

# Using Group Identity and Norms to Explain Prosocial Behaviours in Anonymous Online Environments

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Social media usage has significantly increased in recent years and continues to grow. Thus, it is important to investigate the behaviours that occur on social media in order to enhance our understanding of how individuals interact in these online environments. The present studies explored the occurrence and the type of prosocial online supportive behaviours on anonymous geographically based social media (i.e., *Yik Yak*) and examined how a social identity approach could help understand the occurrence of these prosocial behaviours. The first study explored whether prosocial behaviours occurred on the *Yik Yak* platform. Results of this study revealed use of this social media platform to provide and receive support. It also extended the findings by examining the types of issues and social support involved. The second study examined self-reported use of the anonymous social media platform to seek and to provide support. Results supported the use of the platform for prosocial behaviours and revealed group identification and norms as moderators.

*Keywords:* anonymity, group identity, groups norms, social media, social support

L'utilisation des réseaux sociaux a augmenté considérablement pendant les dernières années et continue de croître. Il est donc important d'investiguer les comportements survenant sur les réseaux sociaux afin de mieux comprendre comment les individus interagissent dans ces cyberspaces. Les présentes études ont exploré l'occurrence et le type de comportements prosociaux de soutien sur des réseaux sociaux anonymes géolocalisateurs (p. ex., *Yik Yak*) et ont examiné comment une approche axée sur l'identité sociale pouvait aider à comprendre la survenue de comportements prosociaux. La première étude a exploré si des comportements prosociaux survenait sur la plate-forme *Yik Yak*. Les résultats ont révélé que cette plate-forme est utilisée pour offrir et recevoir du soutien. L'étude étend ses résultats en examinant les types de problèmes et de soutien social impliqués. La deuxième étude a examiné l'utilisation auto-rapportée de la plate-forme pour rechercher et offrir du soutien. Les résultats ont appuyé l'utilisation de la plateforme pour les comportements prosociaux et ont identifié deux modérateurs : l'identification des groupes et les normes.

*Mots-clés :* anonymat, identité de groupe, normes de groupes, réseaux sociaux, soutien social

The use of social media has significantly increased among teenagers (73%), young adults (72%) and adults (40%; Lenhart, Purcell, Smith, & Zickuhr, 2010). As usage rates continue to grow (Asur, Huberman, Szabo, & Wang, 2011), it is important to expand current social psychology research in order to fully understand social interaction in online environments. One important characteristic of some social media sites and apps is the ability to hide your identity and be anonymous (Kang, Brown, & Kiesler, 2013). The nature of anonymity has been studied extensively both online and offline (e.g., McKenna & Bargh, 2000; Zimbardo, 1969) and its effect on users' behaviours has important implications for understanding online social interactions. Anonymity has traditionally been thought to be more likely to

promote negative behaviours, especially in online social interactions (e.g., lack of accountability enables personal attacks, threats, and rumors; Almuhimedi, Wilson, Liu, Sadeh, & Acquisti, 2013). Less research has been done on the positive aspects of anonymity in online behaviours (McKenna & Bargh, 2000). Among existing studies, there is some evidence of prosocial behaviours where users provide their peers with social support (De Choudhury & De, 2014), yet there is a lack of explanation as to why anonymity would influence this type of positive behaviours as part of online social interactions. Thus, the overarching aim of the present study is to explore the occurrence of prosocial interactions on anonymous social media and the group processes that may influence them. The construct of anonymity has attracted significant research attention in the field of social psychology. Anonymity is traditionally conceptualized as the state of being unidentifiable to others (Pfitzmann & Köhntopp, 2001). Social psychology research has long established that anonymity strongly influences behaviours. Specifically, a wide range of studies have

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looked at how anonymity can influence behaviours at both an individual level (e.g., it can increase aggressive behaviours; Zimbardo, 1969) and at group level (e.g., bystander apathy; Darley & Latané, 1968). Social psychologists have also studied the impact of anonymity in online social environments, especially with the rapid increase of internet use in the past decade. One of the main uses for the Internet is interpersonal communication (Kraut, Mukhopadhyay, Szczypula, Keisler, & Scherlis, 1999), which is commonly referred to as computer-mediated communication (CMC). Anonymity is a major component in CMC due to the ability for individuals to conceal their identity from others if they wish to do so.

### **Anonymity and its Influence on Social Behaviours**

In recent years, an exponential trend in anonymity-seeking behaviours has been observed on the Internet, specifically on online social media (Stutzman, Gross, & Acquisti, 2013). Users who seek full anonymity have access to a variety of anonymous social media apps and sites such as *Whisper* and *4chan*. Unlike traditional social media sites such as *Facebook* and *Twitter*, users of anonymous social media sites are able to post content without creating a profile or having to share any personal information. Reasons why individuals tend to seek anonymity on the Internet include: being able to freely express themselves, maintain control over personal information disclosure and over personal image, and to avoid embarrassment, judgment, and criticism (Kang et al., 2013). A study by Zhang and Kizilcec (2014) found that when given the option, users were more likely to post anonymously on social media, especially for controversial content. With the ever-growing popularity and adoption of these sites comes a greater need for understanding what kind of behaviours occurs in these anonymous settings.

