To boldly go where no group has gone before: An analysis of online group identity and validation of a measure

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ABSTRACT

Online groups have become more popular in recent decades, in both research and practice. Many authors have proposed important outcomes of group membership, and some have even investigated some preliminary dynamics of these online groups. Unfortunately, no validated measure of online group identity exists, causing these researchers to employ measures with poor psychometric properties or concerning construct validity. For these reasons, the current article undergoes a multiple study process to validate a measure of online group identity. In doing so, several aspects of online group identity are discovered, largely based on propositions previously posed for offline groups. Study 1 demonstrates that individuals from a general sample identify with online groups, and the measure has an identifiable factor structure. Using a naturally occurring online group, Study 2 shows the measure's concurrent, convergent, and divergent validity, while simultaneously revealing many novel relationships of online group identity. Lastly, Study 3 investigates the effect of The United States President, Barack Obama, creating an account on the website studied in Study 2 and interacting with group members. The results of Study 3 reveal that online group identity did not change after this historic event, although members had notable emotional responses. In all, the current study illustrates the validity of an online group identity measure, and discovers many important relationships previously unknown in regards to online group identity. It is believed that the investigated measure of online group identity will become an important tool in future research, especially when further probing the relationships analyzed in the current study. Further implications and suggestions for future studies are discussed.

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1. Introduction

The internet has rapidly become essential to everyday life. Worldwide, a 528% increase in internet users occurred between 2000 and 2011, and 78.6% of North Americans are internet users (Internetworldstats.com, 2012). Activities such as emailing or instant messaging are vital for many individuals, leaving people connected unlike ever before. This increase in quick and easy communication has also created new social groups and movements. For instance, the use of Facebook and Twitter helped spur the Arab Spring of 2011 (Vargas, 2012). With the use of these websites, Middle Eastern revolutionaries were able to coordinate their efforts efficiently, and could spread their word to a worldwide audience (Khondker, 2011; Marzouki, Skandrani-Marzouki, Bejaoui, Hammoudi, & Bellaj, 2012). *The National* reported during the Arab Spring that, "Nearly 9 in 10 Egyptians and Tunisians surveyed

in March said they were using Facebook to organize protests or spread awareness about them" (Huang, 2011). While these computer mediated communication (CMC) tools are helping to connect offline or "real life" social groups, they are also creating new and dynamic online groups.

Online groups consist of three or more people who perceive a common in-group identification, and they primarily interact through CMC (Baker, 2008; McKenna, 2008; McKenna & Green, 2002). Many online activities result in the formation of online groups. For example, some individuals join message boards designed to connect cancer patients to receive social support from members (Beaudoin & Tao, 2007; Fogel, 2004). Alternatively, some people play online games, and create online groups to enhance their enjoyment (Frostling-Henningsson, 2009; Longman, O'Conner, & Obst, 2009). In both of these examples, and more generally, individuals connect through the internet to interact with similar others, and over time they categorize, identify, and compare themselves as a part of these online groups. Although research on the psychological effects of internet use is relatively new, recent years have seen a burgeoning of interest in online groups. Popular press articles often speculate about the detriments of online groups to

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their users (Chiu-ying & Hsu, 2012; Torres, 2012), while certain organizations actively promote online group formation (Google, 2012; Ward, 2012). Despite mainstream interest, only a modest amount of psychological research has been performed on online groups.

Little empirical evidence has been discovered about online groups, as many publications only outline propositions about online groups (Joinson, 2007; Wallace, 1999). Even the propositions made are often based on offline group studies (e.g. race, gender, political affiliation), although researchers note the drastic difference between offline and online groups (Friedman, 2007; Kollock & Smith, 1999; Nip, 2004). For example, offline groups usually have clear inclusion criteria, such as physical characteristics (e.g. gender, geographic location, skin color). Alternatively, online group membership is often vague, as it is unclear whether "lurkers" actually constitute as members (Preece, Nonnecke, & Andrews, 2004; Setoyama, Yamazaki, & Namayama, 2011). Additionally, aspects such as group size and power are usually salient in offline groups, but these aspects are not as important in online groups (Herring, 2003; Welser, Gleave, Fisher, & Smith, 2007). While researchers often claim that online group membership can be important for group members, few studies have actually investigated this notion. The dearth of research is unfortunate, as many propositions draw from offline group literature, and the ability to generalize to online groups is uncertain at best. Therefore, many concepts which may be taken as true are based on undefended notions, and these concepts should be empirically researched further before the literature can reliably progress.

The current study examines a number of previous propositions about online groups and empirically tests them. First, basic questions about online groups are investigated, such as whether individuals actually identify with online groups. Then, several corollaries of online group identity are analyzed. Also, particular aspects of online groups are examined, such as size and power, to determine whether their relationships with online group identity are comparable to offline groups. In the process of addressing these questions, the current study also analyzes the psychometric properties and validity of an online group identity measure. Therefore, the current study creates an initial analysis of online groups to understand the effects of online group membership, and validates a measure of online group identity for future use.

