing participants information that suggested everyone was from MTurk, compared to providing individuating details instead), the study also included pilot measures of how

participants felt about others in the online forum as a group. Results from these measures, which were provided to a subset of participants, informed the group-based manipulation of Study 5.

Method

Participants. Participants were recruited from Amazon's Mechanical Turk (MTurk) service to take part in a study on "online interaction" in which they would supposedly be interacting with other participants on a separate forum website after answering a few survey questions. Because Study 4 was intended to clarify the observed marginal findings in Study 3, I performed an a priori power analysis using G*Power (Faul, Erdfelder, Lang, & Buchner, 2007) to determine a sufficient sample size. The design of Study 4 was such that I desired a statistically-significant difference (at a .05 level) in participants' feelings of recognizability by pseudonym condition, comparing the expressive and information pseudonym conditions; this effect was expected to be significant in Study 3 but was not ($F[1, 125] = 1.92, p = .169, \eta^2 = .015$). Calculating an effect size d from the means of the two groups in Study 3 of $d = .278$ and using an α of .05 and a power of .90, the a priori power analysis indicated a target of 273 participants per pseudonym condition, or 546 participants total. After excluding participants who did not complete the study, the final sample for Study 4 included 510 participants (193 men, 310 women, mean age = 37.51, $SD = 12.01$, 74.12% White, 8.24% Black, 3.73% Latino/a, 4.12% East Asian, 1.57% South Asian, 0.78% Native American, 0.19% Pacific Islander, 6.47% mixed-race/multiracial/other, and 0.78% unknown).

Procedure

After completing the consent form, participants were randomly assigned to receive one of two sets of instructions for creating a pseudonym (a “screenname”) to be used later in the study. To manipulate whether the pseudonym that participants used was either personalized and reflective of their self-concept or distinguishing but less reflective of their self-concept, participants were asked either to create (a) a pseudonym that was “as descriptive of [themselves] as possible” (expressive pseudonym condition; $N = 243$) or (b) a pseudonym that used the last two letters of their first and last names, and two numbers from their birth year (information pseudonym condition; $N = 267$). The second condition was designed to control for the relevance of the information contained in the pseudonym to the participant (as information being minimally-relevant can still have psychological impact—see Pelham, 1999), while communicating limited meaningful information about the participant. (See Supplementary Materials for full details and all measures.)

In line with the cover story that participants would be leaving the survey to do another activity, participants next clicked a button on the survey page that would supposedly take them to a forum website where they would interact with other study participants. The webpage and the materials presented in it represented the next stage of the experimental procedure.

On the forum webpage, participants were given a choice of two threads to enter. One of the threads had a subject line that indicated that a person was requesting help proofreading an essay (“Can anyone help me proofread my essay?”; the experimentally-relevant help thread), and the other was associated with a subject line indicating it was a thread in which people could tell jokes to each other (“Does anyone have jokes to

share?"; a filler thread). These forum threads were similar to those used in Study 3. The main difference from Study 3 was that, to have a less controversial essay topic, the essay for proofreading (in which the student seeking help made numerous errors) was the college-level essay on parental controls rather than an essay on global warming from Harber (1998). I recorded whether participants entered the help thread or the filler thread first as a measure of a participants' priority for helping others.

To manipulate the extent to which others on the forum felt recognizable to the participants, I varied the information displayed about them. Providing revealing but incidental information about others has been used in prior research to foster feelings of affiliation (West, Magee, Gordon, & Gullett, 2014), and its purpose was similar in this study. When participants entered the first thread they chose (and thus had already chosen to help first or not), they were randomly assigned to one of two presentations of information about others on each forum post (other-user information manipulation). Posts on the forum either displayed that their author was an MTurk participant, which was the same for all supposed participants on the forum ($N = 246$; generic MTurk worker condition), or task-irrelevant individuating information about their author (e.g., "Prefers waffles to pancakes"; $N = 264$; individuating-information condition), which varied from person to person.

When participants entered the help thread (as either the first or second thread they chose), as in Study 3, they saw two previous responses to the thread: one unhelpful (a supposed participant saying they could not help) and one mildly-helpful (another supposed participant recommending that the essay writer fix a few common grammatical errors). Participants were then given a chance to respond to the thread themselves.

After submitting their reply and answering an attention-check measure about the number of times they had interacted in the forum so far, participants who had just responded to the help thread were told they had been “randomly selected” to return to the thread, and that they could reply again, or they could opt out by leaving the response section blank. This section of the procedure was designed to examine participants’ prosocial behavior through their additional responses, if any, to the thread. In order to maintain the cover story that study participants were engaging on a forum with other participants, they were told that other participants may have also responded to the thread while they were writing their original reply. Upon returning to the thread, they saw that another supposed participant had responded to the thread and was harassing the essay author.

As behavioral measures of prosociality (that is, participants’ tendency to act in ways that benefit forum members other than themselves; Batson & Powell, 2003), I recorded whether participants responded to the thread a second time, and if they did, two raters unaware of conditions (contingency coefficient = .646; 95.97% initial agreement) recorded whether participants confronted the harasser or the harasser’s conduct (e.g., by telling the harasser that they were being rude or mean, or by remarking generally to the essay author that negative comments should be ignored), and whether participants encouraged the essay author in the face of such criticism (e.g., by telling the essay author not to give up, or that posting the essay for others to critique showed personal awareness and a desire to improve). Disagreements were decided by a third rater, also unaware of condition. These measures were included in addition to participants’ entering the help thread first or second.

After responding to both the help thread and the filler thread, participants were redirected “back to the survey” to complete a questionnaire on their experiences. In order to measure the extent to which the experimental manipulations influenced participants’ perceptions of themselves and others in the forum environment, this questionnaire included measures, for which participants indicated their agreement on scales ranging from 1 (not at all) to 6 (very much), of perceived expressiveness of their pseudonym (e.g., “On the forum, I felt like my screenname reflected some aspect of me online”; $\alpha = .947$), personal recognizability (“I believed I was identifiable to other users on the forum,” “I believed I had a distinguishing characteristic that allowed other forum users to identify me”; $r[502] = .549, p < .001$), others’ recognizability (“I expected that users using a certain screenname in one place on the forum would also use it in other places on the same forum”; “I believed that others on the forum would switch to a different screenname with each post they made” reverse-scored; $r[501] = .089, p = .046$), private self-awareness (“On the forum, I was generally very aware of myself and of my own perspective and attitudes,” “Rather than thinking about myself on the forum, my mind was distracted by my task and what was going on around me” reverse scored; $r[501] = .311, p < .001$), knowledge contribution (“I contributed knowledge to the online forum community,” “I took an active part in the community of the online forum”; $r[500] = .647, p < .001$), and sense of community (“To what extent, if at all, did you ever have a sense of ‘being there with other people’ in this community?”, “To what extent, if at all, did you have a sense that you were together with other people on the forum?”; $r[503] = .773, p < .001$) as in Studies 1, 2, and 3. Furthermore, I included items measuring the extent to which participants were concerned about making a good impression on other forum users

(“I was concerned about making a good impression on the forum,” “I cared a lot about how I presented myself to others on the forum”; $r[502] = .767, p < .001$), and items measuring the extent to which participants felt similar to other forum users (“To what extent, if at all, did you feel similar to others on the forum?”, “To what extent, if at all, did you feel that you had similar thoughts and goals to others on the forum?”; $r[507] = .747, p < .001$), on the same 1-6 scale as the other items (a full list of items is available in Supplementary Materials).

I also measured participants’ trait sadism, using items on a five-point agreement scale from Buckels et al. (2013); $\alpha = .728$. I then asked participants their age, gender, and race, then debriefed them on the purpose and expectations of the study and compensated them for being in the study.

Results

Preliminary analyses revealed no systematic effects for participants’ gender or age; consequently, gender and age were not included in subsequent analyses. Furthermore, the order in which participants experienced the two forum threads (the help thread and the filler thread) did not systematically affect the other dependent variables, so the data were collapsed across forum thread order, and participants’ order of visiting the forum threads was analyzed only as a dependent variable. There were no consistent main effects or interactions associated with participant gender, so it was not included as a factor in subsequent analyses. Preliminary analyses also revealed that sadism did not demonstrate systematic interaction effects with the manipulated independent variables (type of pseudonym and type of information provided about others) across the dependent measure of interest. Thus, the analytic models were trimmed to include only the direct

effect for sadism along the main effects for type of pseudonym, type of information provided about others, and the Pseudonym Type x Other Information interaction.

In analyzing participants' self-report responses, the measures of particular theoretical interest for the experiment involved participants' perceptions of recognizability: (a) their own recognizability, (b) the recognizability of others, and (c) participants' perception of their pseudonyms as being personally-expressive. The behavioral measures of primary theoretical interest once again focused on participants' prosocial behavior: participants' likelihoods (a) of visiting the help thread first, (b) of providing a solution to the author in the forum in need of help, (c) of providing encouragement to the author, and (d) of confronting the harasser—either directly or indirectly. Additionally, as in the earlier studies, participants' perceptions of themselves and others were analyzed: participants' sense of community and knowledge contribution (two variables analyzed together to measure participants' relationship to others), and participants' level of deindividuation (operationalized as private self-awareness). Also, to explore how the participants perceived their pseudonyms, a measure was included for participants' subjective worth of their pseudonyms. To explore self-presentation concerns of participants over their perceptions of private self-awareness, a measure was included for participants' concerns about making a good impression on others.

Bivariate correlations were performed to analyze the relationships between the continuous dependent variables of interest. As indicated in Table 5.1, most self-report measures of prosociality were positively correlated with each other and negatively-correlated with or uncorrelated with self-reported sadism. Reporting oneself as feeling recognizable was positively correlated with self-reported prosociality but also with

sadism, while reporting that others felt recognizable was also positively correlated with prosociality but negatively correlated with sadism. As found in other dissertation studies, perceived expressiveness of one's pseudonym was positively correlated with self-reported prosociality and a sense of being recognizable. Private self-awareness was weakly positively correlated with impression concerns and knowledge contribution, and weakly negatively correlated with sadism. On the whole, knowledge contribution, perceived expressiveness, and personal recognizability were the dependent variables most strongly and consistently correlated with other self-report measures of prosociality.

Table 5.1. Bivariate correlations between the continuous dependent variables.

Correlations										
	Recognizable Self	Recognizable Others	Perceived Expressiveness	Private Self-Awareness	Impression Concerns	Feelings of Similarity	Sense of Community	Knowledge Contribution	Subjective Worth	Sadism
Recognizable Self		-.169**	.333**	.024	.226**	.218**	.285**	.116**	.338**	.221**
Recognizable Others			-.009	.068	.002	.006	.028	.115*	-.045	-.236**
Perceived Expressiveness				.009	.226**	.289**	.327**	.317**	.549**	-.061
Private Self-Awareness					.090*	.055	.087	.164**	.012	-.094*
Impression Concerns						.470**	.507**	.383**	.287**	-.012
Feelings of Similarity							.656**	.447**	.277**	.010
Sense of Community								.538**	.280**	-.028
Knowledge Contribution									.211**	-.156**
Subjective Worth										.147**
Sadism										
** $p < .01$ * $p < .05$										

Included below are the bivariate correlations of benign and toxic disinhibition with dependent variables of interest in Study 4, with a focus on replications of previous

disinhibition results. As found in Studies 1, 2, and 3, benign disinhibition was positively and significantly correlated with perceived expressiveness and sense of community; it was also positively correlated with knowledge contribution, which is consistent with Studies 1 and 2, but not Study 3. In Study 4, benign disinhibition was also correlated with a sense of being recognizable, which was not found in Study 1 but was found in Study 2 and Study 3, and with sadism, which is not consistent with previous results. Inconsistent with the finding of Study 1 but consistent with Study 2 and Study 3, toxic disinhibition was not significantly positively correlated with sense of community in Study 4. Toxic disinhibition's positive correlation with sadism remained consistent with previous studies.

Table 5.2. Bivariate correlations between disinhibition subscales and dependent variables of interest in Study 4.

Correlations									
	Benign Disinhibition	Toxic Disinhibition	Private Self-Awareness	Recognizable Self	Recognizable Others	Perceived Expressiveness	Sense of Community	Knowledge Contribution	Sadism
Benign Disinhibition		.228**	-.075	.141**	-.027	.139**	.429**	.271**	.097*
Toxic Disinhibition			-.033	.003	-.069	-.015	.004	.005	.288**
** $p < .01$									
* $p < .05$									

Contingency coefficients between the behavioral measures, and point-biserial correlations between the behavioral measures and the self-report measures, were also examined, as shown in Table 5.3. The behavioral measures were largely unrelated to each other, with the exception of confronting the harasser and encouraging the author, which, in contrast to the null result of Study 3, were positively associated with each other, such that participants who confronted the harasser were also more likely to encourage the

author (or vice versa). In addition, the point-biserial correlations also revealed patterns in the data. As in previous studies, sense of community and knowledge contribution were significantly positively correlated with prosocial behavior, and both showed correlations with replying twice and encouraging the author (consistent with Study 3) as well as confronting the harasser (positive but not significant in Study 3). Furthermore, seeing others as recognizable was positively correlated with helping first and encouraging the author, after several studies of nonsignificant positive trends. The positive association between perceived expressiveness and encouraging the author from Study 3 did not replicate here, but perceived expressiveness was positively correlated with replying twice. Participants' perceptions of themselves as recognizable were positively correlated with replying twice, but were also negatively correlated with helping first. Neither of these correlations are consistent with prior studies, but it is possible the changes to the experimental paradigm (in particular, restricting people to an informational pseudonym or an expressive pseudonym) may have prompted participants to feel more reluctant to enter the help thread first or to feel more helpful once they were engaged on the thread.

Table 5.3. Chi-square contingency coefficients between the dichotomous behavioral measures, and point-biserial correlations between the dichotomous behavioral measures and the continuous self-report measures.

Contingency Coefficients				
	Helping First	Replying Twice	Confronting Harasser	Encouraging Author
Helping First		.006	.030	.046
Replying Twice				
Confronting Harasser				.220**
Encouraging Author				
Correlations				
Recognizable Self	-.094*	.097*	.038	.072
Recognizable Others	.134**	.018	.050	.088*
Perceived Expressiveness	-.022	.094*	.049	.049
Private Self-Awareness	.015	.128**	.068	.036
Impression Concerns	.029	.053	.067	.057
Feelings of Similarity	-.026	.076	.069	.028
Sense of Community	-.013	.123**	.125**	.144**
Knowledge Contribution	.036	.207**	.209**	.109*
Sadism	-.095*	-.005	-.045	-.043
** $p > .01$				
* $p > .05$				

Paralleling the analyses performed in Studies 2 and 3, the effects of the pseudonym manipulation (whether participants had an expressive or information pseudonym) and of the other-information manipulation (whether participants received general or individuating information about others) were first tested with a 2 x 2

multivariate analysis of variance (MANOVA, Pillai's Trace), including sadism as a continuous predictor. A 2 x 2 MANOVA was also performed on the measures representing, as in in Studies 2 and 3, relationships with others. Univariate tests for each variable considered in a multivariate analysis were also reported. The results of these analyses are summarized in Table 5.4. The effects for helping behavior measures, which had dichotomous responses (yes or no), were assessed only at the univariate level overall, using binomial logistic regression to analyze the main effects and interaction of the two experimental manipulations. The results for the helping measures also appear in Table 5.4.

Table 5.4. Means, proportions, and statistical significance of relevant dependent measures. Participant sadism is included as a continuous predictor in the analyses of variance. For clarity, the means provided do not include sadism in the analysis.

Dependent Measure	Information Pseud, Generic Others	Expressive Pseud, Generic Others	Information Pseud, Individuated Others	Expressive Pseud, Individuated Others	Effect of Pseudonym	Effect of Other-Information	Pseud x Other-Info Interaction
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	$F(y, xx)$, p , partial η^2	$F(y, xx)$, p , partial η^2	$F(y, xx)$, p , partial η^2
Recognizability Measures (MANOVA)					$F(3, 472) = 32.07, p < .001$, partial $\eta^2 = .169$	$F(3, 472) = .84, p = .471$, partial $\eta^2 = .005$	$F(3, 472) = 2.03, p = .109$, partial $\eta^2 = .013$
Recognizable Self	2.75 (1.01)	2.91 (1.15)	2.77 (1.09)	2.99 (1.16)	$F(1, 474) = 7.46, p = .007$, partial $\eta^2 = .015$	$F(1, 474) = 1.02, p = .313$, partial $\eta^2 = .002$	$F(1, 474) = .03, p = .861$, partial $\eta^2 < .001$
Recognizable Others	4.23 (1.05)	4.64 (0.94)	4.49 (1.02)	4.47 (0.99)	$F(1, 474) = 3.55, p = .060$, partial $\eta^2 = .007$	$F(1, 474) = .06, p = .813$, partial $\eta^2 < .001$	$F(1, 474) = 4.64, p = .032$, partial $\eta^2 = .010$
Perceived Expressiveness	3.07 (1.59)	4.18 (1.44)	3.12 (1.61)	4.57 (1.35)	$F(1, 474) = 89.96, p < .001$, partial $\eta^2 = .160$	$F(1, 474) = 2.06, p = .152$, partial $\eta^2 = .004$	$F(1, 474) = 1.55, p = .214$, partial $\eta^2 = .003$
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	$F(y, xx)$, p , η^2	$F(y, xx)$, p , η^2	$F(y, xx)$, p , η^2
Private Self-Awareness (ANOVA)	4.24 (1.05)	4.14 (1.28)	4.35 (1.24)	4.15 (1.36)	$F(1, 484) = 1.34, p = .248$, $\eta^2 = .003$	$F(1, 484) = .22, p = .639$, $\eta^2 < .001$	$F(1, 484) = .32, p = .572$, $\eta^2 = .001$

Dependent Measure	Information Pseud, Generic Others	Expressive Pseud, Generic Others	Information Pseud, Individuated Others	Expressive Pseud, Individuated Others	Effect of Pseudonym	Effect of Other-Information	Pseud x Other-Info Interaction
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	$F(y, xx), p, \text{partial } \eta^2$	$F(y, xx), p, \text{partial } \eta^2$	$F(y, xx), p, \text{partial } \eta^2$
Relationship to Others (MANOVA)					$F(4, 472) = .71, p = .584, \text{partial } \eta^2 = .006$	$F(4, 472) = .53, p = .716, \text{partial } \eta^2 = .004$	$F(4, 472) = 2.76, p = .027, \text{partial } \eta^2 = .023$
Impression Concerns	3.39 (1.43)	3.80 (1.44)	3.62 (1.56)	3.33 (1.55)	$F(1, 475) = .33, p = .566, \text{partial } \eta^2 = .001$	$F(1, 475) = 1.20, p = .274, \text{partial } \eta^2 = .003$	$F(1, 475) = 7.74, p = .006, \text{partial } \eta^2 = .016$
Feelings of Similarity	3.40 (1.28)	3.69 (1.17)	3.52 (1.32)	3.40 (1.27)	$F(1, 475) = 1.00, p = .317, \text{partial } \eta^2 = .002$	$F(1, 475) = .95, p = .329, \text{partial } \eta^2 = .002$	$F(1, 475) = 5.56, p = .019, \text{partial } \eta^2 = .012$
Sense of Community	3.47 (1.39)	3.75 (1.28)	3.49 (1.47)	3.49 (1.50)	$F(1, 475) = 1.86, p = .173, \text{partial } \eta^2 = .004$	$F(1, 475) = 1.28, p = .259, \text{partial } \eta^2 = .003$	$F(1, 475) = 2.24, p = .135, \text{partial } \eta^2 = .005$
Knowledge Contribution	4.46 (1.16)	4.50 (1.10)	4.47 (1.14)	4.47 (1.22)	$F(1, 475) < .01, p = .971, \text{partial } \eta^2 < .001$	$F(1, 475) = .04, p = .850, \text{partial } \eta^2 < .001$	$F(1, 475) = .08, p = .778, \text{partial } \eta^2 < .001$
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	$F(y, xx), p, \eta^2$	$F(y, xx), p, \eta^2$	$F(y, xx), p, \eta^2$
Subjective Worth (ANOVA)	2.78 (1.38)	3.14 (1.42)	2.89 (1.42)	3.19 (1.44)	$F(1, 484) = 17.65, p = .003, \eta^2 = .018$	$F(1, 484) = 1.58, p = .369, \eta^2 = .002$	$F(1, 484) = .04, p = .850, \eta^2 < .001$
	Proportion as percent	Proportion as percent	Proportion as percent	Proportion as percent	Exp(B), p	Exp(B), p	Exp(B), p
Helping Behavior							
Helping First	40.77%	34.48%	36.50%	37.30%	Exp(B) = .89, p = .541		
Replying Twice	42.31%	53.45%	44.53%	51.18%	Exp(B) = 1.57, p = .081	Exp(B) = 1.09, p = .715	Exp(B) = .83, p = .611
Confronting Harasser	24.03%	33.62%	27.74%	30.71%	Exp(B) = .46, p = .108	Exp(B) = 1.22, p = .494	Exp(B) = .75, p = .461
Encouraging Author	10.85%	8.62%	8.76%	14.96%	Exp(B) = .76, p = .520	Exp(B) = .70, p = .409	Exp(B) = 2.65, p = .101

Participant sadism. A preliminary univariate analysis of variance (ANOVA) was performed for the experimental conditions and their interaction on participants' self-reported sadism (assumed to represent a stable individual difference variable and assessed after the dependent measures). This analysis revealed no main effects or interactions by experimental condition, all $ps > .19$. Thus, given the hypothesized main effects of participant sadism on prosocial behavior, sadism was included as a continuous predictor in subsequent analyses. Because there were no systematic interactions with sadism and the experimental manipulations, the models used in analyses of the dependent variables were trimmed to include only the effect of sadism as a continuous predictor.