A common theme among studies on anonymity and online behaviours is the disinhibition effect. According to Suler (2004), anonymity decreases users' inhibitions, which can lead to inflammatory behaviours, such as rude or hateful language and illegal or harmful acts (i.e., toxic disinhibition). This negative deindividuating effect of anonymous online communication has been one of the most discussed aspect of CMC (McKenna & Bargh, 2000). For example, Bernstein and colleagues (2011) found content posted on *4chan*, an anonymous discussion board, was frequently offensive and given to antisocial behaviours. Another study by Wang and colleagues (2014) on an anonymous social media site called *Whisper* ran a content analysis on deleted posts and found that the majority of posts contained abusive content such as nudity, pornography, and sexually

explicit messages. Evidence of the negative effects of online anonymity further extend to social interactions. For example, Whittaker and Kowalski (2015) examined cyberbullying via social media and found that aggressive behaviours occurred more frequently on anonymous forums than on *Facebook*.

Alternatively, Suler (2004) theorized that the online disinhibition effect can also lead to increased self-disclosure and prosocial behaviours (i.e., benign disinhibition). Self-disclosure can be conceptualized as revealing personal information to others, while prosocial behaviours are positive interpersonal interactions (e.g., giving advice or comfort; Lapidot-Lefler & Barak, 2015). Self-disclosure and prosocial behaviours are frequently found among online anonymous discussion boards, such as discussion boards for individuals with irritable bowel syndrome (Coulson, 2005) and eating disorders (Eichhorn, 2008). Researchers looking at mental health discourse on *Reddit*, a highly popular social media site, found that a considerable amount of mental health discourse and certain types of disclosure received greater social support (De Choudhury & De, 2014). Specifically, they observed that anonymous posts received more frequent, high quality feedback that provided different types of social support (e.g., emotional, instrumental, and informational support) than non-anonymous posts. Even on *4chan*, a platform on which posts are found to be frequently offensive, Bernstein and colleagues (2011) note that posts asking for advice are quite common as well and promote intimate and open conversations. In sum, Suler's (2004) theory that the online disinhibition effect can lead to contradicting results in online environments (i.e., antisocial behaviours, prosocial behaviours) has been observed in various subsequent studies.

Previous research supports the effect of anonymity on increasing self-disclosure in CMC (e.g., Joinson, 2001), and has also explained why individuals use anonymous social media for self-disclosure (i.e., allows them to express themselves freely while avoiding judgment and criticism; Kang et al., 2013). However, the literature does not clearly document whether anonymity encourages individuals to provide support to their self-disclosing peers. To address this gap in the literature, the present study aims to explore the occurrence of prosocial behaviours (i.e., social support) in an anonymous online environment. Previous studies have been unable to find significant evidence to support that anonymity encourages online prosocial behaviours (e.g., Lapidot-Lefler & Barak, 2015). This lack of sufficient evidence highlights the need to further explore whether there are prosocial behaviours happening in online settings. Thus, the present studies look at whether individuals used

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anonymous social media platforms to provide and receive social support.

Another important gap in the literature that needs to be addressed is how anonymity influences individuals to provide constructive and positive feedback to their peers in online settings. A study by Wodzicki, Schwämmlein, Cress, and Kimmerle (2011) speculated that the effect of anonymity on prosocial behaviours may be moderated by other factors, including group processes and the purpose of the participation. Further investigation is needed in order to examine what factors may motivate online prosocial behaviours. Thus, the present study also aimed to examine what factors may influence individuals to provide their anonymous peers with social support. Specifically, drawing on the speculations of Wodzicki and colleagues (2011), we focused on a group-based approach to examine the determinants of prosocial online behaviours on anonymous social media.

### **Social Identity Model of Deindividuation Effects (SIDE)**

A theoretical framework that is commonly used to explain behaviours in CMC environments, that focuses on group processes and that may help to better understand the effect of anonymity on prosocial behaviours is the Social Identity Model of Deindividuation Effects (SIDE; Reicher, Spears, & Postmes, 1995). SIDE theory proposes that anonymity can induce both negative and positive effects in CMC depending on the specific conditions of a social situation. Specifically, when an individual defines themselves as a member of a group, then anonymity will enhance group salience and in turn, group influence (Postmes, Spears, Sakhel, & De Groot, 2001; Reicher et al., 1995). For example, a study by Coffey and Woolworth (2004) investigated an online discussion board created following a local murder for the community to voice their concerns and encouraged a positive dialogue to overcome the tragedy. However, the anonymous forum was filled with angry, hateful, and racist posts. In comparison, the community also held a town meeting as another way for citizens to voice their concerns, yet there were no vengeful statements made. This finding implies that if antisocial behaviours are the group norm (i.e., implicit rules of what are acceptable behaviours and attitudes of group members), then antisocial behaviours will occur in anonymous CMC.

Based on SIDE theory, it is likely that the presence of prosocial behaviours on anonymous social media is due to the salience of a user's group identity and will be influenced by the group norm. Thus, we hypothesized that if an individual has a high level of

group identification (i.e., the degree to which one identifies as a member of a group), and prosocial behaviours are perceived as the group norm, then individuals are more likely to provide their peers with social support on anonymous social media platforms. This proposal may help us understand, for example, why a notoriously offensive forum such as *4chan* has the potential for encouraging prosocial behaviours, as seen in the advice and discussion threads where users provide their peers with social support.

### **Overview**

We investigated how anonymity may be linked to prosocial behaviours in an online environment among individuals in the same social network. Specifically, the social media platform we chose to observe online behaviours was *Yik Yak*. *Yik Yak* was an anonymous location-based social media app that allowed users to post and view messages called "yaks" within a 1.5 mile radius of the poster's location. The restricted radius made discussions more intimate and relevant for users because it limits access to those within specific communities, such as university campuses. It thus allowed users to interact with their fellow community group members, albeit anonymously. As such, it provided a unique opportunity to examine the role of group membership on CMC. Users had the option to generate discussion by replying to yaks on their feed, as well as "upvote" or "downvote" them. Previous research on *Yik Yak* has found the app to be an efficient method for students to communicate with their fellow peers, as many posts were highly context specific and reflected perceived campus norms (Black, Mezzina, & Thompson, 2016). Focusing on the *Yik Yak* platform, we examined the following research questions: (1) Do university students ask their community group peers for social support on anonymous social media? (2) Do university students receive social support from their community group peers on anonymous social media? and (3) Do university students receive antisocial responses from their community group peers on anonymous social media?