2. Background

2.1. Group identity and online groups

Research has shown that group membership greatly impacts an individual's perceptions, motivations, and behaviors. For these reasons, researchers have shown great interest in group members' race (Sellers & Shelton, 2003; Walton & Cohen, 2007), gender (Cheryan, Plaut, Davies, & Steele, 2009; Swim, Aikin, Hall, & Hunter, 1995), sexual orientation (Diamond, 2003; Gangstad, Bailey, & Martin, 2000), political affiliation (Cohen, 2003; Pratto, Sidanius, Stallworth, & Malle, 1994), and other characteristics (Anderson, John, Keltner, & Kring, 2001; Biernat, Vescio, & Green, 1996), as well as what group characteristics cause their members to act in systematic ways. A multitude of terms and concepts have been created to explain these group dynamics. Among these are group membership (McClain, Carew, Walton, & Watts, 2009), group identity (Kramer & Brewer, 1984; Leach et al., 2008), racial identity (Behrens, 1997; Cokley, 2002), identity fusion (Gomez et al., 2011; Swann, Gomez, Seyle, Morales, & Huici, 2009) and group consciousness (Duncan, 1999; Foster & Tsarfati, 2005). Brief definitions are presented in Table 1. While these concepts are highly related, they still denote differences in an individual's perception of

their group membership. Since the current study is one of the first to analyze online group membership, it is important to choose the concept that best characterizes online group membership.

Historically, group membership and group identity are used to determine an individual's belongingness to a group, whereas the other three concepts are only related to membership and identity. In other words, an individual must classify or identify with a group before they can experience racial identity, identity fusion, or group consciousness (Cokley, 2002; Foster & Tsarfati, 2005; Gomez et al., 2011). After classification or identification, these three concepts explain particular aspects of group membership. These concepts may be useful for future studies, but should not be investigated until preliminary aspects of group membership are investigated.

This leaves group membership and group identity for two possibilities for current online group research. Group membership largely refers assigning individuals to certain groups, often done by others (e.g. court cases; McClain et al., 2009). The guidelines for assigning group members are often arbitrary and changing. For example, African Americans are characterized by how much African American "blood" they have, determined through their heritage. At different points in American history, an individual was determined to be African American through varying amounts of "blood," ranging from one-half to "any ascertainable amount" (McClain et al., 2009). While these designations can be practical, they rarely capture the extent an individual perceives themselves a part of a group. An individual with one-half African American "blood" may not perceive themselves to be African American due to their upbringing, while an individual with one-sixteenth may perceive themselves as African American because they were raised in an African American community. So, while group membership could be applied to online groups through measuring time spent online, it would likely be an insufficient measure. With the other four options discounted, it seems that group identity is most suitable for the present research.

Often, researchers point towards an individual's group identity when explaining group members' behaviors. Group identity (defined in Table 1) is an aspect of the self, separate from the personal self (e.g. their personality characteristics), but still constitutes a large portion of self-perceptions (Leach et al., 2008). Since group identity is central to the self, it is an important determinant in human motivation and behaviors (Abrams & Hogg, 2004; Brewer, 1991, 2007; Tajfel & Turner, 1979). Individuals always compare themselves and others as parts of the groups they belong, both consciously and subconsciously, which partly explains discrimination and racism (Ahmed, 2007). These effects are found even when groups are based on weak ties or assigned randomly (Tajfel, Billig, Bundy, & Flament, 1971). Given these considerations, online group membership likely affects motivations and behaviors, only if individuals actually identify with these groups.

As mentioned, internet use is rapidly increasing worldwide, and individuals are adapting this new technology for recreational and business purposes. A large function of the internet is communication. Individuals can connect to others through services such as Skype, Facebook, and message boards. While these services allow individuals to interact with distant friends, they also allow people to connect with strangers. This possibility has sprung many activities. For example, Omegle is an instant messaging service which users can be instantly connected to a complete stranger to talk through text, while Chatroulette does the same for video chatting. While these two services are certainly popular, a common outcome of connecting with online strangers is the formation of online groups. These groups can be formed through shared characteristics, such as members of special-interest forums (Yu & Young, 2008). They can also be formed through common online activities, such as members of video game communities. Regardless of the activity or reason for online groups to exist, several researchers

Table 1
Common group term definitions.

Group membership	Assignment of an individual into a group based on characteristics specific to the group (i.e. labeling someone as African American because they appear phenotypically African American)
Group identity	Awareness of belonging and psychological attachment to a group (i.e. recognizing, associating, and valuing being African American)
Racial identity	Multidimensional construct largely consisting of physical, psychological, sociopolitical, and cultural elements. Similar to group identity (i.e. identifying and assimilating with African Americans)
Identity fusion	Overlap between an individual's social and personal self, which that the two become synonymous (i.e. seeing oneself as African American more so than an individual)
Group consciousness	Group identification pared with ideological beliefs about group's social standing and collective action. Often ties own fate with the group's fate (i.e. believing that own conditions can be improved through group action)

have proposed that online groups provide important outcomes for their members, and they are similar to offline groups; however, there is only a limited amount of research to support these notions, existing studies have notable shortcomings, and many central questions about online group identity are left unknown (Barker, 2009; Kim, 2009, 2010; Kim & Park, 2011).

The studies which have already examined online group identity are largely lab studies. In these studies, participants are often assigned their online group membership in a research lab. Then, they are instructed to interact with others through text-based chat, and group membership is displayed on their monitor through pictures. Groups are represented by common pictures, such as cartoon characters (Kim, 2009, 2010; Kim & Park, 2011). Obviously, in these studies, group membership is very artificial. Members have very weak ties, and their perceptions and interactions are vastly different than those that real online groups experience. Therefore, results about online group identity using lab studies may not be generalizable to real online groups, and the findings may not be applicable to real-world settings.