Recognizability measures. To test the multivariate main and interactive effects of the pseudonym manipulation (whether participants had a descriptive or information pseudonym) and the other-information manipulation (whether participants were given general or individuating information about others) while examining the effect of sadism as a continuous predictor, I performed a multivariate analysis of variance. In the MANOVA, the conditions involving participants' pseudonyms and information given about others were the independent variables, and sadism was entered as a continuous predictor. The dependent measures were perceived personal expressiveness of one's pseudonyms, perceptions of one's own recognizability, and perceptions of others' recognizability.

There was not a multivariate (or univariate) main effect for the other-information condition, but there was a significant multivariate main effect for the pseudonym condition (see Table 5.4). Consistent with the intended manipulation of the pseudonym and as found in Study 3, univariate analyses (see Table 5.4) indicated that participants

with an expressive pseudonym felt that their pseudonym was more personally expressive than did participants with an information pseudonym. Participants with an expressive pseudonym also felt significantly more personally recognizable than did those with an information pseudonym. There was a marginally-significant main effect of pseudonym condition on perceptions of others' recognizability, such that participants felt others were somewhat more recognizable when participants had an expressive pseudonym than when they had an information pseudonym. There was also a univariate main effect of pseudonym condition on participants' perceptions of their pseudonyms as personally-expressive, such that participants with expressive pseudonyms found their pseudonyms to be more personally-expressive than did participants with information pseudonyms.

The multivariate analysis of variance also revealed a multivariate effect of sadism, $F(3, 472) = 32.07, p < .001$. Univariate analyses revealed that sadism was related to both perceptions of personal recognizability and others' recognizability. Specifically, participants who reported higher levels of sadism felt more personally recognizable, $F(1, 474) = 26.62, p < .001$, partial $\eta^2 = .053$, and perceived others as less recognizable, $F(1, 474) = 26.98, p < .001$, partial $\eta^2 = .05$. There was no effect of sadism on participants' perceptions of their pseudonyms as being personally expressive, $F(1, 474) = .61, p = .435$, partial $\eta^2 = .001$.

As predicted, there was a significant interaction between pseudonym condition and other-information condition for participants' perceptions of others as recognizable (see Figure 5.1). There was a marginally-significant difference between participants in the information pseudonym condition who were told that others were MTurk workers and participants in the information condition who were given individuating information about

others, $F(1, 253) = 3.55, p = .061, \eta^2 = .014$, such that participants who were given individuating information thought others were somewhat more recognizable than did participants who were given generic information that others were MTurk workers. There was no significant difference between participants in the expressive pseudonym conditions, $F(1, 230) = 1.80, p = .181, \eta^2 = .008$.

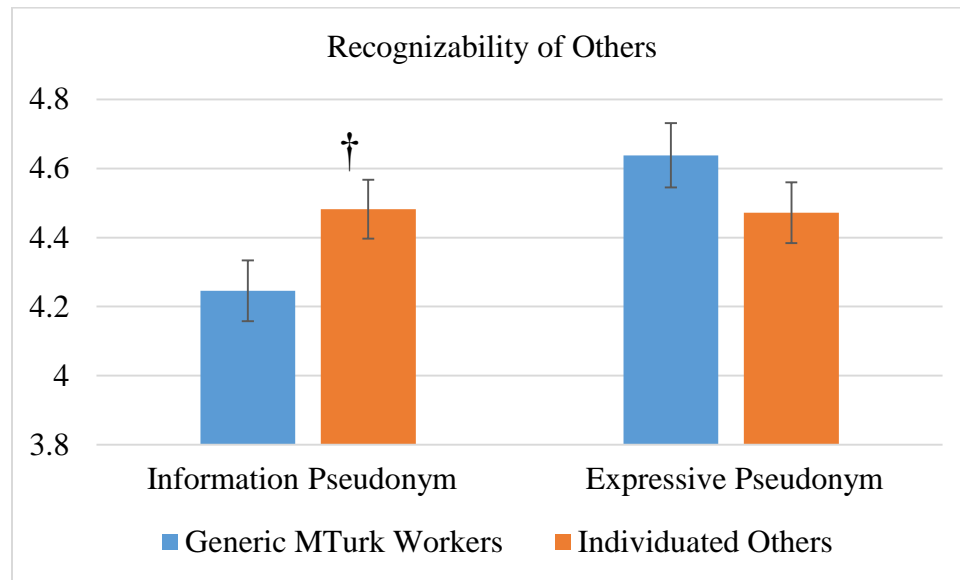


Figure 5.1. A bar graph displaying the means for perceptions of others' recognizability by experimental condition, evaluated with sadism as a continuous predictor ($sadism = 1.67$). The significance of this result does not change when excluding sadism from the analysis. † $p < .10$.

Analysis of the alternate set of simple effects found that participants in the generic MTurk worker condition thought that others were significantly more recognizable when they themselves had expressive pseudonyms than when they themselves had information pseudonyms, $F(1, 231) = 9.20, p = .003, \eta^2 = .038$, but that participants who received individuating information about others did not vary in their perceptions of others' recognizability by pseudonym condition, $F(1, 252) = .01, p = .943, \eta^2 < .001$.

Private self-awareness. As in previous studies, a univariate ANOVA for the experimental conditions and their interaction, with sadism as a continuous predictor, on participants' private self-awareness revealed no significant main effects and no significant interaction, all $ps > .24$.

Subjective worth of pseudonym. Replicating the finding of Study 3, an ANOVA containing the experimental conditions as fixed factors and sadism as a continuous predictor on participants' judgments of their pseudonyms' worth revealed a main effect of pseudonym type, such that participants with expressive pseudonyms judged their pseudonyms to be worth more than did participants with information pseudonyms. There was no significant main effect of the information participants received about others, but there was an effect of sadism, $F(1, 484) = 12.58, p < .001, \eta^2 = .025$, such that participants higher in sadism rated their pseudonym as being worth more. This analysis did not show a significant interaction between pseudonym type and information about others, $p = .369$.

Relationship to others. A MANOVA tested the effect of the 2 (participants' pseudonym) x 2 (information given about others) manipulation and sadism on the measures of impression concerns, feelings of similarity to others, sense of community, and knowledge contribution. There were no main effects of the experimental conditions (see Table 5.4). However, there was a multivariate effect of participant sadism, $F(4, 472) = 4.21, p = .002$, partial $\eta^2 = .034$. There was only one significant univariate effect for sadism: Participants higher in sadism reported lower levels of knowledge contribution, $F(1, 475) = 10.92, p = .001$, partial $\eta^2 = .022$.

The MANOVA also revealed a significant interaction between the experimental conditions. As indicated in Table 5.4, there were significant univariate interactions found for participants' concern about making a good impression on others, and for participants' feelings of similarity to others. For participants' impression concerns, participants with information pseudonyms did not differ based on the information given about others ($F[1, 253] = 1.74, p = .189, \eta^2 = .007$), but participants with expressive pseudonyms were more concerned about making a good impression when others were not individuated ($F[1, 233] = 6.12, p = .014, \eta^2 = .026$).

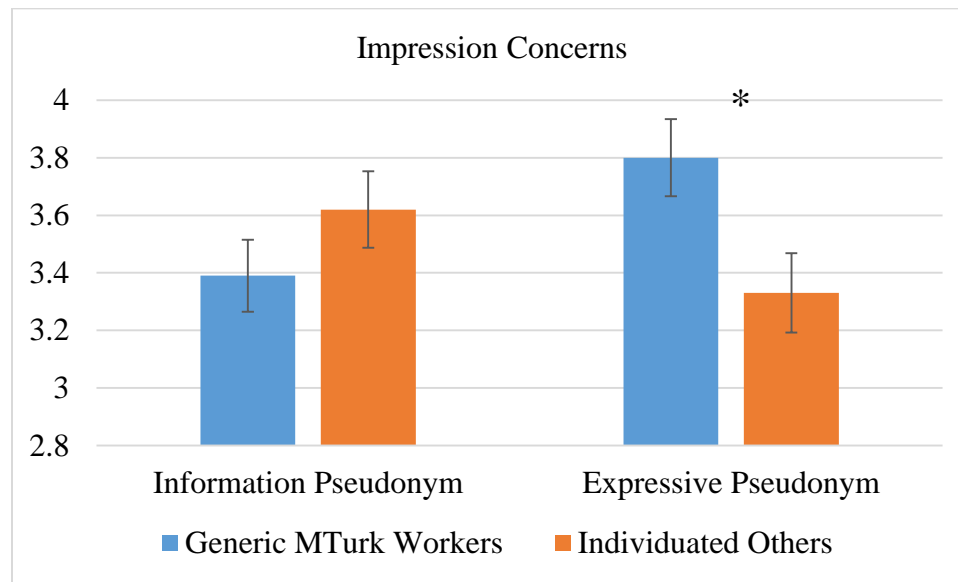


Figure 5.2. A bar graph displaying the means for participants' reported concerns about making a good impression on other forum users by experimental condition. * $p < .05$.

For feelings of similarity to others, participants with information pseudonyms did not differ by whether others were individuated ($F[1, 256] = .40, p = .527, \eta^2 = .002$), but participants with expressive pseudonyms felt more similar to others when others were not individuated than when they were individuated ($F[1, 234] = 4.58, p = .033, \eta^2 = .019$).

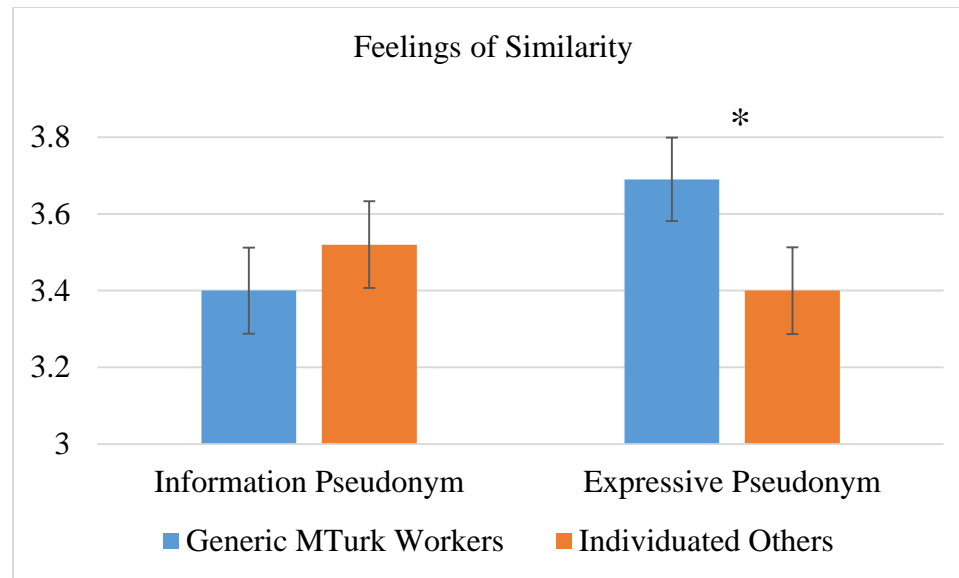


Figure 5.3. A bar graph displaying the means for participants' reported concerns about feeling similar to other forum users by experimental condition. * $p < .05$.

Analysis of the alternate set of simple effects (differences between pseudonym conditions within information conditions) revealed interactions such that, for participants' concern about making a good impression on others, participants were more concerned in the generic MTurk worker condition when they used expressive pseudonyms ($M = 3.80$, $SE = .13$) than when they used information pseudonyms ($M = 3.40$, $SE = .13$), $F(1, 240) = 4.77$, $p = .030$, $\eta^2 = .019$; and participants were trending toward being more concerned in the individuating information condition when they used information pseudonyms ($M = 3.62$, $SE = .13$) than when they used expressive pseudonyms ($M = 3.33$, $SE = .14$), $F(1, 260) = 2.31$, $p = .130$, $\eta^2 = .009$. The interaction pattern was the same for participants' feelings of similarity to others at decreased significance, with participants in the MTurk worker condition feeling marginally more similar to others when they used expressive pseudonyms ($M = 3.69$, $SE = .11$) than when they used information pseudonyms ($M = 3.40$, $SE = .11$), $F(1, 244) = 3.50$, $p = .063$, $\eta^2 = .014$; but there was no trending difference by pseudonym type in the individuating information conditions, $p = .482$.

Disinhibition. For participants' reports of benign disinhibition, there was a significant main effect of information about others, such that participants who did not receive individuating information about others reported more benign disinhibition ($M = 3.46$, $SD = .99$) than did participants who received individuating information about others ($M = 3.18$, $SD = .95$), $F(1, 500) = 11.32$, $p = .001$, partial $\eta^2 = .022$. This main effect was qualified by an interaction, $F(1, 500) = 5.19$, $p = .023$, partial $\eta^2 = .010$, such that the effect was present when they did have a personally-expressive pseudonym, $F(1, 239) = 14.37$, $p < .001$, partial $\eta^2 = .057$, but not present when participants did not have a personally-expressive pseudonym, $F(1, 261) = .66$, $p = .419$, partial $\eta^2 = .003$. In this way, benign disinhibition follows the same overall pattern as do participants' reported impression concerns and feelings of similarity in this study.

Forum thread helping behavior. Binary logistic regressions were performed on participants' likelihood of entering the help thread first, replying to the help thread twice, confronting the harasser, and encouraging the essay author, to determine the extent to which participants helped others in the forum setting. The regressions included the experimental manipulations, their interaction (except for the helping-first measure, which involved only the pseudonym manipulation), and the effect of participant sadism as a continuous predictor.

Because the manipulation of information about others occurred only when participants first encountered others in the forum after they entered the helping thread, the logistical regression for the entering the helping thread first measure included only two predictors, pseudonym type and sadism. The effect for pseudonym type was not significant, $p = .658$ (see Table 5.4). There was an effect for sadism, $\text{Exp}(B) = .753$, $p =$

.034, such that participants who were higher in sadism were less likely to enter the help thread first.

Based on findings from previous studies in the dissertation (see Study 2, Chapter 3), I performed a supplementary analysis that examined the potential role of perceptions of others' recognizability as a mediator of the relationship between sadism and choosing the help thread first. This analysis, conducted using PROCESS Model 4 (Hayes, 2017) and 5000 bootstraps, revealed a significant indirect effect of sadism on helping first through perceptions of others' recognizability, Indirect Effect = $-.0694$, 95% CI $[-.1553, -.0064]$. Inclusion of the mediator (perceptions of others' recognizability) on the significant direct effect between sadism and helping first ($\text{Exp}(B) = .75, p = .034$) resulted in that direct effect becoming nonsignificant, $\text{Exp}(B) = .82, p = .145$; thus, the effect of sadism on helping first was fully mediated by perceptions of others' recognizability. Analysis of the alternative path (sadism mediating the effect of perceptions of others' recognizability on helping first) did not reveal a significant indirect effect, Indirect Effect = $.0347$, 95% CI $[-.0103, .0874]$. This result suggests that higher levels of sadism were related to a lower likelihood of helping first because participants higher in sadism saw others as being less recognizable.

Although the direct effect of pseudonym type on helping first was not significant, I also explored the indirect effect of pseudonym type on helping first through perceptions of others' recognizability. The analysis found a significant indirect effect of perceptions of others' recognizability, Indirect Effect = $.0551$, 95% CI $[.0078, .1438]$. Participants in the expressive, as compared to the information, pseudonym condition perceived others as

more recognizable, which in turn predicted a higher likelihood of choosing the help thread first.

For whether participants replied to the help thread twice, a binary logistic regression containing the experimental conditions (pseudonym type and other-user information), sadism, and the pseudonym type x other-information interaction did not reveal any effects or interactions, all $ps > .11$.¹

Binary logistic regressions containing the experimental conditions, their interaction, and sadism revealed no statistically-significant differences by experimental condition on participants' likelihood of confronting the harasser in the thread or encouraging the original author, all $ps > .10$.

Discussion

This study was designed to investigate further the effects of manipulating pseudonym type on participants' perceptions of, feelings about, and behavior toward others online by examining the potential interactive effects of pseudonym type (information vs. expressive) and the type of information (generic or individuated) given about others. Additionally, the study explored the association of individual differences in sadism (Buckels et al., 2013) with participants' relationship to others and prosocial behavior online.

Participant sadism had small but consistent effects overall, such that participants who reported being higher in sadism generally perceived others as less recognizable, reported less prosocial feelings toward others on the forum, and were less likely to enter the help thread first (a primary measure of prosocial behavior). The significant relationship between sadism and helping first on the forum was mediated by sadism's

relationship to perceptions of others' recognizability, such that participants higher in sadism saw others as less recognizable, and this effect on others' recognizability influenced behavior, such that participants higher in sadism were less likely to help first. Previous research suggests that people who are higher in sadism tend to be less sensitive to interpersonal cues, such as detecting and interpreting the emotional expressions of others (Pajevic, Vukosavljevic-Gvozden, Stevanovic, & Neumann, 2018), which could potentially be related to a weaker tendency to recognize others online as distinct individuals. This lack of social sensitivity may be a key process that contributes generally to people higher in sadism being more aggressive toward others online (Buckels et al., 2014) and, in the present study, being less prosocial toward others.

In addition, several findings in the present study replicate the results of the pseudonym manipulation in Study 3 (presented in the previous chapter). As was found in Study 3, participants in the expressive pseudonym condition of Study 4, compared to those in the information pseudonym condition, felt more recognizable and believed that their pseudonyms were more self-expressive. Also supporting the results of Study 3, participants thought others were somewhat more recognizable when they expected that others had expressive pseudonyms than when they expected that others had information pseudonyms. The overall effects of the pseudonym manipulation suggest that it is largely successful at influencing participants' perceptions of the recognizability of themselves and others in the forum setting.

Moreover, consistent with the expectation that providing individuating details (vs. generic information in terms of being an MTurk worker) about others on the forum would moderate the effect of the pseudonym manipulation (see Locksley et al., 1980), there was

a 2-way (Pseudonym Type x Other Information) interaction for perceptions of others as recognizable. This interaction qualified the main effect of pseudonym type on recognizability found in Study 3. In particular, when participants were in the information pseudonym condition (in which pseudonyms were not individuating), providing individuating information about others led them to perceive others in the forum more recognizable, relative to providing generic MTurk worker information. When participants were in the expressive pseudonym condition (and may have thus presumed that they were already receiving individuating information about others), providing them with individuating information about others did not lead participants to perceive others as being more recognizable.

This interaction is theoretically interesting in that it demonstrates an individuation effect in an online context in a way that parallels the effect of individuating information demonstrated in a physical context (Locksley et al., 1980). Locksley et al. found that providing participants with even a small amount of information about a target person's traits made them less likely to apply group stereotypes when evaluating the target on criteria for which the group stereotypes were relevant—that is, they individuated the targets.