We examined these questions as part of two studies. The first study explored whether prosocial behaviours occurred on the *Yik Yak* platform. Specifically, we explored whether individuals used the platform to seek social support, if social support was provided, and if antisocial online behaviours occurred on the platform. In addition, we also explored the specific types of social support asked for and received via the online platform. The second study examined self-reported use of the *Yik Yak* platform in order to (1) confirm the occurrence of prosocial behaviours, and (2) examine group processes that may influence why individuals provide their online peers with social

support on an anonymous social media platform. Specifically, we examined the role of group identification and perceived group norms as moderators for *Yik Yak* usage. We also examined the type of responses people recalled receiving to their posted questions, including prosocial and antisocial ones.

### Study 1

The purpose of Study 1 was to explore whether prosocial behaviours occurred on *Yik Yak* and, if they did, what type of supportive behaviours occurred. Specifically, we explored individual posts to determine whether the platform was used to seek social support, if social support was provided, and if antisocial online behaviours were observed. Furthermore, we explored what kind of support was requested and received and what type of question themes arose.

### Method

**Data collection.** To capture prosocial behaviours on *Yik Yak*, we collected yaks (i.e., individual posts shared on *Yik Yak*) that specifically asked a question. We created a sampling schedule to capture yaks on 15 randomly-selected days from November 2015 to January 2016. On each sampling day, we collected yaks four times a day: morning (i.e., 7:00-11:00am), afternoon (i.e., 12:00-5:00pm), evening (i.e., 6:00-11:00pm), and night (i.e., 12:00-6:00am), based on a randomly selected time in each block. During each sampling time, three types of yaks were collected: the most recent ones that appeared on the feed, the first question that appeared, and the question with the most replies. We collected these yaks by taking screenshots of the *Yik Yak* post and their replies on the identified sampling days and times. In total, we collected 307 yaks. The final sample consisted of 150 questions, with number of replies per post ranging from 0 to 74.

### Coding scheme.

**Questions.** After randomly sampling and collecting the yaks, a coding scheme was developed to identify what type of support students were requesting (see Table A for types of support coding scheme), as well as what kind of questions they asked (see Table B for questions content coding scheme). The categories for social support (i.e., resources or assistance available through one's social network; Cohen & Hoberman, 1983) were based on Gottlieb's (1978) four types of support: informational, emotional, instrumental and appraisal. Seventeen categories were created to code what students asked their peers on *Yik Yak*. Finally, we also coded the time of day and date that the yak was posted, as well as how many votes and replies each yak received at the time of the collection.

**Replies.** In addition to questions, we also collected the replies to those questions and created a coding scheme to reflect whether support was actually provided (see Table C for support provided coding scheme), as well as the type of support (see Table D for types of support coding scheme). The types of support coding scheme for replies also used Gottlieb's (1978) category of social support. In the "support provided" coding scheme, we included a category for "troll" to keep track of antisocial behaviours. A troll is defined as a respondent who deliberately posts opinions and comments to start an argument or to stir up emotion for no apparent purpose (Buckels, Trapnell, & Paulhus, 2014).

**Coding process.** Three researchers used the coding schemes discussed above to code all posts collected on *Yik Yak*. The first two researchers' coding was compared and any discrepancies were resolved using the third researcher's coding. Specifically, 70% of the posts were coded the same by the two researchers, and the remaining 30% that was not coded the same was determined by the third researcher.

### Results

The overall goal of this study was to explore whether anonymity promotes actual prosocial behaviours on *Yik Yak* among university students. Specifically, we were interested in whether students (1) requested social support from their community group peers, (2) received social support from their peers, and (3) received antisocial responses from their peers. We also examined what types of supportive behaviours occurred. The yaks we collected were transcribed, coded, and then analyzed.

**Requesting social support.** Out of a total of 307 collected posts, 150 were questions (48.9%). Each of the 150 questions (yaks) were coded for type of support and question content. Table 1 features frequency data associated with types of support, where more than half ( $n = 79$ ; 52.7%) of students on *Yik Yak* were seeking informational support (i.e., advice, guidance, suggestions). Also frequent were questions seeking emotional support ( $n = 25$ ; 16.7%; i.e., seeking comfort, reassurance, and affection) and

Table 1

*Frequency of Types of Support Posts*

Support types	Frequency (%)
Informational	52.7
Emotional	16.7
Instrumental	14.7
Appraisal	11.3
Rhetorical	4.7

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Table 2  
*Frequency of Question Content Posts*