Similarly, group membership is assigned in these lab studies, as noted. Little research has investigated online groups in a naturalistic setting, such as an online support group, and actually demonstrated that individuals identify with these groups. It is entirely possible that online group membership is not naturally occurring, and the previous findings are only present because membership was assigned. This would cause online group identity to be merely an artifact of the methodology used. Thus, another limitation of current online group studies is the lack of empirical evidence showing that group identity naturally occurs.

Additionally, concurrent comparisons between online and offline group identity have yet to be made. Authors often discuss the two, but rarely are the two empirically studied simultaneously. This is problematic because, as stated before, many authors assume the two have similar properties, but this is only based on theoretical arguments. Many aspects of online and offline group membership are very different, such as inclusion criteria and group size and power (Herring, 2003; Welser et al., 2007). Because of this, it is likely that offline and online group identity are different, but it is unknown how different. Another limitation of the current online group literature is uncertainties about the relevance of online and offline group identity.

Lastly, no study has validated a measure of online group identity, and the measures used in studies that have actual online group samples are questionable. Some are only single item predictors, and all of them are designed for offline groups which have not been validated for online groups (Barker, 2009; Kim, 2009, 2010; Kim & Park, 2011). It is problematic to assume that a group identity measure created for offline group use would have identical properties when used for an online group, due to the differences in these types of groups. It is possible that many scale items that accurately gauge offline group identity do not do the same for online group identity, as further noted below. Even results of studies using actual online groups are questionable because of measurement

issues, and authors' conclusions may be based on unfounded premises. While online group membership may have important implications, as authors have repeatedly argued, the true nature of these groups may still be unknown due to methodological issues of studies.

Given these limitations in the current literature on online groups, the current study seeks to analyze the validity of an online group identity measure. Several goals can be accomplished through the validation process. Through using online and offline group identity scales, concurrent comparisons can be made between offline and online group identity. Also, if a valid scale is administered to a naturally occurring online group, the results could provide substantial evidence that individuals identify with online groups outside of a lab setting. Then, correlates of online group identity could be discovered. Lastly, the measure would benefit future researchers, as current authors use inadequate measures for online group identity. A valid scale would allow stronger inferences to be made about online group identity. Therefore, the current article undergoes a three study process to examine the validity of an online group identity measure to improve the methodological vigor of future research.

2.2. Online group identity measure

Although it may be possible, it is problematic to assume that an adapted offline group identity measure would adequately measure online group identity without investigating its validity and psychometric properties. Several factors may cause offline group identity measure to be invalid for measuring online group identity. Online groups may not have the same functions as other commonly studied groups, such an organization or family. These groups likely involve face-to-face exchanges with other members, consistent interactions, and are largely structured. Conversely, online groups usually do not involve any face-to-face exchanges, members can avoid all interactions, and are largely unstructured. An individual may label themselves as an online group member and have high group identity, while group membership is disjointed and unclear. Thus, previously used group identity questions, such as "The ingroup is united" (Jackson, 2002) and "I am a cooperative participant in the social groups I belong to" (Luhtanen & Crocker, 1992), may not accurately gauge online group identity. Until an online group identity measure has its validity analyzed, existing data on online group identity is not reliable.

Instead of creating an entirely new measure of online group identity, the current study modifies an existing measure of group identity. Many viable group identity measures exist. Early measures of group identity conceptualize the construct as a general feeling of connectedness, and operationalize it as a unidimensional measure; however, this has been shown to be an insufficient method of conceptualizing and measuring group identity (Ashmore, Deaux, & McLaughlin-Volpe, 2004; Sellers, Smith, Shelton, Rowley, & Chavous, 1998). Latter scales identify specific facets of group identity, and create multidimensional measures to capture this

construct. Unfortunately, these scales disagree in the number and nature of their subdimensions (Cameron, 2004; Jackson, 2002; Sellers et al., 1998). Fortunately, a group identity scale exists which managed to synthesize the efforts of these previous researchers, while adhering to existing findings.

This scale is Leach et al.'s (2008) measure of group identity. To create their scale, the authors performed a literature review on existing group identity measures, and fused their subdimensions into a hierarchical, multidimensional measure. This scale consists of five components of group identity, which also form two second-order factors. The five components are individual self-stereotyping, the perception of similarity to other group members; in-group homogeneity, the perception that the entire group is similar; solidarity, a psychological and behavioral commitment to the group; satisfaction, positive feelings about the group and group membership; and centrality, the salience and importance of group membership. Individual self-stereotyping and in-group homogeneity form the second-order factor of self-definition, while solidarity, satisfaction, and centrality form the second-order factor of self-investment. The resulting measure consists of 14 items, with 13 of them adapted from previous scales. Leach et al.'s (2008) measure is the most comprehensive group identity measure to date, as it incorporates more identified facets of group identity than any other existing measure.

In addition, Leach et al. (2008) validated their measure through a seven study process. Their results showed that their proposed first and second order factors fit their data well, even when different reference groups were used (University, Dutch, and European). Also, their scale was shown to have high internal consistency, concurrent validity, construct validity, and discriminant validity. Despite the scale's success in measuring offline group identity, no study has used it to measure online group identity, or analyzed whether it is an appropriate measure for online group identity. As previously mentioned, it is problematic to assume that this measure would have identical properties when used for online group identity compared to when used for an offline group identity, due to inherent differences between these two types of groups. Therefore, the current study studies the validity of this measure for online group use.