Although perceptions of others' recognizability did not correlate significantly with three of the four measures of relationship to others (impression concerns, feelings of similarity, and sense of community), two of the measures of relationship to others—impression concerns and feelings of similarity, which did substantially correlate with each other (see Table 5.1)—displayed interaction effects in some ways comparable to but in some ways different from the interaction pattern found for others' recognizability. For

impression concerns, participants with information pseudonyms were somewhat (but not significantly) more concerned about making a good impression on others when they received individuating rather than generic information about the other online participants but, by contrast, participants with expressive pseudonyms reported being significantly *less* concerned about making a good impression when they received individuating information about others rather than generic information that others were MTurk workers. For participants' perceptions of others as similar to themselves, the pattern of the interaction was comparable, in which participants in the information condition rated others introduced with individuating information as more similar than those described generically, whereas participants in the expressive pseudonym condition rated others as significantly less similar in the individuating condition, compared to the generic MTurk worker condition.

Although interaction effects were hypothesized, the particular pattern of the interaction effect that was obtained for impression concerns and similarity among participants in the expressive pseudonym condition—with participants having lower impression concerns and seeing others as less similar when they received individuating information rather than generic descriptions of others—was not anticipated. The interaction pattern seems to indicate that a small amount of individuating information may be effective in leading people to be more concerned about the impressions they make on others and fostering feelings of greater similarity when participants have a pseudonym that is not recognizable as personally meaningful (an information pseudonym). However, when participants are identifiable with a personally expressive pseudonym, additional individuating information can negatively affect these aspects of

relationship to others. This latter result resembles the “less is more” effect on disclosure between strangers in interpersonal (non-online) social interaction found in other research (Norton, Frost, & Ariely, 2007). Norton et al. (2007) demonstrated that, in physical social interaction contexts, there is not a linear positive effect of learning information about others and feeling socially connected with them; instead, sometimes additional information about another person serves to give evidence to a perception of dissimilarity between the observer and the target, which leads to less liking. Norton et al. proposed that when people already have developed a sense of familiarity with others, additional information can induce people to see the other person as more distinct and thus more dissimilar, reducing the sense of personal connection.

Exchanging information, including deeply personal information, in online anonymous settings (such as PostSecret) can enhance a sense of closeness to others (see Culén, Finken, & Gasparini, 2014), but it is possible that the effect of individuating information, generally, may be moderated by the nature of an online context. That is, there may be an optimal level of information to provide about strangers online in pseudonymous settings, one that serves to individuate others but does not alienate the person receiving the information, and that optimal level may vary as a function of what participants perceive as the nature and goal of the interaction. My findings may indicate that, in the context of compensated participation in a study of “online interaction” which takes place in a forum format, learning even seemingly trivial bits of individuating information can have an adverse effect for online social relationships, perhaps because when participants are already individuated by expressive pseudonyms additional individuating information (about situation-irrelevant personal preferences) may have

been perceived as unnecessary and distracting from the task at hand. When such additional information is irrelevant or inappropriate in a particular online setting, it may be likely to promote perceptions of differences (Norton et al., 2007) and dissimilarity (as I found) rather than personal closeness. Consistent with this interpretation, recent research has demonstrated that if the online setting seems an inappropriate one for sharing such information, self-disclosure does not lead to greater feelings of closeness to the same extent that it does when the setting is deemed appropriate, and can actually serve to reduce feelings of social closeness instead (Lin & Utz, 2017).

Whereas this explanation focuses on the potential effect of introducing individuating information, another interpretation for the pattern of results associated with the pseudonym type x other-information interaction effects observed in the current study is that the generic information about others, indicating that the other participants were also MTurk workers, could also have exerted a systematic effect on how participants thought and felt about others in the online forum. Hogg and Hains (1996), for example, proposed that feelings of social connection can develop through collective mechanisms (e.g., perceiving others as members of one's ingroup) as well as through interpersonal processes (e.g., appropriate self-disclosure). The next study in this dissertation, Study 5, investigated the potential impact of group-related processes on participants' behavior toward others in the forum setting.

As in Study 3, there were no significant main effects or interactions of the experimental manipulations on participants' prosocial behaviors in Study 4. Significant point-biserial correlations between self-report measures of prosociality and measures of prosocial behavior did exist (see Table 5.3), but the magnitudes of these effects were

generally small. However, there was also a significant negative correlation between sadism and participants' likelihood of helping first, which was mediated by perceptions of others' recognizability. Perceptions of others' recognizability was influenced by the experimental manipulation of pseudonym type. Although these results were not entirely consistent with hypotheses, in that participants with expressive pseudonyms and participants who viewed individuating information about other users did not directly display more helping behavior than participants in the other conditions, earlier studies also did not find consistent differences in helping behavior as a function of pseudonym type. Pseudonym manipulations in prior studies have led to significant (in Study 1 and Study 2; see Chapter 3) or marginally significant (in Study 3) direct effects of pseudonym type on helping first, but these pseudonyms were of different types than the ones in the present study (i.e., assigned to participants or chosen from a list in Studies 1 and 2; designed by participants to be "unique" in Study 3).

One potential reason why prosocial feelings only weakly related to prosocial behavior on the forum in the research presented in previous chapters of my dissertation and in the present study is that the dynamics of prosocial behavior online may differ from those in physical contexts. In physical settings, people are often motivated to act prosocially toward others based on relationship considerations, such as feel closer to them (Rachlin & Jones, 2008) or being more concerned about making a good impression (Grant & Mayer, 2009). By contrast, online prosociality may be more strategic than is prosociality in physical settings, potentially due to the more limited information about others that is available online, which may limit the kinds of emotional bonds developed particularly in brief, task-oriented online encounters. For example, in physical contexts,

people respond in a more deliberative, egoistically-motivated manner (weighing the personal costs and rewards for helping or not helping) when they have some level of distance (physically or emotionally) from the person in need or the circumstances that create the need for assistance (Dovidio, Piliavin, Gaertner, Schroeder, & Clark, 1991). As a consequence, online prosociality may involve different types of actions than those that have been included based on work on interpersonal helping in physical settings. Thus, the next study, Study 5, included a larger number of more varied prosocial behaviors, including opportunities to offer relatively easy indirect forms of helping that limit the person costs for helping that may be inhibiting offers of assistance in other ways (see Dovidio et al., 1991).

Study 5 also further investigated an alternative explanation for the effects of the experimental manipulation in Study 4. The interpretation of the results of Study 4 was that the manipulation in which unique information was provided about others in the session, compared to generic information that participants were MTurk workers, affected outcomes by promoting individuation. The alternative explanation pursued in Study 5, motivated by the unexpected decrease in prosocial feelings when participants received individuating information about others with expressive pseudonyms, considers how the differences across these two conditions could be due, at least in part, to creating group-related cues with the generic information that all participants on the forum shared group membership as MTurk workers. That is, telling participants that others are MTurk workers—such as themselves—could be seen as relevant information, making salient a form of shared social identity, in interpreting social dynamics in the forum setting. From this perspective, greater prosociality elicited toward members of one's own ingroup

(Brewer, 2017), could account for why participants had prosocial feelings (impression concerns, similarity, and sense of community) toward others on the forum when commonality as MTurk workers (particularly when they had expressive pseudonyms) were made more salient compared to when different aspects of the individuals were emphasized. This interpretation may not explain the overall pattern of findings as well as the “less-is-more” interpretation of Study 4’s results, but the role of group-related cues on orientations toward others online that is suggested by some of the findings in Study 4 appeared sufficiently promising to pursue in Study 5.

Study 5

The primary goal of Study 5 was to investigate the possibility that providing generic MTurk worker information, compared to information that distinguishes individual forum participants from one another, in Study 4 could have been seen as a group-related social cue, which could have affected how people behaved online. Considering this possibility might help to explain the distinctively strong feelings of similarity and impression concerns observed in the generic MTurk worker/expressive pseudonym condition in Study 4. Simply perceiving others as ingroup members (e.g., as sharing membership in the social category, MTurk workers) elicits a range of favorable impressions and prosocial feelings toward others (Brewer, 2017), and these responses can become even more pronounced when ingroup members experience conditions that involve more meaningful exchanges (e.g., with expressive rather than informational pseudonyms) between one another that can help make their functional relationship and connection more salient (Gaertner et al., 2016). Thus, rather than (or in addition to) the “less is more” phenomenon (that is, that receiving too much information about another person can serve to alienate oneself from them; Norton et al., 2007) that may occur when those on the forum are individuated by providing distinctive task-irrelevant information, receiving extra information about ingroup members, whom people tend to perceive as heterogeneous (Dovidio & Gaertner, 2010; Mullen & Hu, 1989), through expressive (vs. informational) pseudonyms may produce particularly positive orientations toward others in the forum.

To help disentangle the effects of the potential group-based effect of providing non-individuating information by describing people on the forum all as MTurk workers

from the effect of individuated impressions of others, the primary hypothesized process in Study 4, Study 5 investigated participants' strength of identification as an MTurk worker as a potential moderating factor. According to Social Identity Theory (Tajfel & Turner, 1979; see Hogg, Abrams, & Brewer, 2017), because people derive self-esteem from their membership in a group, they tend to value and respond more positively to members of their group more than to others not perceived to be ingroup members. Critically, Social Identity Theory posits that this ingroup favoritism will be greater among people who identify more strongly with their group, because they feel that their personal esteem is more closely tied to their membership in the group (see Hewstone, Rubin, & Willis, 2002). Thus, in Study 4, to the extent that information that all participants are MTurk workers operated as a group-related cue that aroused processes of ingroup favoritism, in Study 5 the degree to which participants identify as an MTurk worker would be expected to systematically moderate how they respond to other participants on the forum. Specifically, work on Social Identity Theory suggests that, in the condition in which they learn explicitly that others on the forum are MTurk workers (but not in a condition in that emphasizes individual identities), participants who identify more strongly with this ingroup would display greater prosocial feelings and behaviors toward others in the setting (Tajfel & Turner, 1979).

Furthermore, compared to Study 4, I provided participants in Study 5 with more options for punishing the forum harasser than simply direct confrontation, such as seeking to punish the harasser, either by informing an authority figure or by engaging in social exclusion. Specifically, in addition to an opportunity to directly confront the harasser, I also gave participants an option to covertly inform the experimenter of the

harasser, or to refuse to work with the harasser in a future interaction. These covert forms of punishment could allow participants who are unsure of how to respond to a context with limited information—that of a very brief text exchange—the opportunity to mark a behavior as harmful without risking embarrassment through direct confrontation.

Rather than vary pseudonymity as expressive versus non-expressive, a factor that was manipulated in Study 4, all participants in Study 5 were instructed to use expressive pseudonyms because it was the pseudonym condition in which I found that participants in Study 4 tended to be more prosocially-oriented in the generic MTurk worker information (shared group identity) condition than the individuated information condition. Study 5, replicating the procedure of Study 4, varied whether participants were informed that they were all MTurk workers (as was the participant) or were given individuating information about others on the forum. In Study 5, I also included a second manipulation designed to make group or individual identity salient. In particular, when the task was described to participants, it was framed either as being a series of online interactions with other MTurk workers (i.e., other members of the participants' own group, which made their group membership salient), or it was framed as a series of online interactions with other individuals (which did not make group membership salient). The information manipulation (having others online identify themselves as MTurk workers or with individuating information) and the framing manipulation (having the research described as studying interactions among MTurk workers or among individuals) were crossed. The measures and experimental manipulations introduced in Study 5 were expected to provide a more nuanced understanding of the group-related effects in Study 4, as well as additional information on how online settings can influence prosociality.

My overarching goal for Study 5 was to determine the extent to which making shared group identity salient by emphasizing shared group identity (through the type of information given about others, through framing, or both) operates as a social identity cue that, particularly among participants more highly identified with being an MTurk worker as a social identity, leads participants to behave more prosocially toward others on the forum. The design that I employed permitted a partial replication of the Study 4, relating to whether participants using expressive pseudonyms who were explicitly told that others on the forum were also MTurk workers would show more positive orientations than those who were given individuating information about others. In addition, the inclusion of the framing manipulation to emphasize social or individual identity potentially offers an opportunity for a conceptual replication of Study 4. I explored whether the information and framing manipulations have separate, additive, or interactive effects on perceptions of others on the forum and prosocial feelings and behaviors. For example, an interactive effect would be revealed if the condition in which participants received individuating information from others and the study was framed as being about interactions between individuals differed in results from all of the other conditions in which the information exchanged and/or the framing cued shared identity, with these latter conditions not different from each other. If the effects of Study 4 were conceptually replicated within the design of Study 5, it would be expected that participants would feel greater prosocial feelings toward others with individuating information when they were told that others were members of their own group than when others' individuality was emphasized, consistent with ingroup liking (Hogg et al., 2017). Additionally, manipulating perceived

group membership would be expected to allow other prosocial effects of providing individuating information to arise and potentially interact with group effects.

I had several overarching expectations for main effects in the experimental design. First, I expected that, because of its activation of a group-related social identity, the group-related framing of the forum task would make people more report more prosocial feelings than would the individual framing. Furthermore, I expected that a group-related context could make participants more likely to help others (Balliet, Wu, & de Dreu, 2014). From the results of Study 4, I expected that giving individuating information to participants could lead to them reporting less prosocial feelings overall, given that all of the pseudonyms in Study 5 were expressive, and this effect was found for expressive pseudonyms in Study 4. In terms of expected interaction effects, I expected that group framing might be particularly impactful for increasing participants' prosociality when they already have a strong group identity, because a strong group identity could serve to motivate people to help those perceived as members of their ingroup.

Additionally, as in Study 4, I expected that giving personal information about others to people who were already in a strongly self-expressive setting—either individualist framing or weak group identity—could lead to less prosocial feelings. I expected also that there would be a three-way interaction such that the strength of participants' group identities would matter primarily for the three conditions in which social identity was made salient (either through framing, group-related information, or both) but would not matter as strongly in the condition in which no group information was made salient. I also had an alternative hypothesis for this interaction. It is also

possible that participants who are higher in group identity as an MTurk worker, because they are more chronically attuned to group membership, may generally perceive an experiment conducted on MTurk more readily as a group situation. Consequently, receiving individuating information about others through an individualist framing or individuating information would be perceived as receiving additional information about ingroup members, while those low in identification as an MTurk worker would show a similar “too much information” effect as in Study 4 when receiving individuating information about others.

The practical implications of this research are wide-ranging. Understanding group-related pro- and antisociality online can help people seeking to collaborate with others online to best leverage their personal information to encourage affiliation in others, while maintaining a relative sense of privacy. More broadly, knowledge of the mechanisms involved in group dynamics online may help forum administrators and social media managers to create strategies, rules, and environments in which new members are welcome to interact and integrate into the online community. In addition, such findings could inform policies for social websites that could encourage people on those websites to act more prosocially toward website members who are outside their perceived ingroup.

Method

Participants. Participants were recruited from Amazon’s Mechanical Turk (MTurk) service to take part in a study on “online interaction” in which they would supposedly be interacting with other participants on a separate forum website after answering a few survey questions. The sample included 414 participants (145 men, 266

women; mean age = 36.68, $SD = 11.66$; 70.77% White, 9.66% Black, 5.80% Latino/a, 3.38% East Asian, 1.45% South Asian, 0.97% Pacific Islander, 1.45% Native American, 5.56% mixed-race/multiracial/other).

Procedure

After completing the consent form, participants were randomly assigned to see one of two sets of instructions about the task: one that framed the task in individualistic terms (saying that the forum setting “allows individuals to converse with each other” and that “other individuals participating in the study” had made forum posts that they would be reading; $N = 219$), or one that framed the task in group-based terms (saying that the forum setting “allows people to converse with other members of their group” and that “Turkers participating in [their] group” had made the posts they would be reading; $N = 195$; see Supplemental Materials).

Across framing conditions, participants then created a pseudonym that was “as descriptive of [themselves] as possible,” as in Study 4. That is, every participant used a pseudonym reflective of the expressive pseudonym condition in Study 4; this was designed to allow the study to provide additional information on the negative effect of receiving individuating information that was occurring within the expressive pseudonym conditions in Study 4.

In line with the cover story that participants would be leaving the survey to do another activity, participants next clicked a button on the survey page that would supposedly take them to a forum website where they would interact with other study participants. The webpage, and the materials presented in it, represented the next stage of the experimental procedure.

On the forum webpage, participants were given a choice of two threads to enter. One of the threads had a subject line that indicated that a person was requesting help proofreading an essay (“Can anyone help me proofread my essay?”; the experimentally-relevant help thread), and the other was associated with a subject line indicating it was a thread in which people could tell jokes to each other (“Does anyone have jokes to share?”; a filler thread). These forum threads were identical to those used in Study 4, using the excerpt from Harber’s (1998) college-level essay on parental controls. As in earlier studies, I recorded whether participants entered the help thread or the filler thread first as a measure of measure of a participants’ priority for helping others.

To manipulate the extent to which others on the forum felt recognizable to the participants, I varied the information displayed about them, as in Study 4. When participants entered the first thread they chose, they were randomly assigned to one of two presentations of information about others on each forum post: posts either displayed generic information about their author that was the same for everyone in the study (that everyone was an “MTurk participant”; $N = 208$; generic MTurk worker condition), or random task-irrelevant personal information about their author (e.g., “Prefers waffles to pancakes”; $N = 206$; personal-information condition); in the personal-information condition, three users’ information displayed “Is here from MTurk” to remind participants, as in the generic MTurk worker condition, that the supposed other forum members were also from MTurk. The information about users that was displayed to participants was identical to that presented in Study 4.

After each reply submitted, participants were given the option to report any inappropriate behavior, as a behavioral measurement of norm enforcement via

punishment. This measure was included to provide a more nuanced measurement of participants' prosocial motivations; by reporting inappropriate behavior to the experimenters, participants could potentially contribute to a system of punishing bad behavior on the forum without the personal risk inherent in confronting someone who was behaving inappropriately.

When participants entered the help thread (as either the first or second thread they chose), they saw three previous responses to the thread: one unhelpful (a supposed participant saying they could not help), one mildly helpful (another supposed participant recommending that the essay writer fix a few common grammatical errors), and a third who made a mildly-objectionable comment in which another supposed participant laughed disparagingly and claimed not to know even where to begin in correcting the essay. I included this ostensible member of the online forum both to allay suspicion (as a small number of Study 4 participants thought it was odd that the replies in the help thread were so positive overall), and to measure participants' responses to a more ambiguous case of inappropriate behavior than the open harassment they also encountered. Participants were then given a chance to respond to the thread themselves, but given the findings of Study 1 and 2 that revealed no major differences in the types of help thread responses across pseudonymous conditions, and given that all pseudonymous conditions in this study were persistent, the responses of interest for analysis were actually produced at the next step of the procedure. Participants were also asked to report inappropriate behavior to the experimenters. Of interest was whether or not participants would find the mildly disparaging behavior of one of the previous commenters to warrant reporting.

After submitting their reply and reporting behavior to the experimenters, participants who had just responded to the help thread were then told they had been “randomly selected” to return to the thread, and that they could reply again, or they could opt out by leaving the response section blank. In order to maintain the cover story that study participants were engaging on a forum with other participants, they were told that other participants may have also responded to the thread while they were writing their original reply. Upon returning to the thread, they saw that another supposed participant had responded to the thread and was harassing the essay author.

As behavioral measures of prosociality (that is, participants’ tendency to act in ways that benefit forum members other than themselves; Batson & Powell, 2003; Batson, Ahmad, & Stocks, 2011), it was recorded whether participants responded to the thread a second time, and if they did, two raters unaware of condition (contingency coefficient = .651, 96.01% initial agreement, with disagreements decided by a third rater unaware of condition) recorded whether they confronted the harasser or the harasser’s conduct (e.g., by telling harassers that they were being rude or mean, or by remarking generally to the essay author that negative comments should be ignored), and whether participants encouraged the essay author in the face of such criticism (e.g., by telling the essay author not to give up, or that posting the essay for others to critique showed personal awareness and a desire to improve).

After responding to both the help thread and the filler thread, participants were redirected “back to the survey” to complete a questionnaire on their experiences. First, participants indicated if they were interested in completing a potential second study with the same group of people with whom they had just interacted. If participants indicated

that they were interested, they were provided with a list of pseudonyms including those used for the posts that they read in the forum setting, and they were able to indicate whether they were interested in interacting with each person again, or if they did not want to interact with each person again. This paradigm was designed to give participants the opportunity to exclude other users from future interactions, and decisions to exclude the essay author (as a measure of whether they would refuse to help the user again), the creator of the mildly-disparaging comment, or the harasser were noted for subsequent analysis. For the purposes of the study, both explicitly excluding and not including a person on the list were considered to be exclusion behavior.