Question content	Frequency (%)
Course-related	20.7
Campus resources	12.7
Seeking connection	10.0
Pursuing	9.3
Hooking up	8.7
Entertainment, activities, food	6.7
Other	6.7
Relationships	5.3
Gym/health	4.7
City of Guelph	3.3
Living situation	2.7
Friends	2.0
Mental health	2.0
Technology	2.0
Alcohol/substance-use	1.3
Family	1.3
“What should I do?”	0.7

instrumental support ( $n = 22$ ; 14.7%; i.e., providing assistance in money, labour, or time). Table 2 features frequency data for the types of questions students were asking on *Yik Yak*. The top five most reoccurring topics were course-related ( $n = 31$ ; 20.7%), campus resources ( $n = 19$ ; 12.7%), seeking connection ( $n = 15$ ; 10%), pursuing ( $n = 14$ ; 9.3%) and hooking up ( $n = 13$ ; 8.7%). Table 3 features both types of support and question content codes in a cross-tabular format. We found that students seeking informational support commonly asked about course-related ( $n = 25$ ; 31.6%), campus resources ( $n = 19$ ; 24.1%), and entertainment, activities, food ( $n = 7$ ; 8.86%). Students seeking emotional support frequently inquired about pursuing ( $n = 8$ ; 32%), relationships ( $n = 6$ ; 24%), and hooking up ( $n = 4$ ; 16%). Students seeking instrumental support asked about seeking connections ( $n = 13$ ; 59.1%), hooking up ( $n = 4$ ; 18.18%), and alcohol/drug use ( $n = 2$ ; 9.1%). Lastly, students looking for appraisal support commonly asked questions that were course-related ( $n = 5$ ; 29.4%), hooking up ( $n = 2$ ; 11.76%), and entertainment, activities, food ( $n = 2$ ; 11.76%).

**Receiving social support.** The 150 questions we analyzed received a total of 1335 replies. Out of total replies, 229 provided informational support (17%), 39 provided emotional support (2.92%), 32 provided

Table 3  
*Cross-Tabulation of Type of Support and Question Content Posts*

	Informational	Emotional	Instrumental	Appraisal	Rhetorical	Total
Course-related	25 <sup>a</sup>	0	1	5 <sup>a</sup>	0	31
Campus resources	19 <sup>b</sup>	0	0	0	0	19
Seeking connection	0	0	13 <sup>a</sup>	1	1	15
Pursuing	5	8 <sup>c</sup>	0	1	0	14
Hooking up	3	4 <sup>b</sup>	4 <sup>b</sup>	2	0	13
Entertainment, activities, food	7 <sup>b</sup>	0	1	2	0	10
Other	2	0	1	3	4 <sup>c</sup>	10
Relationships	2	6 <sup>b</sup>	0	0	0	8
Gym/health	3 <sup>b</sup>	2	0	1	1	7
City of Guelph	5 <sup>b</sup>	0	0	0	0	5
Living situation	2 <sup>b</sup>	0	0	1	1	4
Friends	0	3 <sup>b</sup>	0	0	0	3
Mental health	0	2	0	1	0	3
Technology	3 <sup>b</sup>	0	0	0	0	3
Alcohol/substance-use	0	0	2 <sup>b</sup>	0	0	2
Family	2 <sup>b</sup>	0	0	0	0	2
“What should I do?”	1 <sup>b</sup>	0	0	0	0	1
Total	79	25	22	17	7	150

*Note.* <sup>a</sup> Highest number of posts in support category; <sup>b</sup> Highest number of posts in question content category; <sup>c</sup> Highest number of posts in both support and question content categories.

Table 4

*Troll Comments*

Post content	Troll comments (%)	Support type	Question content
How does one go about getting rebound sex??	.35	Informational	Hooking up
When it's just you and a cute girl on the bus.... How do I not make this awkward?	.25	Emotional	Pursuing
I want honest opinions, I'm a 6'10 guy, is that too tall to be considered attractive?	.24	Emotional	Pursuing
Why can't we live in a world where we can develop our own cultures. Why is it that I can't live in my own ethnic community without seeing someone that's not part of it want to join in?	.24	Rhetorical questions	Other
Why is that I feel something inside me when my friend told me that she's looking for a hookup / or relationship?	.17	Emotional	Friends
Best place on campus to meet great girls?	.16	Informational	Pursuing
How do I stop hating that my boyfriend has/makes female friends?	.14	Emotional	Relationships
Can't stop thinking about the girls my boyfriend hooked up with while we were broken up, any tips from ppl with similar experiences?	.13	Emotional	Relationships
Gift ideas for gf? 200 budget. Thanksy'all	.13	Informational	Relationships
Any good shows that have individual story lines for each episode? An overarching story over the season is ok, but one story per episode is more important to me	.13	Informational	Entertainment, activities, food
What happens if you miss a seminar?	.13	Informational	Course-related
Looking forward to going home, except I have to take the train which cause me to have panic attacks. Any tips?	.11	Emotional	Mental health
If a girl used to like you/love you but you didnt realize at the time and now shes having a hard time believing you and doesnt know what she wants but still hooks up with you WHAT DOES IT MEAN :(	.09	Emotional	Relationships
My friend that is in 5th year is ALWAYS with his gf and I never hang out anymore. What can I do to make him realize it's not healthy to be together 24/7	.07	Emotional	Friends
How much would it cost to adopt/buy a cat?	.07	Informational	City of Guelph
Real talk anyone just wanna chat? About anything. Drop a topic and have a discussion, I'm up for it. No negativity though, all good vibes.	.06	Instrumental	Seeking connection
Every time I fuck a girl she says it hurts her. What can I do?	.06	Emotional	Hooking up
Do Asian boys like white girls? I notice that most seem to stay interracial.. Am I out of luck??	.05	Emotional	Pursuing
SOS I'm a girl, just masturbated for the first time. As I started to climax, I... peed a bit. I cleaned myself up, weirded out. I started again & as I got myself off I peed AGAIN. Why? Is that normal?	.05	Emotional	Hooking up
Am I supposed to just leave it? (picture of spilled coffee)	.04	Informational	Advice
What year were you born in?	.04	Informational	Other
So, imagine that 2 girls have the same personality. Girl A is amazing in bed but not very pretty. Girl B is pretty but terrible in bed. Which would you date?	.04	Informational	Hooking up
Girls who are dtf???	.03	Instrumental	Hooking up
I been going to the gym for 3 months now and im noticing improvements on how much i can lift but cant really noticed any changed in my arms, should i be using protein powder cuzi don't	.03	Informational	Gym/health

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instrumental support (2.4%), and 210 provided appraisal support (15.73%).