For Study 1, several hypotheses were created a priori. First, individuals identify with online groups (H1). Second, the measure of online group identity has an identical factor structure compared to when the reference group is an offline group (H2). Third, the measure of online group identity has satisfactory internal consistency, similar to when the reference group is an offline group (H3). Fourth, the measure of online group identity has high convergent validity with another measure of online group identity (H4). Fifth, the measure of online group identity has high concurrent validity with other related measures, but these correlations are smaller than with the alternative group identity measure (H5). Sixth, the measure of online group identity does not correlate with unrelated measures, indicative of its discriminant validity (H6). Further hypotheses are presented below, after the validity of the online group identity measure is tested.

3. Study 1

The goal of Study 1 is to determine whether individuals from a general sample identify with online groups, and to discover the psychometric properties of a scale to measure online group identity. Of particular interest were the scale's factor structure and internal consistency. The results of Study 1 are supported using Studies 2 and 3's samples, detailed in those studies.

3.1. Study 1 participants/procedure

Study 1 used a student sample, recruited from a large northeastern university. In exchange for participating, participants were awarded course credit. Two items were included to detect insufficient motivation (ex. Please mark the number 1 to this question). The number of participants for Study 1 was 190, but 25 were removed from the analyses. Seven did not agree to the informed consent, 16 failed the attention check, and two were three standard deviations above the mean for time spent online. These latter participants were removed because individuals who spend an extreme amount of time on the internet may have extenuating conditions for their internet use, such as internet addiction (Nichols & Nicki, 2004). Therefore, their responses are atypical, and may inappropriately alter the results of the study. This left 165 participants. Most of the remaining participants were female (79%), young (mean = 19.03, SD = 1.66), and Caucasian (84%).

3.2. Measures

3.2.1. Group identity

Instead of creating a new measure of group identity, a previously created measure for offline group identity was used. Although many other group identity measures exist, Leach et al.'s (2008) measure gives the most complete views of group identity, and has robust psychometric properties. To properly analyze a measure of online group identity, several comparisons were used. Akin to Leach et al.'s (2008) methodology, several iterations of their measure were administered with different reference groups. In a random order, participants were asked about their group identity in regards to their country of origin, the state of their current residence, their university, their chosen online group, and the group that they identify with the most. Each iteration of this measure consisted of identical items, with only the chosen reference group changed. An example item for university identification is, "It is pleasant to be a member of my university," whereas an example item for state identification is, "It is pleasant to be a member of my state."

Certain alterations to the scale were made to gauge online group identity. Leach et al. (2008) created 14 items which all include an open blank, meant to be replaced with a social group of interest. An example question is "I feel a bond with _____." For the current study, participants were given an extensive definition of online groups, and several examples of potential online groups, such as social news websites or newsgroups. Then, they were told to choose the online group that they are most a member, and this online group would be the reference group for the following questions. "This online group" was placed inside the blank in each of the questions. Also, participants were told if they did not identify with an online group, they were able to respond "Not Applicable" to all the questions of the online group identity measure. Eighty participants gave this answer, resulting in eighty-six participants who responded to the full measure of online group identity. The modified version of the measure, with instructions for Study 1, is included in Appendix A. Below, this scale will be referred to as the Online Group Identity Scale (OGIS).

3.3. Study 1 results/discussion

To handle missing data, a mean imputation method was used for the CFA, where the average value of the subscale was inserted for the missing value.

3.3.1. Confirmatory factor analysis

In the current study, the best fitting model from Leach et al. (2008) was tested to determine whether it had similar fit indices

when the reference group was an online group. The resulting fit indices for each reference group are presented in Table 2. No matter the reference group, the model had acceptable fit. For online group identity, most of the model's fit indices are above .90, except for the GFI which drops to .863. The ratio of χ^2 to degrees of freedom were better than a 2:1 ratio, also indicating good fit. The main residual indices are below .08. Both of these exceed the criterion for acceptable model fit. The standardized item loadings were all above .70, with many above .90 ($p < .05$). Four of the five components' loadings onto the second-order factor were .90, with centrality only loading .51 (all $p < .05$). Finally, the second-order factors had high covariation (.85). These results support Hypothesis 2.

When the reference group was an offline group, the fit indices were comparable. Most were above .90, but GFI reached .866 for the most identified group. All χ^2 to degrees of freedom ratios were worse than when an online reference group was used. Also, all main residual indices indicated worse model fit than when an online reference group was used. Most standardized item loadings were above .60, but often lower compared to an offline reference group. Most components loaded onto the second order factor well, but In-Group Homogeneity reached as low as .37. Finally, the two second order factors had a wide range of covariance (.26–.59).

Additionally, CFAs of the model was replicated using samples from Studies 2 and 3. The results of these CFAs were similar to the results of Study 1, and are presented in Table 2. The model fit the data well, with fit indices all above .90, including the GFI. The main residual indices are below .07, exceeding the criterion for acceptable model fit. The standardized item loadings all exceeded .60, with many in the .90 range (all $p < .05$). Most of the subscales loadings onto were acceptable and statistically significant ($p < .05$); however, In-Group Homogeneity only loaded .31 onto its second-order factor using Study 2's sample, but still differed reliably from zero ($p < .05$). Finally, the two second order factors covaried .65 and .57. Therefore, the replication of the CFA results using samples from Studies 2 and 3 bolsters the results of Study 1, and further supports Hypothesis 2.