In order to measure the extent to which the experimental manipulations influenced participants' perceptions of themselves and others in the forum environment, the questionnaire also included measures, for which participants indicated their agreement on scales ranging from 1 (not at all) to 6 (very much), of personal connection to pseudonym (e.g., "On the forum, I felt like my screenname reflected some aspect of me online"; $\alpha = .928$), personal recognizability ("I believed I was identifiable to other users on the forum," "I believed I had a distinguishing characteristic that allowed other forum users to identify me"; $r[404] = .504, p < .001$), others' recognizability ("I expected that users using a certain screenname in one place on the forum would also use it in other places on the same forum"; "I believed that others on the forum would switch to a different screenname with each post they made" reverse-scored ; $r[408] = .09, p = .068$), private self-awareness (e.g., "Rather than thinking about myself on the forum, my mind was distracted by my task and what was going on around me"; $r[409] = .223, p < .001$), knowledge contribution (e.g., "I contributed knowledge to the online forum community";

$r[409] = .60, p < .001$), and sense of community (e.g., “To what extent, if at all, did you ever have a sense of ‘being there with other people’ in this community?”; $r[408] = .79, p < .001$) as in Studies 1, 2, 3, and 4, measured on a scale of agreement with survey items from 1 (not at all) to 6 (very much). The study also included measures for participants’ concern about making a good impression on other forum users (e.g., “I cared a lot about how I presented myself to others on the forum”; $r[410] = .74, p < .001$), and items measuring the extent to which participants felt similar to other forum users (“To what extent, if at all, did you feel similar to others on the forum?”; $r[410] = .67, p < .001$), on the same 1-6 scale as the other items. As in previous studies, participants’ trait sadism was measured using items and the five-point agreement scale from Buckels, Jones, and Paulhus (2013); $\alpha = .616$. Sadism was measured after the experimental manipulations, and because analysis revealed a difference by experimental condition, as detailed below, it was not included as a moderator for this study.

In addition to measures from previous studies, a measure was added containing nine items (e.g., “How similar do you feel to Turkers as a whole, in terms of general attitudes and beliefs?”, “How much do you identify with being a Turker?”; $\alpha = .927$) measuring ingroup identification strength—in this case, strength of identifying as a member of MTurk’s participant community, or “Turker”—based on items from the Common Ingroup Identity Questionnaire (Hogg & Hains, 1996). Because the extent to which participants expected the task to be group-related was directly manipulated, this measure was included both to adjust for participants’ variable strength of identifying as a member of the relevant group, and to investigate its potential as a moderator of the dependent variables.

Results

Preliminary analyses revealed no systematic effects for participants' gender or age; consequently, gender and age were not included in subsequent analyses. Moreover, the order in which participants experienced the two forum threads (the help thread and the filler thread) did not systematically affect the other dependent variables, so the data were collapsed across forum thread order, and participants' order of visiting the forum threads was analyzed only as a dependent variable. There were no consistent main effects or interactions associated with participant gender, so it was not included as a factor.

As in previous studies, the self-report dependent variables of particular theoretical interest for the experiment involved participants' perceptions of recognizability: (a) their own recognizability, (b) the recognizability of others, and (c) participants' perception of their pseudonyms as being personally-expressive. The behavioral measures of primary theoretical interest once again focused on participants' prosocial behavior: participants' likelihoods (a) of visiting the help thread first, (b) of replying twice to the help thread, (c) of providing encouragement to the author, and (d) of confronting the harasser—either directly or indirectly. Additionally, as in the earlier studies, participants' perceptions of themselves and others were analyzed: participants' sense of community and knowledge contribution, as well as participants' concerns about making a good impression on others, and participants' feelings of similarity to others.

Bivariate correlations were performed to analyze the relationships between the continuous dependent variables of interest. As indicated in Table 5.5, most self-report measures of prosociality were positively correlated with each other. Feeling recognizable was positively correlated with self-reported prosociality but negatively correlated with

Included below are the bivariate correlations of benign and toxic disinhibition with dependent variables of interest in Study 5, with a focus on replications of previous disinhibition results. As found in all previous studies in this dissertation, benign disinhibition was positively and significantly correlated with perceived expressiveness and sense of community; it was also positively correlated with knowledge contribution, which is consistent with Studies 1, 2, and 4. In Study 5, benign disinhibition was not correlated with a sense of being recognizable, unlike Studies 2, 3, and 4. The correlation with sadism is similar to that found in Study 4, and it may reflect the larger sample sizes of these two studies in comparison to Studies 1 through 3. Toxic disinhibition's positive correlation with sadism remained consistent with previous studies, but Study 5 also revealed a negative correlation of toxic disinhibition with others' recognizability that was not significant in Studies 1, 3, and 4, but was significant in Study 2.

Table 5.6. Bivariate correlations between disinhibition subscales and dependent variables of interest in Study 5.

Correlations									
	Benign Disinhibition	Toxic Disinhibition	Private Self-Awareness	Recognizable Self	Recognizable Others	Perceived Expressiveness	Sense of Community	Knowledge Contribution	Sadism
Benign Disinhibition		.296**	-.036	.061	-.033	.107**	.357**	.218**	.145**
Toxic Disinhibition			-.056	.010	-.147**	-.060	.035	-.050	.249**
** $p < .01$									
* $p < .05$									

As indicated in Table 5.7, contingency coefficients were calculated between dichotomous behavioral measures. Analysis revealed that replying twice, confronting the harasser, and reporting the harasser were significantly associated with excluding the harasser from future interactions and excluding the author of the thread from future

interactions. The directions of these associations were such that people who replied twice, who confronted the harasser, or who reported the harasser were more likely to exclude the harasser from future interactions than those who did not; and people who performed these actions were less likely to exclude the author from future interactions. Confronting the harasser was also associated with reporting the harasser such that people who confronted were more likely to report than people who did not confront. Reporting another individual in the thread who responded mildly negatively was also associated with reporting the harasser, such that people who reported the mildly negative individual were more likely to report the harasser than those who did not. Helping first and encouraging the author were not significantly associated with any dichotomous behavioral measures.

Contrary to Study 4, in which greater likelihood of replying to the help thread first was correlated with perceptions that the participant was less recognizable and that others were more recognizable, replying to the help thread first was not correlated with any continuous behavioral measures in Study 5. However, greater likelihood of replying twice to the help thread was positively correlated with perceptions of oneself as being recognizable, feelings of similarity to others, sense of community, and knowledge contribution, although not perceived expressiveness or private self-awareness; thus, there is some replication of Study 4 in Study 5's finding of correlations between replying twice and feeling personally recognizable, and between replying twice and expressing general prosocial feelings toward others. Also notable was the extent to which participants' self-reported confrontation correlated positively with likelihood of performing prosocial behaviors, such that participants who reported greater levels of confrontation were not

only more likely to confront the harasser in a replying message, but were also more likely to report negative behavior (both the mildly-negative individual and the harasser) and to exclude the harasser from future interactions, and were less likely to exclude the author of the help thread from future interactions. Participants' perceptions of others as recognizable and participants' ingroup identity strength did not directly correlate with any dichotomous behavioral measures.

Participant sadism. Unlike in previous studies, a univariate ANOVA containing the experimental manipulations revealed a main effect of experiment framing on participant sadism, $F(1,403) = 6.58, p = .011$, such that participants who were told that the experiment was group-based ($M = 1.72, SE = .05$) reported more agreement with the sadism scale than did participants who received an individualist framing ($M = 1.54, SE = .05$). No other effects or interactions were significant, all $ps > .45$. However, the main effect by condition meant sadism was unsuitable as a moderator in this study.

Ingroup identification strength. Because a univariate ANOVA revealed no main effects or interactions by experimental condition for participants' ingroup identification strength, all $ps > .40$, participants' ingroup identification strength was included as a moderator in binary logistic regressions for the behavioral measures, along with the experimental conditions and their interactions. Ingroup identification strength was also included as a moderator in linear regressions for the continuous dependent variables.

Tables containing the regression coefficients for the self-report and behavioral measures are available in the appendix.

Perceptions of self and others. Similar to the other studies in this dissertation, analyses were performed on participants' feelings of private self-awareness, perceived expressiveness of pseudonym, feelings of personal recognizability, sense of community, reported knowledge contribution, feeling that others were recognizable, feeling similar to others, and feeling concerned about making a good impression on others, in order to measure the extent to which the experimental manipulations influenced participants' feelings about, and perceptions of, themselves and others.

In the first step, to parallel the analyses of Study 4, the outcomes of interest were examined by testing the effects of the two manipulated independent variables, the manipulations of individuated versus group-related information and whether the experiment was framed as about individual or within-group exchanges, and their potential interaction (without considering the effect of the moderator, group identification) by performing a series of univariate ANOVAs.

The ANOVA revealed a main effect of experiment framing condition on participants' reported sense of community, $F(1,402) = 4.63, p = .032$, such that participants who were told that the forum activity was group-based ($M = 3.89, SE = .09$) felt more of a sense of community than did participants who were told that the forum activity was individualist ($M = 3.61, SE = .10$). There was no effect by personal information condition (similar to the null result found in Study 4) and no interaction, $ps > .64$.

The ANOVA also revealed a main effect of experiment framing on participants' reported feelings of similarity with other forum members that followed the same pattern, $F(1,408) = 4.91, p = .027$, such that participants in the group-based framing ($M = 3.74, SE = .08$) felt more similar to others than did participants in the individualist framing ($M = 3.48, SE = .09$). There was no effect by personal information condition (similar to the null result found in Study 4) and no interaction, $ps > .25$.

Additionally, the univariate ANOVAs revealed no differences by experimental condition on participants' reported perceived expressiveness of their pseudonyms (all $ps > .17$), feeling personally recognizable (all $ps > .27$), feeling that others were recognizable (all $ps > .17$), feeling concerned about making a good impression on others

(all $ps > .64$), or contributing knowledge (all $ps > .12$). These findings are consistent with the null results found in Study 4 for comparisons of the other-information conditions.

Ingroup identification strength was included as a moderator in linear regressions for the self-report measures, which were performed by experimental condition and ingroup identification strength, including all interactions.

The linear regressions did not reveal any main effects of the experimental manipulations for any of the self-report measures, all $ps > .19$. For all aforementioned self-report measures except for perceptions of others' recognizability, there were significant main effects of ingroup identification strength (all $ps < .05$; see Tables 5.6-5.11 in the appendix), such that higher levels of ingroup identification strength were associated with higher levels of the self-report measures.

The linear regressions revealed a marginal two-way interaction on participants' reported knowledge contribution between ingroup identification strength and the receipt of personal information about other users, $B = .277$, $SE = .146$, $p = .059$. The interaction was such that for those low in ingroup identification strength, there was a slight trend toward reporting less knowledge contribution when participants received personal information about other users, $B = -.304$, $SE = .226$, $p = .179$, but the opposite trend was present for those high in ingroup identification strength, $B = .310$, $SE = .216$, $p = .153$, such that receiving personal information made these participants somewhat more likely to contribute knowledge. These results, while modest, are consistent with the expectation from Study 4 that receiving personal information about others may be useful in promoting helpful behaviors for those who already feel they are part of a group, while those who do not feel they are part of a group may socially withdraw upon receiving

additional information about others. Study 4 did not demonstrate main effects or interactions of the experimental manipulations for knowledge contribution, but other measures that were expected to be similar to knowledge contribution, such as impression concerns and similarity to others, did demonstrate effects of the experimental manipulations consistent with this pattern.

In addition, the regression revealed a significant main effect of ingroup identification strength, $B = .241$, $SE = .107$, $p = .025$, such that those who identified more strongly with their group also reported more knowledge contribution. No other main effects or interactions were significant, all $ps > .19$.

Adjusting for ingroup identification strength also revealed a marginal two-way experimental interaction in linear regression for participants' reported feelings of similarity with other users, $B = -.375$, $SE = .219$, $p = .088$; the individualist and group-based framing conditions varied significantly when participants also received personal information, such that those in the individualist condition felt less similar to others than did those in the group-based condition, $B = -.414$, $SE = .159$, $p = .010$, while the two conditions did not differ when participants did not receive personal information, $B = -.039$, $SE = .152$, $p = .798$. Within framing conditions, neither personal-information group differed significantly from each other, $ps > .20$. The overall trend suggests a similar pattern to that found with knowledge contribution, such that participants who are primed to think of themselves as part of a group make use of personal information to feel more similar to their peers, perhaps out of a desire to seek social connection, while those who are primed to think of themselves as separate from others make use of personal information to make themselves feel more distinct. In addition, the regression revealed a

significant main effect of ingroup identification strength, $B = .480$, $SE = .108$, $p < .001$, such that those who identified more strongly with their group also felt more similar to others on the forum. There were no other significant main effects or interactions, all $ps > .28$.

Measures of prosociality and self-interest. I performed analyses on participants' likelihood of entering the help thread first, replying to the help thread twice, confronting the harasser, encouraging the essay author, reporting inappropriate behavior in both its mild and blatant forms, and excluding the harasser or the help thread author, to determine the extent to which participants felt or behaved antisocially or prosocially in the forum setting.

Because a univariate ANOVA revealed no main effects or interactions by experimental condition for participants' ingroup identification strength, all $ps > .40$, I included participants' ingroup identification strength as a moderator in binary logistic regressions for these behavioral measures, along with the experimental conditions and their interactions.

The logistic regressions for confronting the harasser and encouraging the author of the thread revealed no main effects or interactions, all $ps > .16$.

For replying twice to the help thread, the logistic regression revealed a significant three-way interaction involving the two manipulated independent variables (information and framing) and the continuous predictor (ingroup identification strength) on whether participants replied twice to the help thread, $\text{Exp}(B) = 2.255$, $p = .032$. The interaction, depicted in Figure 5.4, was such that for those who identified strongly with their ingroup, there was a marginally significant Information x Framing interaction, $\text{Exp}(B) = 3.142$, p

= .054. When the activity was framed in an individualist manner, receiving additional individuating information about other users made high-ingroup-identifying participants somewhat more likely to reply twice than were high-ingroup-identifying participants in the group-based framing condition, $\text{Exp}(B) = 2.188$, $p = .070$, with an overall interaction between ingroup identification strength and framing condition that was significant, $\text{Exp}(B) = 1.706$, $p = .042$; by contrast, high-ingroup-identifying participants did not significantly differ by condition when they did not receive additional individuating information, all $ps > .31$. There was no interaction by experimental condition for participants low in ingroup identification strength, $\text{Exp}(B) = .517$, $p = .263$. This interaction is consistent with the hypothesis that providing individuating information would only relate to a higher likelihood of prosocial behavior among those who perceived the interactions as taking place in a setting with which they identified strongly, relative to the prosocial behavior of those who did not identify strongly with the group. However, the “too much information” effect hypothesized for low-ingroup-identifying participants, such that receiving individuating information about others in an individualist setting would serve to decrease the likelihood of prosocial activity relative to not receiving such information, was not found for this behavioral measure.



Figure 5.4. Two bar graphs depicting the percentages of low-ingroup-identifying participants and high-ingroup-identifying participants, as determined by a median split, replying twice to the help thread within a 2 x 2 cross of the experimental conditions.

Considering the hypothesized effects from a different perspective, I examined the relationship between strength of MTurk identification within each of the four combinations of the information and framing manipulations. To the extent that people respond differently to individuating information when interactions online are perceived as interpersonal (as suggested by the “less is more” effect; Norton et al., 2007) than when it

is perceived as an ingroup exchange (in which information about others may be valued), a relatively strong, positive relationship with the likelihood of replying twice (in terms of a point-biserial correlation) would be expected within the individual information-individualistic framing condition, in which high-MTurk-identifiers would likely still tend to view the exchange as an ingroup interaction. Indeed, this was the only condition in which participants with stronger ingroup identification were significantly more likely to reply to the help thread twice, $r(90) = .22, p = .035$. In the condition in which other participants were described as MTurk workers and a group framing of the study was emphasized, there was a nonsignificant positive relationship, $r(107) = .07, p = .505$. In the other two conditions, individualistic framing with others being described as MTurk workers ($r[85] = -.09, p = .419$), and group framing with others having individual information ($r[95] = -.08, p = .448$), the relationships were negative and nonsignificant. Thus, this finding is consistent with the hypothesis that people not viewing the interaction as taking place within their group would be less likely to offer help than would those who perceived the interaction as being within their group.

For participants' likelihood of reporting the harasser to the experimenters, the logistic regression including the moderator revealed a marginal two-way interaction between framing condition and ingroup identification strength, $\text{Exp}(B) = .599, p = .091$, such that for those who identified relatively weakly with their ingroup, receiving an individualist framing made them somewhat more likely to report the harasser than when they received a group-based framing, $\text{Exp}(B) = 2.466, p = .059$, but there was no such difference for those who identified strongly with their ingroup, $\text{Exp}(B) = .792, p = .596$. Furthermore, the regression revealed a marginal main effect of ingroup identification

strength, $\text{Exp}(B) = 1.543$, $p = .065$, such that those who identified more strongly with their ingroup were somewhat more likely overall to report the harasser. This tendency suggests that the interaction found with framing condition is such that low-ingroup-identifying participants were being more motivated to report the harasser in the individualist framing condition, rather than demotivated from reporting in the group-based framing condition. That is, reminding low-ingroup-identifying participants that they were interacting with other group members may have been an ineffective cue for motivating them to enforce social norms via punishment. No other main effects or interactions approached significance, all $ps > .13$.

For participants' likelihood of reporting the mildly-disparaging user to the experimenters, the logistic regression including the moderator did not reveal any significant main effects or interactions, all $ps > .10$.

For participants' exclusion of the essay author from a future interaction, the logistic regression revealed a significant main effect of experiment framing, $\text{Exp}(B) = 1.972$, $p = .032$, such that, among those who opted in to a future interaction, participants who received an individualist framing were more likely to exclude the essay author than were participants who received a group-based framing. No other effects or interactions were significant, all $ps > .22$.

Discussion

Whereas Study 4 manipulated participants' individuated versus group-related experiences by varying the nature of the information about others in the forum, Study 5 included that manipulation plus another experimental manipulation, which was intended to conceptually parallel the information manipulation, of whether the study was explicitly

framed as one examining interactions between individuals or between members of the same group (MTurkers). In Study 5, at the step in the analyses in which just these two experimental manipulations were considered, only the framing manipulation had significant main effects: Framing the study as an interaction among members of the same group, compared to exchanges between individuals, produced a stronger sense of community and greater feelings of similarity to others among participants, and it made participants somewhat less likely to exclude the person on the forum who requested their help.

However, some effects observed in Study 4 did not appear in Study 5 as a function of the manipulation of information about others (or of the manipulation of how the experiment was framed for participants). Specifically, the experimental manipulations in Study 5 did not significantly influence participants' perceptions of others or themselves as being more recognizable or personally-expressed in the forum setting. In addition, as in previous studies, most behavioral measures did not show any main effects or interactions of the experimental conditions. Because sadism was measured after the manipulations and was affected by the framing manipulation, the effects of individual differences in sadism, which were considered in Study 4, were not examined in Study 5.

One possible reason why the manipulation of information about others that emphasized either individual preferences or commonality as MTurk workers had much more muted effects in this study than in the previous one (Study 4) is that this information was always presented in Study 5 in combination with a direct statement, presumably by the person in charge of the study, an authoritative source. Previous work has shown not only that statements by a more authoritative source are generally found to

be more persuasive (Sutherland, 1992; Tredinnick & Laybats, 2017), but also that information that is more explicit and direct limits the impact of information that requires inferences, even about the same issue (as in the formation of expectation states; Berger & Wagner, 2017). Thus, in the current study, the inclusion of the framing manipulation likely diminished the impact of the information manipulation, compared to its effect in Study 4.

Whereas the interpretation of the results for Study 4 focused on the dynamics of feeling individuated online and the hypothesized “too much information” effect (paralleling results found in studies showing “less [information] is more” in producing personal connections in social interactions; Norton et al., 2007), Study 5 was designed specifically to explore how group-related processes might also contribute to the dynamics of online interactions. Social identity theory (Tajfel & Turner, 1979) and self-categorization theory (Turner & Reynolds, 2011) posit that individuals possess both an individual identity, in which unique personal qualities in one’s self-concept are activated, and a social identity, in which the self-concept is derived from membership in a group, and both may be simultaneously salient to varying degrees. Thus, beyond the influence of having too much information having a negative effect in interpersonal exchanges, an additional influence in the interactions examined in Study 4 could be that participants who were under the impression that they were interacting with members of their ingroup reacted more positively to receiving individuating information about other ingroup members, such that they felt more connected to others and displayed more prosocial behavior.