**Antisocial responses.** Out of the 1335 replies we analyzed, approximately 5% ( $n = 70$ ) were categorized as troll comments. Out of the 150 posts, 24 received at least one troll reply (16%). Table 4 displays these posts. The highest percentage of troll replies a post received was 35% (“How does one go about getting rebound sex??”). The type of support posts that got the most troll comments were emotional support ( $n = 11$ ; 45.8%) and informational support ( $n = 10$ ; 41.7%). The type of questions that got the most troll comments was hooking up ( $n = 5$ ; 20.8%), pursuing ( $n = 4$ ; 16.7%), and relationships ( $n = 4$ ; 16.7%).

### Discussion

The results of Study 1 provide evidence of prosocial behaviours occurring on an anonymous social media platform. Specifically, we found that university students used *Yik Yak* to seek social support from their community group peers by posting questions, and also to provide support to their peers by replying to their posts. Furthermore, the occurrence of antisocial troll behaviours was very low in comparison to the number of prosocial responses. Secondly, we were able to explore what kind of support students were requesting and the common themes of the questions asked. We found that students requested informational support (i.e., advice, guidance, suggestions) the most, specifically about courses and campus resources. The next most frequently requested type of support was emotional support; we found that students tend to request emotional support when inquiring about romantically pursuing someone, relationships, and hooking up.

### Study 2

The purpose of Study 2 was to provide further support for the occurrence of online prosocial behaviours on anonymous geographically based social media (i.e., *Yik Yak*) and to examine the influence of group identification and group norms on these prosocial online behaviours.

### Method

**Participants.** One hundred and twenty-nine university students completed a survey focusing on various aspects of student life, including measures of group identification, perceived group norms about online social interactions and online behaviours, in exchange for course credit. Participants were recruited using convenience sampling from a participant pool and through advertisements on campus. Participants recruited from the participant pool received course credits as compensation, while those recruited through

on campus advertisements received monetary compensation.

### Materials and procedure.

**Group identification.** Identification was assessed using the Cameron (2004) measure of identification. The measure consists of fifteen items, rated on a five-point Likert scale ranging from 1 “*strongly disagree*” to 5 “*strongly agree*”. A sample item is “*I have a lot in common with other students at the University of Guelph*”. Items were combined by averaging across all items ( $\alpha = .92$ ); greater values indicate greater degree of group identification.

**Perceived group norms.** The measure consists of four items that focused on group norms about online behaviours. Items were assessed using a five-point Likert scale from 1 “*strongly disagree*” to 5 “*strongly agree*”. A sample item is “*The majority of University of Guelph students would provide constructive advice to an online question made from the campus.*”. Items were combined by averaging across all items ( $\alpha = .81$ ); greater values indicate greater support for online prosocial behaviours.

**Behaviours on *Yik Yak* platform.** Participants were asked a series of questions about their usage of the *Yik Yak* platform within the campus boundaries. Participants were asked if they had the *Yik Yak* app on their phone; if they had ever posted a genuine question on the platform while geographically on campus; if the question received replies; if the replies answered the question. Participants were also asked if they had replied to someone else’s question while they were on campus and if the reply they provided was intended to offer support to the user who posted the question.

### Results

**Types of online behaviours.** Of the 129 participants, 63 (49%) did not have the *Yik Yak* app on their phone, while 66 did (51%). Of the participants who had the *Yik Yak* app on their phone, 29 (44%) had never posted a question or a reply on the platform. Twenty-four (36%) had posted both replies and questions, 5 (8%) had only posted a question, and 8 (12%) had only posted replies.

A total of 29 participants had posted a question on the platform. Of these, 22 (75.9%) received responses. Of these, 14 (63.6%) were classified as having received support, 6 (27.2%) were classified as having received the support directly requested and 2 (9.1%) were coded as offensive, demeaning or hurtful. Supporting the hypothesis that community peer ingroups provide social support via online platform, even if anonymous, more support responses were

reported than antisocial ones (i.e., offensive, demeaning or hurtful),  $\chi^2(1) = 11.56, p = .001$ .

**Group identification and norms.** A series of logistic regressions were conducted to examine the relationship between group identification, norms and usage of the platform. Group identification and norms were centered at their respective means.

The first regression examined whether or not participants had the app on their phone. The overall regression accounted for a significant amount of variance,  $\chi^2(3) = 15.75, p = .001$ . Examination of the regression revealed that identification was significantly related to ownership of the app  $b = .57, Wald z = 7.71, p = .006$ , that norms were not significantly related to ownership of the app,  $b = .32, Wald z = 2.65, p = .104$ , and that the interaction of identification and norms was not significantly related to ownership of the app,  $b = .26, Wald z = 1.30, p = .254$ .