From these results, the OGIS is psychometrically sound. Most fit and residual indices were more satisfactory than when an offline reference group was used, indicating that the scale is appropriate for measuring online group identity. Also, as Brown (2006) notes, it is important to check for areas of localized weakness when performing a CFA. To check for areas of localized weakness, the model's loadings were analyzed. For the OGIS, the subscales' loadings onto the second-order factors routinely exceeded .70, except for the In-Group Homogeneity subscale for Study 2's sample. It is unsurprising that this subscale had low loadings. Potentially more so than any other group, internet users have a broad range of ages,

connect from a wide range of locations, and have varied backgrounds and interests. When individuals identify with an online group, they may still recognize these differences, believe that the online group is a diverse collection of individuals, and even embrace these differences. If Study 2 was the only sample in the current article, then the In-Group Homogeneity subscale may have been dropped from further use; however, samples from Studies 1 and 3 indicate that the In-Group Homogeneity subscale does adequately load onto its respective factor. Therefore, the replication of the results supports the use of this subscale, and maintains that the OGIS has a satisfactory factor structure.

3.3.2. Reliabilities and descriptive statistics

Additionally, the OGIS had a satisfactory reliability of .94 in Study 1. Each of its subscales scores were .83 (Solidarity), .93 (Satisfaction), .90 (Centrality), .91 (Individual Self-Stereotyping), and .96 (In-Group Homogeneity). Also, the total scale had a reliability of .90 in Study 2 and .90 in Study 3. Subscale reliabilities for Studies 2 and 3 are presented in Table 3. These results are comparable to Leach et al.'s (2008) original publication. These findings provide strong support Hypothesis 3.

Furthermore, correlations between subscales of the group identity measure are presented in Table 3. Most correlations between the individual subscales and the total scale are extremely high, with all but one being above .70. Additionally, most intercorrelations between the subscales are considered strong (about .50) by preexisting standards (Cohen, 1992). These findings were generally replicated with Studies 2 and 3; however, In-Group Homogeneity had considerably lower intercorrelations compared to Study 1. Nevertheless, these results largely support Hypothesis 2 and 3, and provide evidence that the OGIS has satisfactory psychometric properties when used for online group identity.

Presented in Table 3 are the descriptive statistics and reliabilities for the OGIS. Its group mean (4.3) was comparable to the other reference groups of state (4.7), country (5.3), university (5.7), and most identified group (6.1); however, a repeated measures ANOVA revealed that these differences were significant ($F = 78.616$, $p < .001$), and post hoc tests with a Bonferonni adjustment reveal significant differences between each group comparison ($p < .01$). Also, while online group identity had the lowest mean, some individuals rated their online group as their most identified group. The results show that individuals identify with online groups, supporting Hypothesis 1. These findings lend to the importance of online groups, and show that individuals perceive themselves as a part of online groups.

Since Study 1 revealed that individuals from a general sample identify with online groups, aspects of online group membership can be analyzed. For Studies 2 and 3, two goals are achieved. The first goal is to provide additional validation evidence for the OGIS. The second is to aid in understanding the nature of online groups. Some of this is done through validating the OGIS, while other questions are addressed apart from the validation process.

4. Study 2

The purpose of Study 2 is to validate the OGIS, through examining aspects of its concurrent, convergent, and divergent validity. In the process of validating the OGIS, a number of aspects of online group identity are investigated. To gauge the scale's convergent validity, an alternative measure of online group identity was used. To address the scale's concurrent and discriminant validity, several constructs were chosen and are described below.

First, identity fusion is "a powerful union of the personal and social self wherein the borders between the two become porous without diminishing the integrity of either construct" (Swann,

Table 2
Confirmatory factor analysis fit indices for the online group identity measure using samples 1, 2, and 3.

	CFI	NFI	GFI	SRMR	RMSEA	AIC	X^2	df
Country identity								
Sample 1	.950	.909	.890	.057	.080	213.91	145.9	71
State identity								
Sample 1	.953	.917	.881	.064	.085	221.89	153.9	71
University identity								
Sample 1	.948	.914	.879	.063	.091	236.21	168.2	71
Most identified group								
Sample 1	.947	.920	.866	.094	.103	263.08	195.1	71
Online group identity								
Sample 1	.967	.907	.863	.054	.076	172.89	104.9	71
Sample 2	.973	.931	.911	.055	.063	181.63	113.7	71
Sample 3	.960	.934	.924	.057	.069	237.30	163.9	71

Table 3
Intercorrelations between subscales of the online group identity measure using samples 1, 2, and 3.[a]

Variables	Mean	SD	1	2	3	4	5	6
(1) Online group identity	4.3, 4.2, 4.2	1.2, 1.0, .92	.94, .90, .90					
(2) Solidarity	4.5, 4.2, 4.3	1.3, 1.3, 1.3	.86**, .81**, .82**	.83, .85, .82				
(3) Satisfaction	4.8, 5.0, 5.0	1.3, 1.1, 1.1	.89**, .83**, .87**	.78**, .64**, .70**	.93, .90, .85			
(4) Centrality	3.1, 2.9, 2.8	1.5, 1.6, 1.3	.68**, .81**, .72**	.49**, .57**, .52**	.42**, .55**, .52**	.90, .88, .87		
(5) Individual self-stereotyping	4.5, 4.2, 4.3	1.7, 1.4, 1.4	.82**, .74**, .68**	.60**, .51**, .41**	.69**, .56**, .53**	.37**, .45**, .26**	.91, .91, .90	
(6) In-group homogeneity	4.7, 4.5, 4.8	1.6, 1.3, 1.2	.80**, .39**, .45**	.61**, .10, .17**	.70**, .14, .24**	.34**, .18*, .10	.44**, .31**, .45**	.96, .92, .87

* $p < .05$.
** $p < .01$.
[a] For each cell, the first number is the result from Study 1, the second number is the result from Study 2, and the third number is the result from Study 3.