To test more directly the effects of group-based processes (as suggested by work in social identity theory; Tajfel & Turner, 1979; see also Hogg et al., 2017), in Study 5 I also examined the direct and potentially moderating effects of individual differences in participants' strength of identity as MTurk workers in Step 2 of my analyses. When considered along with the experimental information and framing manipulations, ingroup identification strength had a positive direct effect on self-report measures of prosociality: Participants who were higher in ingroup identification strength felt more similar to others, reported more knowledge contribution and confrontation of the harasser, and felt more recognizable and self-expressed by their pseudonyms. This set of findings is consistent with a large body of research showing that people who are more strongly identified with their group are more supportive of other members of their group and are more willing to engage in actions for their benefit (Hogg et al., 2017; note, this is not the same as ingroup-outgroup differences in behavior, it is about how identity strength predicts pro-ingroup behavior). The results of Study 5 thus implicate substantial group-based influence in how participants responded to others on the online forum.

In Study 5, I also considered the possibility that strength of identification as an MTurk worker would also interact with the framing and/or the information about others manipulation. Specifically, I posited that participants low on ingroup identification, who would tend to see the online interactions as between individuals would generally respond less positively to "too much" information about others (Norton et al., 2007) unless the situation was otherwise framed a group-related interaction. In contrast, those high in MTurk identity would generally respond more positively to more information about others because they may tend to view interactions in the context of MTurk studies

generally as group-related. I observed only one relevant interaction—an Identification x Framing x Information interaction—for participants' likelihood of replying twice to the help thread. The interaction was such that receiving two individuating cues non-additively intensified effects, relative to receiving only one individuating cue, for people who strongly identified as members of the MTurk worker ingroup. Specifically, for these participants, receiving one individuating cue (either that others on the forum had individuating information under their pseudonyms or that the activity was between individuals) did not lead to a significantly greater likelihood of replying twice to the help thread compared to receiving no individuating cues (i.e., the condition in which no individuating information about others was provided and the study was framed as involving interactions between group members), but receiving both cues did lead to a statistically-significantly greater likelihood of replying twice, compared to when there were no individuating cues. The pattern of findings for this interaction was generally consistent with previous work showing that people low the strength of ingroup identity tend to respond to others in an individuated way whereas those high in identification tend to behave in group-based ways.

In addition to the other implications of the findings of Study 5, it is also notable that the MTurk worker group identity was strong enough to provide ingroup-related effects for those who strongly identified as an MTurk worker, even though MTurk workers do not necessarily interact with each other or interact only minimally (Amir & Rand, 2012) in MTurk studies. For research generally, the MTurk worker group identity is a topic that has only recently begun to receive systematic empirical attention. The emerging research (e.g., Almaatouq, Kraft, Dunham, Rand, & Pentland, 2019) suggests

that the context in which MTurk workers interact may be better understood as an intragroup context than as one between strictly anonymous individuals. For example, in this research, a participant simply being aware that the people they are working with are from the same crowdsourcing website as the participant can increase the likelihood of prosocial behavior relative to not having this information. The results of Study 5, specifically the positive relationship between ingroup identification and prosocial feelings in an MTurk setting, suggest this as well. In terms of online interactions, these results indicate the often-overlooked importance of group identity on prosociality.

General Discussion

The collective goal of Studies 4 and 5 was to understand the interpersonal and intragroup influences on how learning about others in an online forum can affect the ways online participants think about themselves, as well as how they respond to others online. To this end, in addition to informing participants about others' pseudonyms, Studies 4 and 5 included individuating information about others in the online setting. Study 4 focused specifically on the roles of individuating information (versus common information that others were MTurk workers) and expressive pseudonymity (vs. nonexpressive, informational pseudonymity)—both factors that emphasize individual, rather than social, identities (Dovidio et al., 2013)—in encouraging prosocial feelings and behavior online. Study 5 expanded upon the findings of Study 4 by including an additional manipulation that framed the work as about individual or group processes and investigating the role of the strength of participants' ingroup identity with others on the forum. Study 4 investigated everyday sadism as a moderator for prosociality, and Study 5 focused on ingroup identification strength as a moderator for prosociality. Overall, the

studies found support for there being an optimal amount of personal information to receive about another person online—particularly when one does not feel a strong sense of ingroup cohesion with this other person. When individual identities were emphasized, individuated information about others in the forum appeared to be “too much information” (Norton et al., 2007), which served to discourage, rather than encourage, prosocial feelings. By contrast, when group identity was salient, receiving personal information about others in the forum did not have these more negative effects. Thus, the findings of Study 5 serve to parallel in an online setting the effects found in in-person settings by Norton and colleagues (2007).

In several important ways, Study 5 serves as a conceptual parallel to Study 4. Specifically, the experimental design of Study 5 allows its effects to delineate the extent to which participants in Study 4 were affected by group-based influences as well as by individuating factors. In Study 4, it appeared that participants were making inferences about the group-based context given the information they were given about other participants (i.e., that they were either MTurk participants or had some sort of individuating feature) and were acting according to whether or not the activity seemed to be taking place within their own group (i.e., MTurk participants). In Study 5, a parallel but even more direct manipulation—that of telling participants explicitly whether the activity was with other group members or with other individuals—illustrated participants’ group-based behavior to an extent that it rendered the subtle cue from Study 4 generally non-operative in influencing participants’ prosocial feelings. In both Study 4 and Study 5, giving participants the impression that they were in a group-based context generally led

to greater likelihoods of prosocial behavior, and higher reported prosocial feelings, than did giving participants the impression that they were in an individualistic context.

Although group-based considerations are certainly important in understanding participants' behavior in online contexts, it is worth noting that Study 4 also contributes to the dissertation's understanding of how perceptions of others can influence prosocial behavior. In particular, Study 4 revealed a mediation pathway by which perceptions of others as being more recognizable, as influenced by their use of personally-expressive pseudonyms, can increase the likelihood of feeling prosocial inclinations and engaging in prosocial behavior. Thus, it is likely that both perceptions of others as individuals and perceptions of others as members of one's group tend to work in concert in a given situation, with both factors contributing to whether or not a participant will engage in prosocial behavior or report prosocial feelings. Additional research is needed to determine whether these effects influence each other additively or non-additively. For example, a study could manipulate cues of others' individuality and others' group identity salience in a 2 x 2 crossed experiment (low vs. high individuality, low vs. high group salience; for example, by using explicit group/individualist framing and an activity that either asks people about themselves generally (high individuality) or about their MTurk worker status (low individuality), respectively) and directly investigate the individual and joint effects of both factors. Learning about the relative impact of both factors could help people present their social information in ways that encourage more prosocial behavior from others.

The findings of Study 4, particularly the relatively weak relationship between prosocial feelings and prosocial behavior in the study, suggested that participants were

deploying helping resources strategically, rather than indiscriminately, online, perhaps due to the limited amount of information available about others or because of a greater impression of social distance (Dovidio et al., 1991). Thus, Study 5 included additional behavioral measures that involved options that did not require direct confrontation and allowed them to express negative responses indirectly, such as reporting the help-thread bully to the experimenter (prosocial) or excluding the author of the help thread from a future interaction (self-interested). The effects of the experimental manipulations on these measures were still modest, with the only significant effect being that participants in the condition framed as individualistic were more likely to exclude the help thread author. However, with respect to the individual difference measure of ingroup identification with MTurk workers, participants who identified more strongly as members of the ingroup of MTurk workers behaved more prosocially on these less-direct measures. These behavioral measures also correlated significantly and positively with self-report measures of prosociality, such as reported confrontation, impression concerns, sense of community, and knowledge contribution.

Additional findings from Study 5 suggest that participants who more strongly identified as an MTurk worker tended to consider their involvement in the online forum to be more group-related, even when it was framed in terms of interactions with other individuals. Consistent with the broader literature on how strength of identification related to orientations toward other ingroup members (Hogg et al., 2017), participants who identified more strongly as an MTurk worker in Study 5 not only showed some evidence of prosociality behaviorally but also felt more connected to others on the forum (perceiving greater similarity and feeling more recognizable to others) and perceived

themselves as more helpful (reporting greater knowledge contribution and confronting the harasser more strongly). Indeed, there were cues in the situation that made an inference about the collective nature of the context reasonable. Participants were aware that the study recruited participants from the MTurk worker pool and had to conform to MTurk guidelines.

The results of Studies 4 and 5 concerning the role of group identity as an MTurk worker have implications for the meaning and interpretation of MTurk research beyond this dissertation. For instance, even when experimenters describe a study in terms of interpersonal interactions, participants may still experience the encounter as ingroup behavior rather than as an interaction between anonymous individuals. This finding extends previous research that has shown that participants on MTurk are more willing to provide help to fellow MTurk workers, compared to people with whom they did not share an identity (Almaatouq et al., 2019). Thus, being an MTurk worker seems to be an identity that can be made salient by circumstances present in a given study, and that participants holding this identity (and especially participants who hold this identity strongly) will more readily display prosocial behavior toward people presumed to be in the ingroup. It should not be assumed, then, that studies taking place between MTurk workers (or those suggested to be MTurk workers) are experienced by participants as interactions between unidentified strangers but may rather be considered as exchanges between ingroup members unless explicitly indicated otherwise (e.g., by telling MTurk workers that they are not working with other MTurk workers on the task or making group membership irrelevant). This presence of ingroup identity could also extend to other crowdsourced research platforms, such as Prolific (a website that, like MTurk, helps

researchers collect responses from tens of thousands of participants online; Prolific, 2020).

Recognizing the potential group-based nature of research using MTurk workers may appear to represent an additional limitation of recruiting participants through online services, such as MTurk or Prolific for the generalizability of findings for some types of studies, such as work on how people form impressions of others with whom one has not direct connection. However, this approach may be helpful for understanding essential elements of how people think about and behave toward others in a time in which people engage substantially with one another over social media. Social media use in developed countries is generally high (with 72% of American adults using some form of social media website as of February 2019; Pew Research Center, 2019), with people using a variety of social media websites (e.g., Facebook, which is used by 69% of American adults) regularly. Furthermore, social media websites generally include regular opportunities for group-based interactions, such as with memberships delineated for friend groups, for individuals with shared interests (as with Facebook's "Pages" feature), or connections with others through tools that allow a user to view how their friend network may connect them to people who would otherwise be total strangers (as on Twitter and other sites that show a user shared followers or friends). It is possible, then, that acknowledging group-based influences in MTurk studies should not uniformly be considered a limitation for researchers; rather, this aspect of social interaction between participants could be viewed as enhancing generalizability of findings to the types of interactions people have online through group-based social media.

Overall, the results of Studies 4 and 5 suggest that although there is generally an optimal amount of personal information to receive about others online, such that too little and too much both have less positive effects in terms of prosocial feelings and behavior, the potential to be given too much information about others tends to apply mainly to those with whom one does not share an ingroup. For ingroup members, receiving extra personal information tends to engender more prosocial feelings and behavior than receiving group membership information alone, and this effect is more pronounced for those who identify strongly with their ingroup than for those who do not. Study 4 also demonstrates that the extent to which this extra information (particularly in the form of expressive pseudonymity) makes others seem more recognizable serves to mediate the relationship between information and prosocial behavior. These results are consistent with effects suggested by Social Identity Theory, and they extend the theory to intragroup contexts online. The subsequent chapter, Chapter 6, will discuss in greater depth the theoretical and practical implications of these findings.

Footnotes

¹ The regression on participants' likelihood of replying twice to the help thread was conducted again without sadism. The logistic regression containing only the experimental conditions and their interaction revealed a marginal main effect of pseudonym type, $\text{Exp}(B) = 1.57, p = .081$. Consistent with expectations, participants were somewhat more likely to reply twice when they had an expressive pseudonym (52.26%) than when they had an information pseudonym (43.45%). The main effect of other-information condition and the interaction were not significant, all $ps > .61$.

Apart from this case, excluding sadism from the analyses of the dependent variables did not change the pattern or significance of the results.

² Exclusion of ingroup identification strength as a moderator did not change the pattern of the results in Study 5. However, a regression excluding this moderator did reveal a marginal main effect of experiment framing on participants' likelihood of excluding the author of the essay, $\text{Exp}(B) = 1.753, p = .063$, such that those who opted in to a later interaction (which did not vary by experimental condition, all $ps > .42$) were somewhat more likely to exclude the essay author when the experiment was framed as individualist than when it was framed as group-based. Thus, framing the activity as individualist may have increased self-interested motivations such that participants did not want to interact with someone needing their help again. No other effects or interactions were significant, all $ps > .71$. These null results are similar to those found in Study 4.

Chapter 6:

General Discussion

The research presented in Studies 1 through 5, contained in Chapters 2 through 5, was conducted with the goal of better understanding processes of personal identity and social identity as they took place in pseudonymous, rather than anonymous, settings. In my research, pseudonymity is broadly defined as using an identifiable name that is different from one's real name, and anonymity involves not using an identifiable name of any kind. I investigated the differences between pseudonymous and anonymous interactions online because the standard social psychological understandings of online interactions still depend heavily on theories developed for anonymous settings (e.g., the Social Identity model of Deindividuation Effects; SIDE; Postmes, Spears, & Lea, 2002), and because improving the psychological model of online identity has broad implications for the social-media-saturated society of today. I also examined how group identity and personal identity can interact in pseudonymous settings, to build upon the expectations of group and personal identity that have been created for anonymous settings by prior research, such as the SIDE model.

Overall, my research revealed that pseudonyms markedly influence users' impressions of identifiability, both for themselves (Studies 1 and 2) and for others (Study 3), and that these impressions—and the group context in which they are given—serve to influence both prosocial and antisocial behavior. The extent to which individual- or group-based behavior is activated depends on the framing of the setting, the extent to which a user identifies as a member of the group (Study 5), and whether or not the pseudonym the user has is personally-expressive or not (Study 4). Specifically, I found

that pseudonymous users behave significantly more prosocially than do anonymous users online (Study 1), and that the type of pseudonym people use, as well as the type of pseudonym they expect others are using, also significantly increase prosocial behavior in systematic ways (Study 2). Moreover, individuating other people in the setting through personal disclosures can prompt both prosocial behavior and increased feelings of recognition of others (Studies 3 and 4); conversely, group-based behavior can be prompted by reminding users of a relevant, shared group identity among people in the setting (Study 5).

The results of my dissertation research offer insights into the processes underlying interactions among individuals and between groups online. These findings have important implications for understanding online social behavior online, including the aspects of online interaction that promote the formation of friendships and communities. Practically, the results of my dissertation research have further potential in being applied to social website design.

In this chapter, I (a) briefly summarize the pattern of empirical findings across the chapters in the dissertation, (b) identify general limitations of the dissertation research, and (c) discuss promising future directions for research building on my dissertation work.

Summary of Empirical Findings

My dissertation examined how both the nature of pseudonyms and individual differences in sadism relate to a range of perceptions, feelings and behavior online. Previous research on self and identity suggests that self-expressive pseudonyms may serve to remind users of behavioral standards they value, such as behaving altruistically by helping others; furthermore, pseudonyms that are persistent over time should

encourage users to behave more prosocially because of the pseudonyms' ability to preserve recognizability of their users. In addition, previous research on Dark Tetrad traits (antisocial personality motivations, one of which is sadism; Buckels, Jones, & Paulhus, 2013) has indicated a correlation between these negative personality traits—particularly sadism—and antisocial behavior online, such that increased Dark Tetrad traits predict increased antisocial behavior (Buckels, Jones, & Paulhus, 2013). The findings of my dissertation studies are, overall, consistent both with these expectations and with an overarching theoretical model that includes direct effects of pseudonymity versus anonymity—and persistent pseudonymity versus temporary pseudonymity—on prosocial behavior, as well as mediation effects of recognizability of self and others, and both moderating and direct effects of sadism, particularly in self-report measures of prosociality. The findings for the behavioral measures are generally a bit more complex, which will be addressed below.

Effects of the nature and duration of pseudonyms. Consistent with my expectations, the persistence of a pseudonym—whether it is used across multiple interactions or for only one interaction—significantly influences the pseudonym-user's behavior and perceptions of self and others in an online setting. Study 1 (Chapter 2) investigated the extent to which having a persistent pseudonym, compared to a temporary pseudonym or no pseudonym (anonymity), influenced participants' eagerness to help another user, their likelihood of providing practical or emotional help to the user (operationalized as providing a solution to the problem or sympathy, respectively), and their feelings of personal connection, sense of community, knowledge contribution, and altruism. From my analysis of previous studies on users' reputational concerns and

identity formation, I expected that participants with persistent pseudonyms would prioritize helping others more than would those with temporary pseudonyms, which was supported by the findings of Study 1. Furthermore, compared to anonymous users, participants with persistent pseudonyms were more likely to offer a solution to the person in need of help, and those with temporary pseudonyms were somewhat more likely to express sympathy.

The increase in expression of emotional support in the case of temporary pseudonyms relative to persistent pseudonyms was not hypothesized, but it is consistent with theories of benign disinhibition (Suler, 2004). Benign disinhibition involves a feeling of freedom to express oneself in an honest way in order to connect with others, regardless of differences in status in face-to-face interactions (e.g., “[online] it is easier for me to express my true feelings and thoughts”; Udris, 2014). Benign disinhibition could have manifested in my research in that participants might feel freer to express sentiments that could make them vulnerable when they have the potential to change their pseudonym. By contrast, having a persistent pseudonym could mean such disclosures could be tied to them in the future, perhaps leading to embarrassment or exploitation.

As anticipated from my overarching expectations of pseudonyms serving to express the self and thereby prompting behavior in line with the user’s internalized expectations for social situations, both participants with persistent pseudonyms and those with temporary pseudonyms felt a greater sense of personal connection to their online presence than did anonymous participants, and these feelings of personal connection mediated the relative increase in their helping behaviors. Those with persistent

pseudonyms also felt more of a sense of community, and they reported more feelings of altruism and more of a sense of having contributed their own knowledge in the situation.

Participants' expectations for the persistence of others' pseudonyms mattered as well. Study 2 (Chapter 2) investigated, using a 2 x 2 design the extent to which having a persistent pseudonym, compared to a temporary pseudonym, and being told that others had either persistent or temporary pseudonyms would influence prosocial behavior, motivations, and impressions of others as in Study 1. It also extended Study 1 by including measures for thoughts about others on the forum, as well as trait sadism as a moderator. I included sadism as a moderator because of its link to antisocial behavior online (Buckels, Jones, & Paulhus, 2013). Given the findings of Study 1 and previous psychological work on helping others when they are more visible (see Kogut & Ritov, 2005), I expected that participants' behavior would be influenced by their perceptions of others as being identifiable online. Consistent with this expectation, Study 2 showed that participants overall—and particularly those with persistent pseudonyms—were more likely to prioritize helping others when they also expected others were using persistent pseudonyms. The effects of others' pseudonyms on participants' priority for helping were mediated by participants' perceptions of others as identifiable.

In addition to participants' behavior being influenced by others' identifiability, others' identifiability also mediated two trending differences between participants with temporary pseudonyms and participants with persistent pseudonyms. The mediation was such that those with persistent pseudonyms were more likely to go to the help thread first and were also more likely to offer a solution to the problem, based on their perceptions of others in the thread as being identifiable. That is, participants appear to have assigned a

higher priority to helping others when they could be recognized as the person who did the helping (through a persistent pseudonym's reputation), and when they could recognize another person as being the one they helped. Perception of self and other also appeared to be somewhat mutable by consideration of mutual identifiability; not only did others seem more identifiable when they had persistent pseudonyms, but others also seemed more identifiable when the participants themselves had persistent pseudonyms. In terms of understanding altruism online, it appears that although reputational concerns do contribute to altruistic motives, users may also be motivated by the related but distinct potential to form relationships with others online.