The second regression examined whether or not participants had posted questions on the platform while on campus. The overall regression accounted for a significant amount of variance,  $\chi^2(3) = 28.81, p < .001$ . Examination of the regression revealed that identification was not significantly related to having posted questions,  $b = .72, Wald z = 3.76, p = .053$ , that norms were significantly related to having posted questions on the platform,  $b = .81, Wald z = 7.09, p = .008$ , and that these main effects were qualified by the interaction of identification and norms,  $b = .81, Wald z = 4.55, p = .033$ . The interaction was examined using simple slopes by degree of group identification (i.e., +1SD vs. -1SD; see Aiken & West, 1991). Supporting the hypothesis of the SIDE model, at high degrees of group identification, norms significantly increased the likelihood of having posted a question on the platform,  $b = 1.62, Wald z = 13.98, p < .001$ . However, at low degrees of group identification, norms were not significantly related to the likelihood of having posted a question on the platform,  $b = .01, Wald z = .01, p = .992$ .

The third regression examined whether or not participants had posted a reply to answer a question on the platform while on campus. The overall regression accounted for a significant amount of variance,  $\chi^2(3) = 24.86, p < .001$ . Examination of the regression revealed that identification was not significantly related to having posted replies,  $b = .61, Wald z = 3.24, p = .072$ , that norms were significantly related to having posted replies on the platform,  $b = .76, Wald z = 6.97, p = .008$ , and that these main effects were qualified by the interaction of identification and norms,  $b = .74, Wald z = 4.47, p = .034$ . The interaction was examined using simple

slopes by degree of group identification. At high degrees of group identification, norms significantly increased the likelihood of having posted a reply to a question on the platform,  $b = 1.49, Wald z = 13.05, p < .001$ . However, at low degrees of group identification, norms were not significantly related to the likelihood of having posted a reply to a question on the platform,  $b = .02, Wald z = .01, p = .962$ .

## Discussion

Study 2 accomplished two main objectives. First, the results of Study 2 provided further support for the occurrence of prosocial behaviours on the *Yik Yak* platform through self-report data. We found that university students used *Yik Yak* to seek social support from their community group peers by posting questions on the app. Furthermore, students were successful in receiving support from their peers and reported having received more support responses than antisocial ones (i.e., offensive, demeaning, or hurtful replies).

Second, the results of study 2 help understand under which conditions anonymity may influence individuals to provide their online peers with social support by exploring factors that might promote this behaviour. Specifically, we examined the relationship between group identification, norms, and usage of the platform. We found that degree of identification predicted having *Yik Yak* downloaded on their phone. We also found that norms alone were not a predictor of *Yik Yak* usage. More importantly, the interaction of perceived group norms and group identification was a significant predictor of the type of usage; when students identified highly with their community group peers, norms significantly increased the likelihood of having posted a question on *Yik Yak* and posting a reply to a question on *Yik Yak* while on campus.

A potential explanation for these findings could be due to the anonymity feature of the *Yik Yak* platform. Indeed, according to SIDE theory, anonymity increases the degree to which an individual identifies as a member of a group and this individual will likely be more influenced by group norms (Postmes et al., 2001; Reicher et al., 1995). As suggested by the results of our studies, it is the norm for students to provide support (or prosocial responses) to their community group peers who request support on *Yik Yak*. Thus, students may be influenced by the group norm to provide prosocial responses on *Yik Yak* due to their salient group identity and the anonymous environment. Furthermore, group identification alone does not predict prosocial responses on *Yik Yak*; prosocial group norm in combination with a salient group identity is required to predict prosocial behaviours. Overall, our results provide converging support that anonymity in an online environment can



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promote prosocial behaviours as long as the group identity is salient and the norm is prosocial interaction.

### General Discussion

Traditionally, anonymity has been thought to promote negative behaviours in social interactions. However, according to the SIDE theory, anonymity could actually induce both negative and positive behaviours depending on the salience of group identity and norms (Postmes et al., 2001; Reicher et al., 1995). We wanted to explore occurrences of positive prosocial supportive behaviours in an online, anonymous environment, and examine if the SIDE framework could help us understand the occurrence of these prosocial behaviours on anonymous social media. Herein, we examined how anonymity promotes prosocial behaviours, focusing on social support, in an online environment among individuals in the same social network. Specifically, we used *Yik Yak* as our anonymous social media platform to determine whether university students asked their community group peers for social support, if they received social support from their community group peers, and if they received antisocial responses from their community group peers. To explore our research questions, we conducted two studies: an observational study sampling posts made on the *Yik Yak* platform (Study 1) and a correlational study focusing on self-reported *Yik Yak* usage (Study 2).

In Study 1, we observed posts both requesting and receiving social support, with a minimal amount of antisocial troll behaviours (i.e., replies posted to start an argument or to stir up emotion for no reason). Furthermore, we found that more than half of the questions requested informational support (i.e., advice, guidance, suggestions) and majority of the questions were university-related (i.e., course-related, campus resources). In Study 2, we found further evidence to support our conclusions from Study 1. Specifically, we found that university students asked their community group peers questions and received prosocial responses to their questions on *Yik Yak*. We also found that individuals self-reported receiving more prosocial responses than antisocial responses. Our results further suggest that group identification and norms predict whether a student interacted with their peers on *Yik Yak*. Specifically, when university students identified highly with their community group peers, norms increased the likelihood of having posted a question and replying to a question on *Yik Yak* while on campus.

Our findings provide converging evidence to help us answer our research questions. Firstly, both Study 1 and Study 2 demonstrate that university students used the anonymous social media platform to ask their community group peers for social support via

questions. Secondly, students also received responses from their peers: in Study 1, we observed that questions posted on *Yik Yak* received supportive replies; in Study 2, students reported having received support from their peers. Finally, both studies show that antisocial behaviours is minimal on posts that request social support.