Jetten, Gomez, Whitehouse, & Bastian, 2012, p. 443). When an individual's identity fuses with a group, their sense of self become tied to their group identity. Identity fusion has been shown to be highly related to group identity, but is not simply an extreme level of group identity (Gomez et al., 2011; Swann et al., 2009). The OGIS should be highly correlated with identity fusion, but not to the extent to insinuate that the two constructs become repetitive.

Second, an individual's group identity is related to their intentions to leave that group and group commitment. When an individual identifies with a group, they are much less likely to intend to leave the group and are more committed (Kerr & Kaufman-Gilliland, 1994; Stoner, Perrewe, & Hofacker, 2011); however, online groups are less structured than offline groups, and often have unclear boundaries. It may be possible that individuals who are a part of online groups may be uncertain about the status of their membership. That is, they may be unsure how to join an online group, how to leave an online group, and how to show group commitment. Despite these considerations, it is expected that the OGIS is strongly and negatively correlated with intentions to leave, while strongly and positively correlated with group commitment.

Third, individuals have many different motivations for their internet use (Edwards, 2007). One possible motivation is to connect with other individuals. A benefit of creating interpersonal connections is social support, and those who receive social support from a group identify more with those groups (Mitchell, Billings, & Moos, 1982; Shumaker & Brownell, 1984). There is no reason to believe that online groups are any different. If an individual receives online social support, then they may receive the same benefits as those who receive offline social support. A strong correlation is expected between the OGIS and online group social support. Also, if individuals have no other outlet to connect with other individuals, such as those who have a large overlap between online and offline friendships, they are likely to identify with their online group. The OGIS is expected to positively correlate to online and offline group overlap.

Fourth, group members have been shown to have emotional ties to their groups (Leach & Spears, 2009). When a beneficial event happens to their group, group members share the enjoyment; when a detrimental event happens, group members share the disappointment. There is no reason to believe that emotional attachment to online groups is any different. It is expected that those who identify more with their online group are more emotionally tied. That is, they report more intense emotions in relation to events which occur to the online group, compared to those who do not identify with the online group. Therefore, the OGIS is expected to correlate with emotional reactions to group events.

Fifth, internet use is expected to correlate with online group identity, particularly internet use with the online group. Those who spend ample amount of times online may be more open to affiliating themselves with an online group, and those who identify with an online group likely spend more time with that online group. So, the OGIS is expected to correlate with time spent online and time spent with the online group of interest.

Sixth, it is expected that offline social support has no relation to an individual's online group identity, and serves as a discriminant validity check.

4.1. Study 2 participants/procedure

Since the current study is the first investigation into the validity an online group identity measure, a sample was needed which is similar to populations which would be used in online group identity studies. This sample was retrieved through Reddit.com, the 133rd largest website on the internet (Alexa, 2012). Reddit.com is a social news website, where users can upload news stories, links, pictures, or text. Whenever a user uploads a piece of media, others can comment about the media, which is a large allure of Reddit.com. Many users spend an ample amount of time discussing and debating hot news stories, and even share personal pictures with each other, such as family vacations or their pets. This website design has resulted in a large online community, and individuals regularly interact with each other. Therefore, it seems plausible that Reddit.com users may have a sense of online group identity.

To recruit this sample, several links to the survey were uploaded to different parts of the website through the same method that users upload other forms of media. While browsing the website, any user had a chance to participate in the current study. Once a user clicked the link, they were taken to an informed consent page. If they accepted, they were taken to the survey for the current study. Two questions were placed on the survey to check for inadequate responding, akin to Study 1's sample.

Since the link was present on the website, it is unknown how many people chose not to participate, but some response rate information can be given. Of all the individuals who may have seen the link, 368 individuals opened the survey and 331 individuals answered at least one question; however, several participants' data were removed. Thirty participants were eliminated due to their refusal to sign the informed consent, 83 participants were removed because they answered two or fewer survey questions, five participants were not included because they failed the attention check, four under 18 years of age were removed, and an additional participant was removed because of nonsensical answers. Finally, for all analyses, participants more than three standard deviations above the mean in time spent online, time spent on Reddit.com, and time spent on their most performed online activity were removed. This resulted in seven participants removed from further analyses. The

final sample size was 201 participants, which is 55% of those who opened the survey. Their average age was 23.8 years (Range: 18–55, SD: 6.7), and the sample was almost evenly distributed between the sexes (51% male).

4.2. Measures

Since the aim of the current study was to investigate individual's online group identity, a description was given before each measure which read, "For the following questions, this online group refers to the Reddit.com community." Unless otherwise noted, each item was presented with a 7-point Likert scale. Also, reported reliabilities are those found in the current study, as many of the measures have not been tested on online groups.

4.2.1. Online group identity
The 14-item OGIS was given to measure online group identity, but with new instructions. Participants were told to respond in regards to the Reddit.com community.

4.2.2. Online group identity convergent validity
To gauge the convergent validity of the group identity measure, a Stoner et al.'s (2011) group identity measure was given. This scale consists of 15 questions which include an open blank. An example question is, "I am a member of this _____." For the current study, "online group" was placed in the blank. The total scale had a reliability of .89.

4.2.3. Identity fusion
Based on from Schubert and Otten (2002), participants were shown seven pictures which depicted varying levels of group inclusion. These pictures contained two circles, a smaller one labeled "self" and a larger one labeled "this online group." Picture one showed the two circles being distant from each other, insinuating that this online group had little involvement with the self; however, as the pictures progressed, the two circles grew closer. Picture seven depicted the smaller circle in the middle and completely encapsulated by the larger circle, insinuating that this online group was central to the self. Participants were asked to select which picture best represented their relationship with this online group. Higher values represent higher level of group inclusion.