In addition to the persistence of pseudonyms, the extent to which a user felt a given pseudonym was descriptive of their inner self, compared to using a pseudonym that did not have such meaning, also significantly influenced behavior, perceptions, and engagement in the setting. Study 3 (Chapter 3) aimed to expand upon the findings of Studies 1 and 2 by allowing participants to use personally-expressive pseudonyms, and comparing participants' feelings while using those pseudonyms to participants' feelings while using unique or personally-relevant but non-expressive pseudonyms; in this way, using this study I also sought to add to existing psychological understanding of identity expression online. Although Study 3's results were modest, the study's results did demonstrate that participants using personally-expressive pseudonyms felt more personally connected to their online presence, compared to participants using pseudonyms that were merely unique or pseudonyms that contained personally-relevant but non-expressive information. This finding was consistent with my expectation from personal identity theory (Hitlin, 2003) that pseudonyms connect to the self through

personal expression, rather than the effort used to create them or their mere relevance to the self.

In Study 3, personally-expressive pseudonyms also made participants feel somewhat more identifiable than did relevant-information pseudonyms, and as in Study 2, it is possible that participants' expectations that others were also using personally-expressive or unique pseudonyms made them feel that others were more identifiable than in the relevant-information pseudonym condition. It is also possible that participants' perceptions of themselves as identifiable led them to expect that others would be more identifiable independently of the type of pseudonym they expected others would be using; however, given that the influence by condition on participants' perceptions of others as identifiable was actually stronger (i.e., more statistically-significant) than was the effect on perceptions of oneself as identifiable, and that perceptions of others as identifiable did not differ between unique and personally-expressive pseudonyms, it is likely that participants believed others on the forum shared their pseudonym condition. This egocentric understanding of the experimental setting was not surprising, given the findings of Study 2.

Users' feelings about the extent to which their own pseudonym described themselves were a notable factor in determining social perceptions in interactive online settings, but the information received about other users also played a role in the impressions people formed about communities online. This information interacted with users' feelings about the expressiveness of their own pseudonyms. Study 4 (Chapter 5) investigated the extent to which using a personally-expressive or non-expressive persistent pseudonym along with receiving personal or non-personal information about

others (crossed in a 2 x 2 design) influenced participants' perceptions of identifiability, self-presentation concerns, and feelings of similarity, along with prosocial behavior. Consistent with my expectations for providing individuating information to participants from existing psychological research (Kunda & Sherman-Williams, 1993; Singletary & Hebl, 2009), I found that participants who did not have personally-expressive pseudonyms thought others were more identifiable when they received personal information about others. However, in contrast to these expectations, participants who had personally-expressive pseudonyms felt that receiving personal information about others made others relatively *less* identifiable than when they received the same generic information about everyone else on the forum. Piloted questions on a subset of participants suggested that for participants with personally-expressive pseudonyms, these effects were linked to perceptions of group membership rather than to individuation of other users. Participants with personally-expressive pseudonyms seemed to interpret the receipt of generic information about others as a signal that everyone was a member of the same group (MTurk workers), but receiving personal information about others, even though it was not group-relevant, led to feelings that others were potential members of different groups from the participant; such feelings were not present in the conditions where participants had pseudonyms that were not personally-expressive. This same pattern extended to concerns about self-presentation, such that participants with personally-expressive pseudonyms who received generic information about others felt most concerned about making a good impression. Participants with personally-expressive pseudonyms who received generic information about others also felt most similar to others of the four conditions.

The counterproductive effect of providing personal information about others to participants who had personally-expressive pseudonyms on perceptions of others' identifiability, participants' concerns about making a good impression, and participants' feelings of similarity to others was investigated further in Study 5 (Chapter 5). Study 5 used the same basic design as Study 4, but focused on participants with personally-expressive pseudonyms and their preexisting feelings of group membership. In addition to manipulating whether others were presented as being individuals or as being members of the same group, the study also measured the extent to which participants themselves identified as a member of the relevant group—that of being an MTurk worker—as a moderator. Study 5 also manipulated participants' expectations of group-based interaction by framing the task as one that was either group-based or individualistic, such that the conditions were crossed in a 2x2 design: group framing by information given about others. This study found that the influence of information given about others varied by context; after adjusting for the extent to which participants identified as a member of the group already, effects arose that indicated that participants given an individualistic framing of the activity seemed to feel alienated by the inclusion of personal information about others. Relative to those who received personal information about others in a group-based context, these participants felt somewhat less similar to others on the forum. Framing of the activity had effects of its own as well: participants in the individualist framing of the activity were more likely to exclude the user who had asked for help from a future interaction than were participants in the group-based framing of the activity, and the individualistic framing led to decreased feelings of similarity and sense of community, and increased reporting of trait sadism. Given these results, it may be

possible that individualistic messages to users of social websites could unintentionally encourage more antisocial—or, at least, self-interested—behavior.

However, the effects of context and personal information on participant behavior were moderated by the extent to which participants identified as a member of the relevant group (being an MTurk worker). For those who identified strongly with being a member of that ingroup, framing the activity in an individualist manner led to increased prosocial behavior, in that participants were more likely to reply twice to the help thread; furthermore, receiving personal information about others in the individualist framing also led to decreased feelings of deindividuation among these high-ingroup-identification participants. For those who did not identify strongly with being a member of the ingroup, receiving personal information about others reduced their reported knowledge contribution relative to those who did not receive personal information. For these same participants, receiving a group-based framing of the activity did not increase their likelihood of enforcing norms to the level of those who identified strongly with the ingroup—rather, they required an individualist framing of the activity in order to enforce norms. Thus, individualistic framing in messages given to website users may have usefulness in specific situations, such as encouraging established users to behave collaboratively or prompting users on the fringes of a given group to report bad behavior.

Given the pattern of effects obtained in Study 5, it is possible that the counterproductive effect of providing personal information encountered in Study 4 was the result of participants entering the study in a somewhat individualistic state of mind. In such a mindset, receiving information about other participants—without receiving any reminder that they were all MTurk workers—may have made them feel more

disconnected from the community that was ostensibly forming on the forum, particularly if they were already low in identification as a member of the overall group of MTurk workers. This scenario runs counter to common psychological expectations of personal disclosure in general, as it is often seen as a way to effectively form social bonds both in face-to-face contexts (Bauminger, Finzi-Dottan, Chason, & Har-Even, 2008; Kito, 2005) and online (see Davis, 2012; Hollenbaugh & Ferris, 2014). Rather, such disclosures may serve to emphasize the differences between people in the online setting, particularly among users who do not have a strong sense of group identity, and may result in alienating these users.

Disinhibition: Toxic and benign. The results of my dissertation also support the important distinction proposed by Suler (2004) between toxic and benign disinhibition. Toxic disinhibition reflects the tendency of a person to behave in ways that may harm others due to a perceived lack of consequences, as reflected in scale items by Udris (2014) such as, “There are no rules online, therefore you can do whatever you want.” By contrast, benign disinhibition reflects the perception that one is free to connect with others genuinely, regardless of differences in status that may be present in more formal or face-to-face interactions, as reflected in scale items by Udris (2014) such as, “[Online,] it is easier for me to express my true feelings and thoughts.”

Meta-analytic tests across my five dissertation studies revealed that toxic disinhibition and sadism were positively associated, mean $r = 0.297$, $z = 12.21$, $p < .001$, and that participants who reported greater toxic disinhibition perceived others as less recognizable, mean $r = -0.127$, $z = -4.39$, $p < .001$. Both of these effects are consistent with the expectations informed by prior research.

Meta-analytic tests related to benign disinhibition revealed that, across the dissertation studies, people who scored higher on benign disinhibition felt that they were more recognizable, mean $r = 0.159$, $z = 6.38$, $p < .001$, perceived greater expressiveness of their pseudonym, mean $r = 0.155$, $SE = 0.025$, $z = 6.23$, $p < .001$, experienced a stronger sense of community, mean $r = 0.355$, $z = 14.81$, $p < .001$, and believed that they made a greater knowledge contribution, mean $r = 0.226$, $z = 9.17$, $p < .001$. Benign disinhibition and sadism were positively related, mean $r = 0.100$, $z = 3.98$, $p < .001$, but the magnitude of this effect was much weaker than it was for toxic disinhibition. For the benign disinhibition measure, the positive correlations with self-reported prosocial feelings and perceptions of expressing oneself online are as expected; however, the positive correlation with sadism was unanticipated. It is possible that the construct of benign disinhibition does not encompass solely prosocial behavior; indeed, if the subscale captures the extent to which one feels free to express one's "true feelings and thoughts," it does not preclude those feelings and thoughts from being antisocial or even actively harmful to others. It may be useful to consider "benign" to be a relative term in comparison to "toxic" disinhibition, rather than as a reflection of solely prosocial or positive motivations for behavior online.

Broad influence of participant sadism. In addition to the effects of pseudonym persistence, pseudonym expressiveness, and the impression that users receive about the identifiability or group membership of others in the setting, individual differences between users can also play a role in influencing pseudonymous behavior online. A common moderator of my experimental manipulations more generally was participant sadism, which served to moderate the effects of my experimental manipulations in

Studies 2 and 4, and also had noticeable main effects in Studies 2, 3, and 4. Although the level of sadism in my participants was generally low across studies (as noted in the analyses of previous chapters, all means were below the scale midpoint), I still observed effects based on having a relatively higher or lower level of sadism than the mean. Overall, the patterns of the moderating effect of sadism were such that participants low in sadism were positively influenced by receiving pseudonyms that were more persistent or more descriptive of themselves, but that participants who were higher in sadism did not display improvements in behavior or perceptions of others when they received a more persistent or personally-expressive pseudonym.

Broader implications of the observed effects of sadism arose in Study 5, in which I manipulated the framing of the task such that participants were either led to think of others as members of their own group or as individuals. Participants who were led to think of others as members of their own group displayed higher levels of sadism. People who have a more salient group (vs. individual) identity tend to behave more competitively and exploitatively toward others who are not seen as ingroup members, and particularly so to those seen as members of a different group (Wildschut & Insko, 2007). My finding of differences in sadism as a function of social identity salience also supports the assertions of previous research on online interaction that has underlined the importance of individuating users and reducing the impact of relevant group identities (see Lee, 2006). It further suggests that online communities that seek to increase helping behaviors or prosociality among users may only see effects to the extent that users first think of themselves and others as individuals, and thereby enter the setting with relatively lower levels of sadism than they would if their group identity was primarily salient.

However, given my other findings about the “too much information” effect, it also appears that one’s incoming viewpoint must maintain some aspects of group identity, as a lack of shared group identity may limit the extent to which users are positively influenced by receiving personal information about others and the extent to which they feel a sense of community more generally. Moreover, an overly-individualistic viewpoint (such as one created by framing the situation as being comprised of interactions between individuals) may encourage users to exclude from future interactions those who have asked for help in the past, as was found in Study 5. Thus, it appears an ideal balance between individualism and group identity must be struck. Perhaps such a balance could be attained through providing group-based and individualistic cues based on factors such as existing ingroup identification strength, with strong-ingroup-identifying users receiving cues to individuate others through the receipt of personal information about other users (which should increase their feelings of similarity to others), and weak-ingroup-identifying users receiving cues to promote group affiliation, such as a reminder that everyone on the website is a member of the community, which should limit the potentially negative effects of receiving individuating information about others.

Summary. Overall, the dissertation studies demonstrate that users’ relevant personal and group identities play a powerful role in determining users’ prosocial behavior, both in terms of helping others and in punishing antisocial agents, and that these identities can be activated through personally-expressive pseudonyms and information-providing features of the setting. In particular, personally-expressive pseudonyms, and features that gave personal descriptions of others, appeared to be most effective when users were expressing themselves through their pseudonyms in an

ingroup-centric environment. Personally-expressive pseudonyms can also affect perceptions of the identifiability of oneself and others in the setting, which may serve to mediate the effects of personally-expressive pseudonyms on prosocial behavior; users like to be identified as the person who helped another, and they also like to identify another as the person they helped. Furthermore, although users' personality (specifically, sadism) did play a role—as has been found in previous research on antisocial behavior online (e.g., Buckels, Trapnell, & Paulhus, 2014)—it did not play as large of a role as did other features of the experiments; although trait sadism did act as a moderator in several studies, it was somewhat inconsistent (as in Studies 3 and 5), perhaps due to the relatively low trait sadism among the majority of the people surveyed. With these observations in mind, it is likely that studying the features of online settings, and the ability of users to express themselves and their group membership within such settings, is at least equally important to understanding the behavior of users online as is examining relevant personality characteristics. However, the generalizability of these findings should be considered in greater detail because of aspects of the experimental designs that potentially limit their scope.

Limitations

My research, while directly investigating the research questions posed in my dissertation, has a number of limitations related to its sampling, experimental designs, and procedures. In particular, the opt-in samples used for the experiments limit the generalizability of the results, especially regarding race and age effects, and the experiments failed to replicate established findings with respect to deindividuation in

computer-mediated contexts. These limitations do not jeopardize the internal validity of the research overall and can be addressed in future studies.

Sampling method and demographic limitations. One set of limitations of the dissertation research that applies to all of the studies is that the participants were recruited entirely through Amazon’s Mechanical Turk (MTurk) service. Features of the sampling method and the demographics of the MTurk service limit the generalizability of the findings to the broader population. First, the sampling method is opt-in, and is thus a nonprobability sample. As found by other researchers (see Chang & Krosnick, 2009), such samples display limited external validity when applied to the general population in terms of demographics and knowledge of the research topic. MTurk’s typical American population has been repeatedly sampled to be younger, less religious, more educated, and more liberal than the average American population, with an underrepresentation of Black and Latinx individuals (Berinsky, Huber, & Lenz, 2012; Paolacci & Chandler, 2014; Paolacci, Chandler, & Ipeirotis, 2010). In addition, Studies 1 and 2 focused on the Millennial generation in order to test the social-media-based setting with an age demographic that would likely be more accustomed to it; these studies thus have samples with average ages that are overall younger than an average member of the American population (about 27-28 years old at the time the studies were run, compared to the median American age of about 38; Dimock, 2019; Rogers, 2019).

The relatively restricted age variation in the samples (both due to the relatively young age-skewed population of MTurk and due to research design in Studies 1 and 2) thus limits the generalizability of the results. It is possible that users of different ages may have different kinds of interactions online, or different levels of experience in online

settings, that may change the ways they perceive and react to pseudonyms and pseudonymous others. Although exploratory tests of Study 5 data suggest this may be the case in that younger participants tended to respond more strongly in some ways to the framing manipulation,¹ additional research with participants of a greater age range than that available in MTurk or with a representative sample would provide a more appropriate test for moderating effects of age.

The shortcomings in demographic variation among MTurk-based studies are reflected in my dissertation samples: Over seventy percent of participants in each sample identified as White or European American (i.e., non-Latinx; compared to the 60.1% estimation of non-Hispanic White participants in a representative sample; U.S. Census Bureau, 2019), and most participants were under the age of fifty. It is possible that because of this relatively narrow range of demographics, my research findings are primarily applicable to young or middle-aged White Americans, and that applying the research findings to members of other demographic groups requires additional consideration and study.

The lack of racial diversity may limit the generalizability of the research findings on social identity in particular. One possibility is that the effects of other salient identities to a user beyond their personal expression of self—such as racial or ethnic identities—could affect the strength or readiness with which a user finds a pseudonym to be self-expressive, particularly if the user is reluctant to express certain identities in a given setting and does not incorporate them into the pseudonym. For example, a person with a concealable identity may be less likely to disclose it if they anticipate being stigmatized

because of it (Quinn & Chaudoir, 2009), and most identities are potentially concealable online because of the lack of face-to-face communication.

Another basic way that samples obtained from MTurk may differ from the general population is that participants must be using the service on an Internet-capable device. Thus, using MTurk as a participant pool instantiates a lower limit on participants' technological literacy because potential participants must, at the very least, be sufficiently well-versed in the use of a computer or similar device that they are able to create an account on the MTurk website, which also requires having an email address. Obtaining a sample from MTurk, then, excludes those members of the general population who do not have Internet-capable devices, or those who do not have enough experience with those devices to create a participant account on a website. Such potential participants could behave very differently in studies of online interaction than would participants from MTurk due to their lack of familiarity with the technology and format in use. Furthermore, my sample may differ from the general population in that participants selected the studies from among many other studies on MTurk, with the knowledge that they were studies on Internet interaction. Participants with a particular interest or experience in interacting with others online may have selected my studies over others, thereby increasing the average knowledge of the topic among study participants relative to the general population.

However, these features of using MTurk participants or online participants more generally—such as basic technological literacy and external stimuli from using one's own computer—may make the dissertation research appropriate to generalizing to a more restricted population of interest. The demographics of the MTurk samples in my

dissertation are highly similar to features found among people using social media and websites more generally. Multitasking is prevalent among those using computers, whether between the computer and external stimuli, such as a television (Brasel & Gips, 2011), or between different tasks on the computer itself (Yeykelis, Cummings, & Reeves, 2014). It is also possible that, although the research findings may not be as applicable to the general population due to their overrepresentation of younger White people relative to the overall population of Americans, the demographics of the research samples may be somewhat more representative of Internet users in particular than of the American population more generally. While gaps in the representation of older people and members of racial and ethnic minorities among those using the Internet have closed in recent years, differences still remain, such that the population of Internet users skews younger and more White than the general population (Anderson, Perrin, & Jiang, 2018).

With these differences and similarities in mind, future research should seek to compromise between online opt-in sampling and probability sampling, perhaps by selecting participants randomly from a much larger online community source (e.g., Facebook), or by using an online service that provides representative sampling. Future research could also over-sample groups, such as certain racial groups or LGBTQ people, to better understand the identity effects of pseudonyms with respect to race, sexual identity, or multiple intersecting identities.

Inconsistency in behavioral measures. Although many of the effects found in the dissertation studies were consistent with expectations, other findings were less consistent. In general, behavioral measures did not display systematic significant effects, and the effects that were significant were often moderated by other variables, which

differed by study. Furthermore, the point-biserial correlations between the self-report measures of prosociality and the behavioral measures were generally not significant, and those that were significant were weak. The largest significant point biserial correlation across more than two studies was between sense of community and replying twice to the help thread: $r = .238$ in Study 3, $r = .123$ in Study 4, and $r = .158$ in Study 5.

The limited and inconsistent findings for the effects of the manipulations on behavior within and across studies, along with the generally weak relationships between self-report measures and behavioral measures, suggest that the behavioral measures used in the current research did not adequately capture how self-reported prosocial feelings and assistance are translated into behavior online. One potential reason for the weak relationship between the self-report and behavioral measures might be that self-report measures can be influenced substantially by social desirability concerns (Arnold & Feldman, 1981) or can reflect other influences, such as a desire to be consistent with one's self-concept (Leising, 2011). People may also base their self-reports on their intentions rather than their actual behavior, and the two may be only weakly correlated (Sheeran & Webb, 2016). However, another potential reason for the inconsistent effects for the behavioral measures and their weak relationship to participants' self-reports is that the behavioral measures tapped only discrete aspects of participants' actions—whether or not they engaged in a specific behavior—and did not represent an overall pattern of behavioral response, of which the participant could have been more fully aware (see Montaña & Kasprzyk, 2015). Future research might both use different behavioral measures that map more consistently onto the dimensions of prosociality being

investigated, as well as consider more fully patterns of responses participants might display in response to social situations online.

Relationship to the SIDE model. Although most of the results of my research are in line with expectations drawn from previous work on Internet-based and computer-mediated interpersonal interactions, my research failed to replicate established patterns of users' feelings of deindividuation when interacting via computer, as found in much of the research on the Social Identity model of Deindividuation Effects (the SIDE model; Reicher et al., 1995). The SIDE model posits that people interacting in a computer-mediated context in which they cannot see each other (and who are thereby, according to the model, anonymous) should feel deindividuated, and that this deindividuation should instantiate itself as a relative increase in identification with one's overarching group identity compared to one's sense of personal identity (Lee, 2007). Contrary to the expectations of SIDE, across my studies participants felt more deindividuated when anonymous than when pseudonymous; more deindividuated when using a temporary pseudonym than a persistent pseudonym, or a non-expressive pseudonym than a personally-expressive one; and more deindividuated when framed as being under a group identity than under an individual identity. My research (Chapter 5) showed a marginally significant effect in the opposite direction than was expected for group-based framing, and resulted in no statistically-significant effects supporting the other expectations. Thus, overall, the results of my research are inconsistent with those predicted by the SIDE model.