Most importantly, the results of our studies taken together contribute to our understanding of why prosocial behaviours occur in anonymous online environments. Using SIDE theory (Reicher et al., 1995) as our theoretical framework, we speculated that group identity and norms would explain why individuals provide their anonymous peers with social support. As predicted, we found that when students identified highly with their community group peers, group norms significantly increased the likelihood of requesting social support, as well as providing social support on *Yik Yak*. This finding helps us to further understand the factors that influence whether positive behaviours will occur in CMC environments. Specifically, we can predict that prosocial group norms and a salient group identity will most likely lead to prosocial behaviours in anonymous online settings.

### Implications

Our findings have important implications for understanding what kind of behaviours occur in anonymous online settings. Anonymity has traditionally been thought to promote antisocial behaviours in CMC, yet research has also documented occasions in which prosocial behaviours occur instead. However, there has been a lack of explanation as to why anonymity would influence this type of positive behaviours in settings that have traditionally promoted negative interactions. Our results demonstrate the circumstances under which prosocial behaviours occur. With the ever-growing use of social networking sites (Asur et al., 2011), it is important to understand what variables may affect the type of behaviours that occur in online settings. For example, this information can be used to help reduce occurrences of negative behaviours such as cyberbullying. Furthermore, understanding how to promote prosocial behaviours online could help us take advantage of the positive aspects of anonymous social networks (e.g., being able to freely express themselves, avoid judgment; Kang et al., 2013) while controlling for harmful antisocial behaviours.

Our findings also have some important implications for supporting university students. Specifically, we found that the majority of the questions requested informational support about course-related topics and campus resources. Although *Yik Yak* is no longer in service, it served as a useful

tool for connecting students with their fellow peers on campus and provided an anonymous environment where students felt comfortable obtaining and providing social support on topics related to university life. Social media designers planning on designing an app similar to *Yik Yak* should keep in mind the role that group identification and norms play in anonymous online communication in order to develop an app that can help university students support each other anonymously while minimizing potential antisocial behaviours.

### Limitations

There are several methodological limitations that should be considered when interpreting the results. First, given the nature of the research question (i.e., we were looking at anonymous online social behaviours), we were unable to link specific online posts to specific individuals. Thus, the best option for us was to take advantage of *Yik Yak* 1.5 mile geographic radius and examine posts on campus. However, there is no guarantee that all posters were students which may affect the results of our study. Another limitation to consider is that the prevalence of antisocial behaviours documented in our studies may not be entirely reflective of actual rates of these behaviours online. Specifically, *Yik Yak* had a feature that allows users to upvote or downvote any posts and replies. Any posts that receive 5 downvotes got removed and were thus not available for our documentation. Furthermore, users could flag postings that are racist, homophobic, or generally abusive in order to get them removed. Thus, it is possible that there may be more antisocial responses submitted to the system than those observed by our examination of the posts available to be seen on the platform. Lastly, our sample size was fairly small; a larger sample size would greatly benefit future research, as it will allow for a stronger comparison of levels of group identification and group norms.

### Future Directions

Future research should continue to explore the variables that promote prosocial behaviours in online anonymous settings. Specifically, extending our study to use a different social networking platform or population sample could provide further insight on how group identification and norms influence prosocial behaviours. For example, can this relationship be found on general discussion boards such as *reddit* and *4chan*? Or is it only limited to smaller community forums such as mental health support groups? Increasing our understanding of how to encourage prosocial behaviours across different platforms and populations can help in the future development of anonymous social media where users will be able to experience the advantages of using

anonymous social networks (e.g., able to freely self-disclose and get support from peers without judgment) while minimizing negative behaviours.

It should also be noted that the *Yik Yak* platform was shut down during summer 2017 (CBC News, 2017). Other platforms, however, still continue to offer location-based geographical proximity postings (e.g., *Nearby*). Future research may wish to replicate our findings on these other platforms.

### Conclusion

Anonymity and socially dysfunctional behaviours, such as aggressive behaviours, have a long history in social psychology. The present study aimed to explore the presence of online prosocial behaviours on anonymous geographically based social media (i.e., *Yik Yak*) and to examine whether such behaviours could be explained using a theory focusing on group processes. Results of the study suggest that online prosocial behaviours can occur, even under conditions of anonymity. Moreover, our results suggest that identity and norms derived from social groups can help explain why people would engage in prosocial behaviours. In sum, the results of the present study offer some hope for positive contributions of anonymous social media platforms.

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## APPENDIX

Table A

*Type of Support (Questions) Coding Scheme*

Type of Support	Description	Example
Informational*	Suggestion, directives, information	“What time do places on campus stop serving breakfast?” “SOS how do u unmatched on tinder!?”
Emotional*	Esteem, affect, trust, concern, listening, personal Seeking to be reassured, to improve self-esteem Advice	“how do I stop hating that my boyfriend has/makes female friends?” “Looking forward to going home, except I have to take the train which cause me to have panic attacks. Any tips?” “Is an 18 yr old girl hooking up with a 24yr old guy weird?” “I’ve been there before”
Instrumental*	Aid in kind, money, labor, time, modifying environment Helping behaviours	“Real talk anyone just wanna chat? About anything...” “Does anyone have that I can grab off of? Urgent”
Appraisal*	Affirmation, feedback, social comparison	“Who else is screwed for this stat*2040 exam?” “Did anyone else find the first question hard on that econ midterm? Or am I just that stupid...”
Rhetorical questions	Not expecting a response	“What happened to people respecting the quiet hours? Like I swear these assholes were quieter before they started.”
Other	Does not fit into any categories above	

*Note.* \*Gottlieb (1978).