4.2.4. Intentions to leave online group
Five items were created to measure intentions to leave the online group. An example item is, "I do not plan on being a member of this online group much longer." The reliability of this scale was .65.

4.2.5. Affective, continuance, and moral commitment
Three different types of group commitment were gauged through Jaros, Jernier, Koehler, and Sincich (1993) organizational commitment scale, which was modified to refer to an individual's online group. For the current study, the 13-item affective commitment scale had a reliability of .91, the three-item continuance commitment scale had a reliability of .36, and the four-item moral commitment scale has a reliability of .87. While the affective and moral commitment scales had excellent reliabilities, the continuance commitment scale experienced a drastic reduction when modified for online groups. This is a prime example of why measures should be examined for online group use before studies rely on their results. Upon further analysis, it seems that one item from the three item scale had very poor intercorrelations with the other two items, and was removed from further analysis. The resulting reliability of the two item continuance commitment scale was .71, which is acceptable.

4.2.6. Affective responses to vignettes
Four vignettes were created to measures an individual's affective responses to the vignettes. Two of these vignettes were designed to elicit positive emotions from group members. One vignette depicted a scenario which several celebrities claimed to be Reddit.com users, and the other described a scene which several high-ranking scientists noted that Reddit.com is an important scientific community. The other two vignettes attempted to elicit negative emotions from group members. One of these vignettes illustrated a situation which state representatives were considering shutting down Reddit.com due to the appearance of offensive material, and the other portrayed an instance in which some students were bullied because they were Reddit.com users. Following each of these vignettes, participants were given three distressed emotion words and three positive emotion words, adapted from Steptoe, Leigh, and Kumari (2002). Participants were told to rate the extent they felt each of these emotions in regards to the vignettes. The average reliability was .89 for positive emotion words and .90 for distressed emotion words.

4.2.7. Social support
To measure social support, the 12-item Multidimensional Scale of Perceived Social Support (MSPSS; Zimet, Dahlem, Zimet, & Farley, 1988) was administered. This measure records social support from three different sources: family, friends, and special other. An example family social support question is, "My family is willing to help me make decisions." The total scale had a reliability of .93.

4.2.8. Online group social support
The MSPSS was modified to measure online group social support. The modified scale measured social support received from the online group, and social support received from a special other in the online group. For example, the question, "My family is willing to help me make decisions," was modified to read, "This online group is willing to help me make decisions." The modified version was reduced to 10 items because some of the family and friends social support items were repetitive when changed to gauge online group social support. The total scale had a reliability of .88.

4.2.9. Online and offline group overlap
Four questions were created to measure to what extent participant's offline social groups overlapped with the Reddit.com community. An example question was, "There is a large overlap between people in this online group and those I know offline or in 'real life'." The reliability for this scale was .86.

4.2.10. Internet use
Several items regarding aspects of individual's internet use were administered. These questions included, time spent online per week, time spent on Reddit.com per week, time using the internet in years, and time using Reddit.com in months. Also, a composite variable was created, which was the time spent on Reddit.com per week divided by the time spent online per week. This variable is the percentage of a participant's online time is spent on Reddit.com, and is named RedditRatio in the results.

4.2.11. Demographic information
Age and gender were recorded.

4.3. Study 2 results/discussion

For the OGIS, participants' average response was 4.2 out of a seven. Also, some participant's total scale values reached the max score (7), indicating that individuals extremely identify with their online groups. This further supports Hypothesis 1.

Correlations between the measures of the current study are presented in Table 4. Several correlations should be emphasized. First, the correlations between the two measures of online group identity are exceedingly high (.82). This indicates that the two measures have satisfactory convergent validity, and supports Hypothesis 4. Second, the online group identity measure significantly correlated with several of the relevant measures, including the self and group inclusion pictures (.52), intentions to leave the group (−.54), affective commitment (.77), continuous commitment (.53), moral commitment (.79), online group social support (.52), and offline and online social group overlap (.23). These correlations indicate that the scale is related to measures that are theoretically similar, while not surpassing the correlation of the two online group identity measures. This supports Hypothesis 5, showing that the scale has excellent concurrent validity. Also, there was a non-significant correlation between online group identity and offline social support (.06). These two variables are conceptually distinct measures, and their lack of a significant correlation is evidence of the scale's divergent validity. This supports Hypothesis 6. While these relationships bolster the validity of the OGIS, many of these relationships were previously undiscovered in online groups and provides valuable information in regards to their form and function.

Correlations between the OGIS and affective responses to the vignettes are presented in Table 5. For each vignette, the means for the intended emotions were considerably higher than the alternate emotions, indicating that they were successful in eliciting the intended emotions. In addition, the intended emotion was significantly correlated with online group identity, meaning that individuals who identified with the Reddit.com community were more responsive to the vignettes. This further supports Hypothesis 5.

Lastly, several auxiliary analyses should be mentioned. Many studies are interested in predicting how much time an individual spends online (Willoughby, 2008; Zhang, Lei, & Zou, 2008). In the current study, very few measures significantly correlated with time spent online and time spent on Reddit.com, including the

OGIS. It seems that individuals do not need to spend ample amounts of time with online groups to form an identity.