One reason why the results of my research are inconsistent with the SIDE model because my studies address situations for which the SIDE model was not originally

designed. Specifically, the SIDE model was designed to create expectations for interactions in anonymous settings, rather than pseudonymous ones. The SIDE model itself has been tested less frequently in recent years, as researchers have acknowledged boundary conditions and limitations to its applicability in long-term relationships between users over computer-mediated communication (see Walther, Van Der Heide, Ramirez, Burgoon, & Peña, 2015). In particular, the SIDE model seems to become less relevant as people interact with each other online over time, in spite of its expectations of anonymity; people tend to become familiar with each other and form groups online regardless (Rogers & Lea, 2004). Furthermore, it is possible that merely having a pseudonym, even if it is not persistent or personally-expressive, may allow users to keep their personal identities salient even in situations when they should otherwise feel deindividuated; however, even my research comparing anonymity to pseudonymity did not result in a statistically-significant effect in the expected direction.

Another possibility why my research does not support expectations derived from SIDE is that the processes hypothesized in SIDE do not generalize well to younger people with a large degree of experience in treating computer-mediated settings as social interactions, or to the expectations formed by modern social media more generally. Furthermore, it is unlikely that the increase in group identity strength produced by deindividuating settings could be maintained for an extended period of time, over many interactions, or throughout many personal disclosures on social media. Previous research has demonstrated that people are generally motivated to create distinct social identities and self-categorizations, rather than allowing these self-conceptions to remain uncertain (Hogg, 2016; Hogg & Mullin, 1999).

Another possibility, however, is that these studies did not display the expected effects of the experimental conditions because I did not adequately measure deindividuation. Due to concerns about online participant engagement over the course of the relatively complicated study design, scales with relatively few items were used. The deindividuation measure used throughout these studies was a proxy: a two-item measure of private self-awareness that has been used in previous studies on deindividuation to measure its effects on perceptions of self (Joinson, 2001). Furthermore, other studies of deindividuation have found no differences in private self-awareness, even when participants were supposedly deindividuated (Lee, 2007). However, I did include other measures that, theoretically, should also have been influenced by feelings of deindividuation. In Studies 1 and 2 I assessed participants' feelings of disinhibition, which should have increased in supposedly-deindividuating conditions, but which also did not vary by experimental condition. In Studies 4 and 5, I included a measure of participants' self-conscious concern of making a good impression on others, as related to public self-awareness and feelings of identifiability. Scores on this measure should have been lower in situations that would engender greater deindividuation; however, participants in this condition reported *increased* concern about presenting themselves well to others, along with participants who had personally-descriptive pseudonyms—the opposite of what was expected from deindividuation. It is still possible that none of these measures adequately captured deindividuation or its effects, but it seems more likely that people do not become deindividuated under pseudonymity in the same way that they become deindividuated under anonymity.

Future research may benefit from testing other deindividuation-related measures in pseudonymous communication settings, or even to obtain qualitative data from participants using pseudonyms to investigate whether or not they describe feeling deindividuated in the same way as anonymous participants are expected to feel. Alternatively, to compare the results of pseudonymous interaction with those expected of anonymous interactions in the SIDE model more concretely in the future, experimental studies of a similar design to the later dissertation studies could be run on both anonymous and pseudonymous participants. The dissertation studies focused exclusively on pseudonymous participants after Study 1; potentially, the experimental manipulations added in subsequent studies—such as the inclusion of individuating information about others—could have different effects on anonymous participants as compared to pseudonymous participants.

Future Directions

In this dissertation, I have studied how features of online social contexts, such as allowing users to create self-expressive pseudonyms or to publicly identify as a member of a social group, can influence users' prosocial and antisocial behavior and how these behaviors may serve to help or to hinder the creation of collaborative communities online.

Although my dissertation research focused mostly on how pseudonymity and other social identity cues online can influence positive behavior and attitudes, my future research will build from this foundation to study how these same social identity processes (such as the tendency to feel more connected to members of one's own group when using a personally-expressive pseudonym) may instead promote negative group behavior. For

instance, my research (Chapter 5) has found that people feel more connected to others and are more likely to promote prosociality when they believe the people with whom they are interacting are members of the same group as they are. However, research on group dynamics has also found that members of groups may conform even to negative behaviors promoted by other group members (Crandall & Stangor, 2005) and that contexts of real or perceived competition between one's own group and another group may lead to prejudice and discrimination against the other group (Esses, Dovidio, Jackson, & Armstrong, 2001). This dynamic can be applied to understanding negative group behavior online, not only in terms of the online induction of Internet users into harassment-oriented groups generally but also the radicalization of young White men by White supremacist groups more specifically. I plan to apply the results of this research in creating a series of recommendations for social media website creators and administrators, such that new and existing social media websites—and other websites on which people interact regularly—can be designed and monitored in a manner that promotes positive and collaborative behavior and limits harassment.

The effects of personal goals and existing norms. Future research building on the work presented in this dissertation might also address the extent to which people's goals and the existing norms in a setting serve to influence prosocial behavior online. For instance, additional research might investigate the ways in which prosociality online is influenced by pre-existing expectations for prosociality in a given online social setting, and the extent to which a person might feel motivated to conform to those prosocial norms. Existing research suggests that people are inclined to conform to perceived norms in online settings, such as submitting content anonymously (Culén et al, 2014) or

respecting virtual avatars' personal space according to expectations for interpersonal distance (Yee, Bailenson, Urbanek, Chang, & Merget, 2007). Extending expectations from in-person research, it is reasonable to expect that because people may create goals to affirm existing values through their actions in a given environment (Schwartz, 2010), including engaging in prosocial activities (van Leeuwen & Tauber, 2010), users online may also perform goal-directed behavior in seeking out settings in which they may express their values—that is, settings with norms consistent with those values—and in avoiding settings in which expressing their values would be difficult. Thus, future research might productively investigate not only how people behave—particularly prosocially—once they are engaged in online interactions (the focus of my research) but how people's values and goals affect their choice of entering online sites that emphasize particular contents and opportunities and have different norms.

There are also implications of this research that reach beyond the scope of the original studies. In particular, the results may inform situations in which being anonymous could promote prosociality or being identifiable could promote antisociality. As mentioned in previous chapters, there are settings online in which people use anonymity to share intimate personal details, such as secrets, in communities that are organized around providing emotional support (Culén et al., 2014). Insofar as following the norms of an anonymous community may provide people with a sense of group identity—the group, in this case, being those who participate in such norms—this social setting could encourage prosociality between people whose identities are anonymous to a level that is more like that of interactions between ingroup members than between complete strangers.

Overall, an important implication of the dissertation research, especially Studies 4 and 5, is that the nature of the online community one enters may play a key role in the feelings and behavior engendered by that setting. For instance, my dissertation research suggests that activation of an individualistic mindset (a mindset in which one is prompted to think of oneself and others as separate individuals rather than as members of a group), perhaps through use of personally identifying information, elicits weaker prosocial feelings than when people focus on their shared social identity among people with whom they are interacting. The implications for antisocial behavior, however, remain an empirical question. Although prosocial behavior and antisocial interaction reflect different dynamics and are not necessarily strongly negatively correlated with each other (Dovidio et al., 2006), thinking of others individualistically, compared to as a member of a collective group, promotes more competition (Cox, Lobel, & McLeod, 1991) and places less emphasis on positive interdependence and reciprocity (Hogg et al., 2017).

However, it is also possible that, at least in some online settings, feelings of shared identity could facilitate, not inhibit, antisocial behavior. When people feel a common identity with others, they tend to adhere strongly to group norms and standards, are concerned with how they are seen and valued by other members of the group, and are accepting of hierarchical status relations within the group (Reicher, Haslam, & Hopkins, 2005). Thus, the extent to which some online communities, such as 4chan's Politically Incorrect forum (Hine et al., 2017), have antisocial norms, people who have a stronger sense of group, compared to personal, identity may engage in more antisocial behavior. One method through which antisocial behavior may be left unchecked is through pressure to conform to the behavior of group members. For instance, negative or harmful behavior

from another group member could be left relatively unpunished if group identity is high in the situation and the person behaving harmfully is identifiable as a high-ranking member of the group, as found in conformity studies (particularly if this negative behavior has led to the acquisition of illegitimate power, such as through bullying other group members; Hays & Goldstein, 2015).

Thus, when attempting to predict how an online setting may influence the behavior of those interacting within it, these factors—norms for anonymity and identifiability, group identity strength, and existing identifiable hierarchies—should be considered. Furthermore, measures that address the specific aspects of prosociality or antisociality in question—such as personal disclosure, ingroup favoritism, conformity, or exclusion—should be used, in addition to general measures of prosocial or antisocial feelings and behavior.

Online radicalization and harassment. The results of Study 5 on how shared group membership can promote intragroup helping and punishment—particularly when one has a self-expressive pseudonym—have inspired my future research plans in the area of online radicalization, such as White supremacist radicalization online. Although it is well-established that social groups have a powerful influence on behavior online, my research suggests that their effect is especially strong when they tie one's personal expression (such as through a pseudonym) and associated values to social group expectations. In some contexts, this may lead to increased helping behavior, as found in my dissertation research. However, I expect that in contexts with relevant negative group identities—such as a non-supremacist White person interacting with White supremacists—a shared overarching group identity may make one more susceptible to

joining a related subgroup with repeated exposure in an online setting. My research in Study 5 found that people were more likely to feel connected to and to help others when they thought that others shared group membership with them, but shared group membership has also been found to lead to negative effects like excessive conformity (Müller, Hofmann, Fleischli, & Studer, 2016) and animosity toward members of other groups (Esses et al., 2001).

Furthermore, in situations in which one's relevant identity is uncertain (which often happens online), people may seek to reduce this uncertainty by forming an identity that is more extreme, because an emphasis on being distinct and separate from different "others" substantially reduces identity uncertainty (Hogg, 2014). I hypothesize that activating a social identity that is related to the identity shared by a group of people online may play a role in determining the attitudinal and behavioral effects of group membership online. For example, I expect that, among White participants, activating a White group identity in a context that is relevant to an overarching context of intergroup inequality (for instance, framing White racial identity as a racial identity that is understudied compared to other racial identities) would motivate participants to conform more to potentially-supremacist opinions than they would in a context that was not relevant to both White identity and racial inequality.

To test this expectation, I propose a study of White participants in a false forum setting, in which I would independently manipulate the activation of an identity (related to Whiteness or not) by a pseudonym and the focus of an online group's activity (in terms of discussing a topic promoting White privilege or not). With respect to the activation of participants' White identity, participants would be asked to create a pseudonym in which

their White identity is either made relevant or non-relevant: one in which pseudonyms connect to Whiteness (perhaps by having people include an aspect of their European ancestry in their pseudonyms) and one in which pseudonyms do not connect to Whiteness (a self-expressive pseudonym condition, as used in studies in my dissertation). In terms of the group activity, in the forum setting others will attempt to promote action on a topic either relevant to White identity (such as supporting a White History Month or White Studies courses) or irrelevant to White identity (such as supporting a trivial preference). Dependent measures would include engagement in the group activity, in terms of more frequent contributions to the online exchange, and stronger support for White History Month and White Studies. Support for my hypothesis would be reflected in the finding of a statistically significant Pseudonym Type x Group Activity interaction, with distinctively high levels of participation in the discussion and support for White History Month and White Studies compared to participants in the other three conditions. This finding would demonstrate further how the meaning associated with a pseudonym affects how people behave online and impact attitudes and actions.

Intergroup applications. The results of Studies 3 and 4 on the potentially counterproductive effects of providing “too much information” about non-ingroup members have prompted my future research plans on intergroup interactions online. In particular, my dissertation demonstrates that there is a “too much information” effect on reporting prosocial feelings felt toward non-ingroup members (i.e., other “participants” presented in an individuated way), such that receiving individuating information about non-ingroup members when one has already received information in the form of an expressive pseudonym is related to fewer prosocial feelings toward non-ingroup members

than when one receives only an expressive pseudonym. To extend this line of work and test the scope of this effect, it would be valuable, theoretically and practically, to investigate whether the “too much information” effect I observed is present when considering true outgroup members, rather than non-ingroup or diffuse ingroup members more generally. An extension of the existing research, and an integration with research related to the current COVID-19 pandemic (Van Bavel et al., 2020), could use supposed other participants identified through short entries of personal information to be either proponents or opponents of wearing masks to reduce the spread of the COVID-19 virus. Mask-wearing is a simple and effective prophylactic strategy (Li, Liu, Li, Qian, & Dai, 2020) that has nonetheless encountered some resistance in the United States (Haischer et al., 2020). Such resistance represents an important social divide in terms of immediate classification of individuals and perceptions of threat; it also may be viewed as representing a multi-faceted political partisan divide, with conservative Americans and self-identified Republicans being significantly less likely to engage in preventative activities such as mask-wearing (Perry, Whitehead, & Grubbs, 2020). In this manipulation, which has immediate and significant social relevance, supposed participants who support wearing masks would be ingroup members for more liberal participants, and supposed participants who did not support wearing masks would be outgroup members; the reverse would be true for conservative participants. Additionally, given the recent 2020 presidential election in the United States, mask-wearing behavior may serve as a less direct (and thereby less prone to demand effects) cue to political group affiliation than simply stating whether someone is conservative or liberal.

To investigate more thoroughly the effects of “too much information” online with respect to prosocial feelings, such research would focus on emotional responses when anticipating an interaction with another person. Existing research has established that people anticipating an interaction with an outgroup member, compared to meeting with an ingroup member, may report negative emotions such as anxiety (Stephan, 2014). Such emotions can lead people to act in ways that can be interpreted by others as being less friendly and more cold than these people would behave with ingroup members (Goff, Steele, & Davies, 2008; Shelton, Richeson, Salvatore, & Trawalter, 2005). To investigate the influence of social identities online on affective responses to others, participants from MTurk would fill out an “interaction profile” in which they would give themselves a pseudonym to use with others, so that the context would be established as being pseudonymous. Participants would then be placed in one of six conditions, in a 3 (group condition) x 2 (information condition) design. Participants would first be told one of the following: (a) that they will be interacting with someone who agrees with them about mask-wearing (ingroup condition), (b) that they will be interacting with another person (non-ingroup condition), or (c) that they will be interacting with someone who disagrees with them about mask-wearing (outgroup condition). MTurk participants would then see a card of information from that person’s interaction profile, which would either include an expressive pseudonym and some irrelevant but personal information, such as the person’s food preferences, to reflect the “too much information” conditions in previous studies (personal information condition), or an expressive pseudonym without extra information (minimal information condition). Participants would be asked to write a short message greeting their partner, which would be analyzed using writing analysis software

such as Linguistic Inquiry and Word Count (LIWC; Pennebaker, Booth, & Francis, 2007) for tone and length. Participants would then complete a variety of emotional and interpersonal attitude measures, such as a measure of intergroup trust (Foddy, Platow, & Yamagishi, 2009) for prosocial feelings and a measure of tendency toward exploitative behavior for antisocial feelings (such as fear and greed; Wildschut & Insko, 2007). Participants would be given the opportunity to add information to their interaction profiles before interacting with the supposed other participant, as a behavioral measure of tendency to self-disclose or share information. Participants would also be asked to report their sense of community, knowledge contribution, and feelings of similarity to their anticipated interaction partner, as included in studies in this dissertation.

Given the findings of the studies in this dissertation, I anticipate the following patterns of effects from the anticipated interaction study. First, for the personal information conditions, I expect that participants in the ingroup conditions would show generally higher levels of prosocial feelings and desire to interact with other participants, and that they would be more likely to share additional information with others than would participants in any other condition. I also predict that participants in the non-ingroup and outgroup conditions would react similarly to each other, and similarly to participants in Study 4, in that they would show lower prosocial feelings and desire to interact relative to participants interacting with ingroup members. That is, I anticipate that the findings of Study 4 would generalize to outgroup interactions as well as non-ingroup interactions. I also anticipate that participants in these conditions would be less likely to share additional information about themselves, out of a desire to avoid sharing too much information about themselves in the way that they are receiving too much information

about their interaction partner. I expect that participants in the outgroup condition would show a greater tendency towards exploitative behavior than would participants in the ingroup and non-ingroup conditions. In the minimal information conditions, I anticipate that participants would still display a preference for ingroup members as in the personal information conditions, but that participants would show somewhat more prosocial behavior to non-ingroup and outgroup members in the minimal information conditions relative to the personal information conditions. Thus, the relative differences in participant prosociality between the ingroup condition and the non-ingroup and outgroup conditions would be smaller in the minimal information conditions than in the personal information conditions.

The findings of this research may be applicable to many situations online in which people engage with outgroup members. Internet communities, particularly those based around a shared interest, may gain strong ingroup identities that can influence interactions with members of other communities. These interactions may involve feelings that one has received too much information about an outgroup member when receiving both an expressive pseudonym and a personal preference, as found with non-ingroup members in the research in this dissertation, or they may involve stronger feelings of animosity if people who identify strongly as an ingroup member interact with an outgroup member. Such findings may inform social media websites in fostering more general feelings of community among their users by selectively providing other users' volunteered personal information to reduce feelings of dissimilarity. For example, social media algorithms could show fewer deeply personal posts from users who have been recently "friended" or who do not share a large number of social connections with each

other until those users have interacted positively with each other several times. Such algorithms could serve a dual purpose: not only that of facilitating prosocial feelings between new contacts, but also that of protecting users' personal information from potentially-malicious contacts, such as online trolls, with whom they do not wish to interact.

Conclusion

Overall, my current research explores the interplay between personal and group identities online, and how each is brought to the fore in different contexts through modes of personal expression, framings of a given situation, and individual predispositions. In my future research, I plan to expand the findings of my dissertation to address rising concerns and problems in social interaction online, especially in the domains of radicalization and large-scale harassment across social media platforms. Furthermore, I plan to implement the findings of my current and future research into specific recommendations for website features and administrator oversight, such that both new and existing website members are motivated to behave positively and constructively through messages that are relevant to their motivations. Ultimately, I expect that my work will contribute to the psychological understanding of online social interaction, particularly in the context of identity, and that its implementation will help both website administrators and users to create social spaces that are safer, more enjoyable to use, and more productive and collaborative.

Footnotes

¹ I performed exploratory linear regressions including age ($M = 36.68$, $SD = 11.66$) and its interactions in the model with the experimental conditions and their interactions for several dependent variables. Findings of interest were as follows:

For participants' likelihood of excluding the author of the help thread, including age in the linear regression model reduced the original effect (that of an individualist framing making participants more likely to exclude the help thread author) to marginal significance, $\text{Exp}(B) = 1.68$, $p = .083$. However, a significant interaction of the framing condition with age emerged, $\text{Exp}(B) = .94$, $p = .025$, such that the individualist framing was only effective in making relatively young participants ($-1\ SD$) more likely to exclude the help thread author from a future interaction, $\text{Exp}(B) = 3.42$, $p = .005$, and did not affect older participants ($+1\ SD$), $p > .65$. There was also a marginal three-way interaction between age, framing condition, and information condition, $\text{Exp}(B) = 1.07$, $p = .065$, such that the aforementioned two-way interaction was somewhat less effective when participants received personal information about others online, $\text{Exp}(B) = .38$, $p = .11$. No other effects approached significance, $ps > .29$.

For participants' reports of their pseudonyms being personally expressive, there was an age by information condition interaction ($B = -.04$, $SE = .02$, $p = .032$) such that younger participants reported feeling their pseudonyms were more expressive when they received personal information about others ($B = .65$, $SE = .25$, $p = .011$), while older participants reported no difference, $p > .51$. No other effects were significant, $ps > .11$.

For participants' perceptions of being personally recognizable, there was a marginal main effect of age ($B = -.02$, $SE = .01$, $p = .066$) such that older participants felt

somewhat less recognizable online than did younger participants. No other effects were significant, $ps > .25$. Given that there was no main effect of age on participants' perceptions of their pseudonyms as being personally expressive, it is possible this effect arises from one's perception of others: older people may doubt others' ability to recognize them online more than young people do.

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APPENDIX B.

Study 2 also considered the influence of a relevant individual difference variable, sadism, on online prosociality. Sadism is defined as one's tendency to enjoy causing others pain. Previous research on sadism and similar negative personality traits (Buckels, Jones, & Paulhus, 2013; Buckels, Trapnell, & Paulhus, 2014) has revealed that sadism predicts antisocial behavior, including antisocial behavior online. For instance, people who report themselves as being relatively high in sadism are also more likely to report having engaged in online trolling or harassment of others (Buckels et al., 2013). Because of the specific influence of sadism on online behavior, and because of its position as a motivator of cruelty, it is of particular interest as a personality trait that may influence a person's tendency to engage in prosocial behavior. Sadism could serve to influence prosocial behavior and feelings online overall—such as participants' reported feelings of altruism or desire to help others—or it could have interactive effects with other variables. A measure of participants' sadism (a subset of the Everyday Sadism Scale; Buckels et al., 2013) was added to the questionnaire participants completed, and it was investigated as a moderator.