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Table B

*Type of Question Content Coding Scheme*

Category Name	Definition	Example
Course-related	Anything to do with a specific course in general, professors, assignments, examinations, and classmates in the course.	“Will they bell curve econ2310” “Any advice for the frhd 1100 and frhd 3060 exam?”
School-related	Anything to do with the university campus that isn't course specific. Includes administrative questions, location of buildings, important dates.	“When is the last day of the add period?” “What's for dinner at mountain?”
Intimate relationships	Specific questions about boyfriend/girlfriend. Can also be about someone they're casually dating or “friends with benefits” (FWB – casually hooking up with). Anything to do with the actual act of sex can be coded as “hooking up”.	“how do I stop hating that my boyfriend has/makes female friends?” “Gift ideas for gf? 200 budget. Thanksy'all”
Hooking up	Questions about kissing, oral sex, touching, cuddling, and anything intercourse-related. Includes asking if anyone is down to engage in any of the activities above.	“Hey ladies I'm just wondering what your opinion is regarding the optimal duration of sexual activity?” “How does one go about getting rebound sex?”
Pursuing	Questions about meeting girls/guys, pursuing someone romantically, may mention turn ons and turn offs, flirting, attractiveness, how to approach them. Includes using social media applications (e.g., Tinder) to meet people.	“Is 6'5” attractive or is that too tall?” “I really want to talk to this cute girl in my class, how should I try to start a convo?” “Anyone actually hook up with someone you met off YikYak?”
Friends	Questions that mention friends.	“My friend that is in 5th year is ALWAYS with his gf and I never hang out anymore. What can I do to make him realize it's not healthy to be together 24/7”
Alcohol/ Substance-use	Question has to do with alcohol and drugs. Questions that refer to “going out” as “drinking” can be coded as this category.	“Does anyone have that I can grab off of? Urgent” “Best delivery options while high?”
Going out, partying-related	Anything to do with partying, or going out.	“Where is the best place to party downtown?”
Housemate, roommate, lan- dlord, RA	Questions related to living situation off-campus or in residence.	“How much is too much to pay for a single apartment in Guelph? I'm thinking of renting one next year. Would 900\$ per month be decent, or should I go higher to get my money's worth?” “Would it be easier to find a one bedroom apartment or to find two new roommates?”
City of Guelph- related	Questions about Guelph in general, such as locations of places in the city, by-laws, time places open/close, etc.	“Where in Guelph is a good place to get your hair dyed that is reasonably priced?” “Where can I get my nose pierced in Guelph”
Gym, health	Questions about the gym or health in general. Includes questions about physical appearance. If it has to do with mental health, see this category.	“Is the gym busy?” “I need to get an STI test ASAP. How can I do this?” One of those mornings where I look in the mirror and think things like: "are my eyes placed symmetrically?" and "has that ear lobe always been bigger than the other?" Am I the only one who does this?”
Mental Health	Questions about mental health, including disorders, therapists/councillors, emotions/feelings.	“Have to take the train this weekend which gives me panic attacks, any tips?” “Too depressed to get out of bed, what should I do?”
Entertainment, activities, food Technology	Entertainment purposes, such as movies, activities, sports, games, going out to eat, ordering take-out, etc. Includes social media, computers, cell phones, and the internet in general.	“Anyone else excited for The 100 Season 3!!!!?” “Best on-campus food?” “Wtf are yakarma?”
Family	Family-related.	“SOS how do u unmatched on tinder!?” “If you think you're going to fail a course, would you tell your parents now or wait to see if you magically passed?”
“What should I do?”	General question about what someone should do in particular situation that does not fit in with any of the above categories.	“Am I supposed to just leave it?”(picture of spilled coffee)
Seeking social connection	Questions that seek connection with people or a conversation. These can also be the bold or controversial statement type questions that create a lot of conversation.	“Lol all the softies get upset when I say learn to handle your liquor. What's the point in the university having shot glasses saying we outdrink everyone else if y'all can't even keep it down.” “Any guys looking for sexy time?”
Other	Anything that does not fit in one of the categories above.	“How many coffees have you had today?” “So why is everyone freaking out over this song that was released 14 years ago..? It ain't bad, but why all of a sudden the trend?”

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Table C

*Support Provided Coding Scheme*

Support Provided	Definition	Example
Actual support	The responder is actually trying to help the poster	“Last day to drop courses is March 14 <sup>th</sup> ” “I feel the same way!! Just try not to let it get to you”
Neutral	The responder does not add anything to the conversation  Useless comment	“Okay” “LOL”
Troll	The responder appears to intentionally want to stir up emotion	“Just get laid, solves all your problems” “Trolling is my speciality”
Additional information	The responder requests more information	“What happened?!”
OP	The poster responds to responders	

Table D

*Type of Support (Replies) Coding Scheme*

Type of Support Provided	Definition	Example
Informational*	Suggestion, directives, information	“The foodcourt opens at 7am” “You can unmatched on Tinder by opening up your match’s profile, it’s under options”
Emotional*	Esteem, affect, trust, concern, listening, personal Seeking to be reassured, to improve self-esteem Advice	“That sucks OP, maybe try listening to music to relax you?” “Don’t stress about it, it’s not weird at all” “I’ve been there before”
Instrumental*	Aid in kind, money, labor, time, modifying environment Helping behaviours	“I’ll talk to you! What’s up?” “I have some you can grab off, come to Mountain res”
Appraisal*	Affirmation, feedback, social comparison	“I didn’t study either!!” “You’re right, that midterm was soo hard”
No support provided	Useless comment, does not add to the conversation, does not help the poster in anyway	

*Note.* \*Gottlieb (1978).