Beyond a general effect in which higher levels of sadism could predict acting less prosocially online, it is possible that participants' reported sadism could serve to moderate the behavioral and attitudinal benefits of persistent pseudonymity relative to temporary pseudonymity. Such a moderation could be instantiated in multiple ways, but I expected specifically that users comparatively high in reported sadism would show reduced benefits of persistent pseudonymity, perhaps through high-sadism participants having less of a motivation to help persistently-pseudonymous (and therefore

recognizable) others. That is, I expected that users comparatively low in reported sadism would show the expected effects of increased prosocial behavior, increased feelings of recognizability, and increased feelings of self-expressiveness of pseudonym when using persistent pseudonyms relative to using temporary pseudonyms, while those who are higher in reported sadism would not.

Testing the moderating effect of sadism. Because sadism did not significantly differ between experimental conditions in a univariate ANOVA (all $ps > .26$), and because it was hypothesized that sadism might influence the extent to which users were affected by my manipulations, sadism was included as a moderator for the dependent measures. Linear regressions for the self-report dependent measures did not reveal any new interactions by experimental condition, all $ps > .09$. Binary logistic regression models including sadism as a moderator for the behavioral measures did reveal moderation effects.

A binary logistic regression including the experimental manipulations and participant sadism found a marginal main effect of sadism on whether or not people offered a successful solution to the problem in the help thread, $\text{Exp}(B) = .509$, $p = .077$, such that people higher in sadism were less likely to offer a proper solution in the help thread.

For whether or not people offered emotional support in the help thread, the regression found a marginal interaction between users' pseudonym persistence and sadism, $\text{Exp}(B) = .307$, $p = .091$, such that for participants low in sadism, there was no difference by condition, $\text{Exp}(B) = 1.879$, $p = .353$, such that people in the self-temporary conditions were about as likely to offer emotional support as were people in the self-

persistent conditions, and for people high in sadism, there was an effect approaching significance, $\text{Exp}(B) = .319$, $p = .125$, such that participants in the self-temporary conditions were less likely to offer emotional support than were participants in the self-persistent conditions. Thus, the pattern found in Study 1, in which the temporary pseudonym condition displayed an increased provision of emotional support relative to the other conditions, was somewhat reversed here in high-sadism participants.

Furthermore, when adjusting for sadism, there were effects of experimental condition on whether or not participants chose to go to the forum's help thread first (i.e., before the joke thread). I found a main effect of others having temporary pseudonyms, $\text{Exp}(B) = .380$, $p = .033$, such that in conditions where others had temporary pseudonyms, participants were less likely to help others first. No other main effects or interactions were significant, all $ps > .10$. That is, participants seemed motivated to have their help rewarded by someone they could recognize as being the person they helped. The pattern remains, at lesser significance, when removing sadism from the analysis.

Participants who were relatively low in sadism were more likely to behave prosocially in the help thread, such that they were more likely to offer solutions to the problem. Furthermore, there were interactions between sadism and the experimental manipulations, such that high-sadism participants in the self-temporary conditions were somewhat less likely to offer emotional support than were high-sadism participants in the self-persistent conditions, and when adjusting for sadism, participants in the other-temporary conditions were less likely to enter the help thread first.

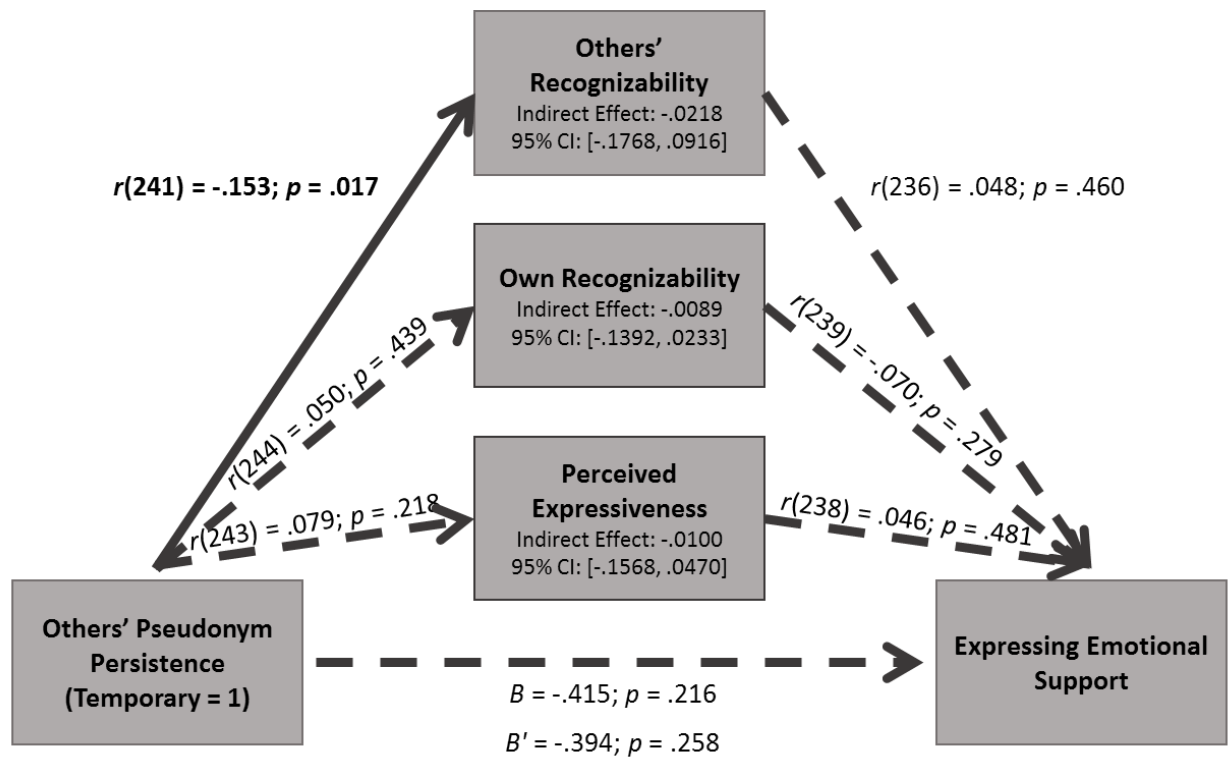


Figure 3.3. Illustration of the indirect paths model for others' pseudonym persistence and participants' likelihood of expressing emotional support in the help thread. The indirect paths tested in parallel were perceptions of others' recognizability, perceptions of one's own recognizability, and perceived expressiveness of one's pseudonyms.

APPENDIX C.

Table 4.5. Bivariate correlations of exploratory measures of trusting others and similarity to others with relevant dependent variables.

Correlations					
	Recognizable Self	Perceived Expressiveness	Sense of Community	Knowledge Contribution	Subjective Worth
Trusting Others	.255**	.255**	.432**	.298**	.191**
Similarity to Others	.317**	.334**	.674**	.474**	.191**
** $p < .01$ * $p < .05$					

Table 4.6. Point-biserial correlations of exploratory measures of trusting others and similarity to others with dichotomous behavioral measures.

Correlations				
	Helping First	Responding Twice	Confronting Harasser	Supporting Author
Trusting Others	.036	.100	-.009	.067
Similarity to Others	.070	.135*	.041	.149*
** $p < .01$ * $p < .05$				

APPENDIX D.

5.8-5.13. Linear regressions for relevant DVs including the experimental conditions, their interaction, ingroup identification strength, and its interactions with the experimental conditions. (See Supplemental Materials for all DVs.)

Linear regressions were performed for information given about others, framing condition, ingroup identification strength, and their interactions in fully saturated models for the following dependent variables: feelings of personal recognizability, feelings of others' recognizability, perceived expressiveness of one's pseudonym, feelings of similarity to others, self-reported knowledge contribution, and self-reported confrontation. Ingroup identification strength correlated significantly and positively with most of the dependent variables, with the exception of others' recognizability, for which the relationship was not significant. The information given about others interacted marginally with the other independent variables for several outcome measures, but no consistent pattern emerged. Findings of interest are described in Chapter 5.

Table 5.8. Linear regression for feelings of personal recognizability including the experimental conditions, their interaction, ingroup identification strength, and its interactions with the experimental conditions.

	B	S.E.	Beta	t	Sig.
Constant	3.190	0.104		30.552	0.000
Others' Info	-0.028	0.152	-0.013	-0.186	0.852
Framing	-0.151	0.158	-0.069	-0.951	0.342
Framing x Info	0.124	0.224	0.049	0.553	0.581
Ingroup ID	0.327	0.111	0.330	2.930	0.004
Ingroup ID x Framing	-0.184	0.151	-0.136	-1.216	0.225
Ingroup ID x Info	-0.173	0.150	-0.129	-1.153	0.250
Ingroup ID x Framing x Info	0.224	0.204	0.121	1.096	0.274

Table 5.9. Linear regression for feelings of others' recognizability including the experimental conditions, their interaction, ingroup identification strength, and its interactions with the experimental conditions.

	B	S.E.	Beta	t	Sig.
Constant	4.498	0.098		45.831	0.000
Others' Info	-0.072	0.142	-0.035	-0.506	0.613
Framing	-0.048	0.147	-0.024	-0.329	0.743
Framing x Info	0.001	0.209	0.000	0.004	0.997
Ingroup ID	-0.082	0.102	-0.088	-0.799	0.425
Ingroup ID x Framing	0.026	0.139	0.020	0.184	0.854
Ingroup ID x Info	-0.017	0.138	-0.013	-0.122	0.903
<i>Ingroup ID x Framing x Info</i>	<i>0.322</i>	<i>0.190</i>	<i>0.184</i>	<i>1.697</i>	<i>0.091</i>

Table 5.10. Linear regression for perceived expressiveness of one's pseudonym including the experimental conditions, their interaction, ingroup identification strength, and its interactions with the experimental conditions.

	B	S.E.	Beta	t	Sig.
Constant	4.483	0.121		37.148	0.000
Others' Info	0.223	0.176	0.087	1.266	0.206
Framing	0.091	0.181	0.035	0.503	0.615
Framing x Info	-0.287	0.259	-0.095	-1.107	0.269
Ingroup ID	0.323	0.126	0.277	2.569	0.011
Ingroup ID x Framing	-0.180	0.171	-0.112	-1.054	0.293
Ingroup ID x Info	0.086	0.172	0.054	0.503	0.615
Ingroup ID x Framing x Info	0.086	0.236	0.038	0.365	0.715

Table 5.11. Linear regression for feelings of similarity to others on the forum including the experimental conditions, their interaction, ingroup identification strength, and its interactions with the experimental conditions.

	B	S.E.	Beta	t	Sig.
Constant	3.651	0.103		35.428	0.000
Others' Info	0.162	0.150	0.068	1.079	0.281
Framing	-0.039	0.154	-0.016	-0.252	0.801
<i>Framing x Info</i>	<i>-0.375</i>	<i>0.219</i>	<i>-0.134</i>	<i>-1.710</i>	<i>0.088</i>
Ingroup ID	0.480	0.108	0.443	4.452	0.000
Ingroup ID x Framing	-0.019	0.146	-0.013	-0.131	0.896
Ingroup ID x Info	0.074	0.146	0.050	0.504	0.615
Ingroup ID x Framing x Info	-0.134	0.200	-0.066	-0.670	0.503

Table 5.12. Linear regression for self-reported knowledge contribution including the experimental conditions, their interaction, ingroup identification strength, and its interactions with the experimental conditions.

	B	S.E.	Beta	t	Sig.
Constant	4.592	0.103		44.599	0.000
Others' Info	0.003	0.150	0.001	0.020	0.984
Framing	-0.201	0.154	-0.089	-1.307	0.192
Framing x Info	0.022	0.220	0.008	0.101	0.920
Ingroup ID	0.241	0.107	0.235	2.243	0.025
Ingroup ID x Framing	-0.033	0.146	-0.024	-0.227	0.821
<i>Ingroup ID x Info</i>	<i>0.277</i>	<i>0.146</i>	<i>0.197</i>	<i>1.893</i>	<i>0.059</i>
Ingroup ID x Framing x Info	-0.174	0.200	-0.090	-0.872	0.384

Table 5.13. Linear regression for self-reported confrontation including the experimental conditions, their interaction, ingroup identification strength, and its interactions with the experimental conditions.

	B	S.E.	Beta	t	Sig.
Constant	3.097	0.121		25.505	0.000
Others' Info	-0.048	0.175	-0.019	-0.277	0.782
Framing	-0.021	0.181	-0.008	-0.116	0.908
Framing x Info	-0.016	0.256	-0.005	-0.063	0.950
Ingroup ID	0.280	0.127	0.246	2.201	0.028
Ingroup ID x Framing	-0.087	0.172	-0.056	-0.505	0.614
Ingroup ID x Info	0.017	0.171	0.011	0.102	0.919
Ingroup ID x Framing x Info	-0.107	0.234	-0.050	-0.457	0.648

Tables 5.14-5.19. Binary logistic regressions for relevant DVs including the experimental conditions, their interaction, ingroup identification strength, and its interactions with the experimental conditions. (See Supplemental Materials for all DVs.)

Binary logistic regressions were performed for information given about others, framing condition, ingroup identification strength, and their interactions in fully saturated models for the following dependent variables: replying twice to the help thread, reporting the harasser to the experimenter, excluding the author of the help thread from a future interaction, confronting the harasser, and encouraging the author of the help thread.

Results of interest are described in Chapter 5.

Table 5.14. Binary logistic regression for replying twice to the help thread, including the experimental conditions, their interaction, ingroup identification strength, and its interactions with the experimental conditions.

	B	S.E.	Wald	df	Sig.	Exp(B)
Constant	-0.172	0.193	0.794	1	0.373	0.842
Others' Info	-0.053	0.282	0.035	1	0.852	0.949
Framing	0.048	0.290	0.027	1	0.869	1.049
Framing x Info	0.243	0.414	0.344	1	0.558	1.275
Ingroup ID	0.136	0.203	0.452	1	0.501	1.146
Ingroup ID x Framing	-0.288	0.275	1.095	1	0.295	0.750
Ingroup ID x Info	-0.279	0.275	1.026	1	0.311	0.757
Ingroup ID x Framing x Info	0.813	0.380	4.576	1	0.032	2.255

Table 5.15. Binary logistic regression for reporting the harasser to the experimenter, including the experimental conditions, their interaction, ingroup identification strength, and its interactions with the experimental conditions.

	B	S.E.	Wald	df	Sig.	Exp(B)
Constant	-0.931	0.219	18.082	1	0.000	0.394
Others' Info	0.128	0.310	0.171	1	0.679	1.137
Framing	0.334	0.314	1.136	1	0.286	1.397
Framing x Info	-0.210	0.442	0.226	1	0.634	0.810
<i>Ingroup ID</i>	<i>0.433</i>	<i>0.235</i>	<i>3.411</i>	<i>1</i>	<i>0.065</i>	<i>1.543</i>
<i>Ingroup ID x Framing</i>	<i>-0.512</i>	<i>0.303</i>	<i>2.854</i>	<i>1</i>	<i>0.091</i>	<i>0.599</i>
Ingroup ID x Info	-0.449	0.308	2.128	1	0.145	0.638
Ingroup ID x Framing x Info	0.496	0.407	1.485	1	0.223	1.642

Table 5.16. Binary logistic regression for excluding the author of the help thread from a future interaction, including the experimental conditions, their interaction, ingroup identification strength, and its interactions with the experimental conditions.

	B	S.E.	Wald	df	Sig.	Exp(B)
Constant	-0.880	0.212	17.213	1	0.000	0.415
Others' Info	0.028	0.307	0.008	1	0.928	1.028
Framing	0.652	0.305	4.560	1	0.033	1.919
Framing x Info	-0.331	0.435	0.578	1	0.447	0.719
Ingroup ID	-0.272	0.222	1.502	1	0.220	0.762
Ingroup ID x Framing	-0.025	0.293	0.007	1	0.932	0.975
Ingroup ID x Info	0.283	0.300	0.894	1	0.345	1.327
Ingroup ID x Framing x Info	0.064	0.399	0.026	1	0.872	1.067

Table 5.17. Binary logistic regression for confronting the harasser, including the experimental conditions, their interaction, ingroup identification strength, and its interactions with the experimental conditions.

	B	S.E.	Wald	df	Sig.	Exp(B)
Constant	-0.791	0.207	14.616	1	0.000	0.453
Others' Info	-0.266	0.311	0.731	1	0.393	0.766
Framing	-0.243	0.321	0.576	1	0.448	0.784
Framing x Info	0.261	0.462	0.319	1	0.572	1.298
Ingroup ID	0.002	0.217	0.000	1	0.994	1.002
Ingroup ID x Framing	-0.122	0.300	0.166	1	0.683	0.885
Ingroup ID x Info	-0.087	0.302	0.082	1	0.774	0.917
Ingroup ID x Framing x Info	0.333	0.418	0.635	1	0.426	1.395

Table 5.18. Binary logistic regression for encouraging the author of the help thread, including the experimental conditions, their interaction, ingroup identification strength, and its interactions with the experimental conditions.

	B	S.E.	Wald	df	Sig.	Exp(B)
Constant	-2.852	0.424	45.214	1	0.000	0.058
Others' Info	0.425	0.581	0.535	1	0.465	1.529
Framing	0.439	0.590	0.554	1	0.457	1.551
Framing x Info	-0.240	0.794	0.092	1	0.762	0.786
Ingroup ID	-0.208	0.434	0.229	1	0.632	0.812
Ingroup ID x Framing	-0.213	0.534	0.160	1	0.689	0.808
Ingroup ID x Info	-0.374	0.546	0.469	1	0.493	0.688
Ingroup ID x Framing x Info	0.972	0.697	1.943	1	0.163	2.644

A linear regression was also performed for private self-awareness, for information given about others, framing condition, ingroup identification strength, and their interactions in a fully saturated model, as seen in Table 5.17.

Table 5.19. Linear regression for private self-awareness, including the experimental conditions, their interaction, ingroup identification strength, and its interactions with the experimental conditions.

	B	S.E.	Beta	t	Sig.
Constant	4.479	0.104		42.928	0.000
Others' Info	-0.047	0.152	-0.022	-0.310	0.757
Framing	0.054	0.157	0.025	0.346	0.730
Framing x Info	0.248	0.223	0.096	1.109	0.268
<i>Ingroup ID</i>	<i>0.183</i>	<i>0.109</i>	<i>0.184</i>	<i>1.677</i>	<i>0.094</i>
Ingroup ID x Framing	-0.214	0.148	-0.157	-1.440	0.151
Ingroup ID x Info	-0.157	0.148	-0.116	-1.062	0.289
Ingroup ID x Framing x Info	0.427	0.203	0.228	2.105	0.036

The linear regression revealed a significant three-way interaction between experimental conditions and ingroup identification strength for participants' reported feelings of private self-awareness, $B = .427$, $SE = .203$, $p = .036$. The interaction was such that for participants who identified strongly with their group, there was a two-way interaction by experimental condition, $B = .721$, $SE = .318$, $p = .024$, such that those who were given an individualist framing of the activity, and who also received personal information about other users, reported higher levels of feelings of private self-awareness relative to those who did not receive personal information ($B = .499$, $SE = .224$, $p = .027$), and relative to those who were given a group framing of the activity (stats). There were no main effects or other interactions by condition or moderator for those who were low in ingroup identification strength, all $ps > .15$. In addition, the regression revealed a marginal main effect of ingroup identification strength, $B = -.183$, $SE = .109$, $p = .094$, such that participants who identified strongly with their group reported feeling somewhat more privately self-aware overall.

The ANOVA excluding ingroup identification strength revealed a marginally-significant main effect of experiment framing on participants' reported feelings of private self-awareness, $F(1,407) = 3.573$, $p = .059$, such that participants in the group-based framing ($M = 4.43$, $SE = .07$) felt somewhat less privately self-aware than did participants in the individualist framing ($M = 4.67$, $SE = .08$). There was no effect by personal information condition (similar to the null result found in Study 4) and no interaction, $ps > .41$.

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