In Study 2, the OGIS was shown to have adequate convergent, concurrent, and discriminant validity. Thus, with the results of Studies 1 and 2 combined, the OGIS seems to be a valid measure with adequate psychometric prosperities. In the process of validating the measure, several aspects of online group identity were noted, many of them lending to the importance of online groups. Now that a valid measure of online group identity exists, the current study seeks to discover more core attributes of online group identity.

5. Study 3

After Study 2, there was no intention to resample the same population; however, a coincidental event changed this. Although Reddit.com is considered large for a social news website, it is still relatively unknown by the general public. From Sample 1, only 1 out of 162 participants listed Reddit.com as their online group, although those sampled are similar to Reddit.com's demographic.

Table 5
Correlations of group identity with emotional responses for study 2.[a]

Variables	Mean	SD	1
(1) Online group identity	4.2	.98	
(2) Positive vignette 1 PA	3.5	1.6	.53[**]
(3) Positive vignette 2 PA	4.8	1.6	.36[**]
(4) Positive vignette 1 NA	1.5	.84	.01
(5) Positive vignette 2 NA	1.4	.96	−.04
(6) Negative vignette 1 PA	1.3	.58	−.10
(7) Negative vignette 2 PA	1.2	.58	−.16
(8) Negative vignette 1 NA	3.9	1.6	.25[**]
(9) Negative vignette 2 NA	3.2	1.7	.18[*]

[*] $p < .05$.
[**] $p < .01$.
[a] PA = positive affect, NA = negative affect.

Table 4
Pearson correlations for study 2.

Variables	Mean	SD	1	2	3	4	5	6	7	8	9
(1) Online group identity	4.2	.98	.90								
(2) Online group identity 2	4.0	.85	.82[**]	.89							
(3) Identity fusion	3.9	1.1	.52[**]	.59[**]	N/A						
(4) Intentions to leave	3.4	1.0	−.54[**]	−.43[**]	−.34	.65					
(5) Affective commitment	4.7	.76	.77[**]	.75[**]	.55[**]	−.58[**]	.87				
(6) Continuance commitment	3.3	1.4	.53[**]	.50[**]	.37[**]	−.27[**]	.43[**]	.70			
(7) Moral commitment	3.3	1.4	.79[**]	.75[**]	.51[**]	−.51[**]	.72[**]	.61[**]	.91		
(8) Online group social support	3.2	1.1	.52[**]	.62[**]	.38[**]	−.26[**]	.54[**]	.37[**]	.52[**]	.88	
(9) Offline social support	5.8	1.2	.06	.01	−.07	.08	.07	−.11	.03	.13	.93
(10) Social group overlap	2.4	1.3	.23[**]	.22[*]	.21[*]	−.10	.01	−.05	.09	.14	.17[*]
(11) Time online (h/wk)	33.4	16.8	−.00	.02	.11	.01	−.01	.02	−.05	.01	−.03
(12) Time on Reddit (h/wk)	14.3	8.9	.13	.13	.16	−.20[*]	.08	.32[**]	.08	.22[*]	−.14
(13) Reddit ratio	.46	.24	.13	.15	.06	−.22[*]	.11	.31[**]	.14	.21[*]	−.15
(14) Internet use (years)	12.4	3.8	−.21[*]	−.17[*]	−.18[*]	.07	−.14	−.17[*]	−.12	−.19[*]	.05
(15) Reddit use (months)	14.3	8.9	.03	.11	−.05	.15	.04	.06	.03	−.07	.06
(16) Age	23.8	6.7	−.18[*]	−.12	−.17	−.02	−.05	−.17	−.07	−.11	.08
(17) Gender	.51	.50	.13	.14	.25[**]	−.08	.13	.02	.08	.06	−.18[*]

Variables	10	11	12	13	15	16	17	18
(10) Social Group Overlap	.85							
(11) Time online (h/wk)	−.04	N/A						
(12) Time on Reddit (h/wk)	.03	.48[**]	N/A					
(13) Reddit ratio	.03	−.31[**]	.59[**]	N/A				
(14) Internet use (years)	−.14	.20[**]	.02	−.13	N/A			
(15) Reddit use (months)	.15	.14	.05	.01	.26[**]	N/A		
(16) Age	−.16	.19[**]	−.01	−.10	.59[**]	.22[**]	N/A	
(17) Gender	.14	.04	−.08	−.10	.12	.14	−.04	N/A

[*] $p < .05$.
[**] $p < .01$.

Needless to say, the Reddit.com community is fairly small, and the website is likely not salient to the general public. Nevertheless, on August 30, 2012, President Obama unexpectedly created a Reddit.com account and answered user questions, as a public relations move. The President even included a picture of himself typing at his laptop, and updated his Twitter account to ensure users it was actually him. This action spurred an incredible amount of attention on the users of Reddit.com. For example, a popular user, Shitty_Watercolour regularly posted images of his own poorly created watercolors which were depictions of other member's posts. Upon President Obama posting, Shitty_Watercolour painted a picture of the president, welcoming him to Reddit.com. Within hours, Shitty_Watercolour's picture was featured on CNN.com (Mendoza, 2012). Literally within hours, a Reddit.com user's meme (reoccurring joke) quickly garnered national attention. This small instance is one example of the rapid media attention given to Reddit.com and its users after The President's actions. This increased focus may have had some implications for its members.

First, this attention may legitimize Reddit.com and its group membership. Often, being a part of an online group is associated with a negative stigma. News stories regularly report children bullied for being "nerdy," which is associated with heavy internet use or online group membership (Driscoll, 2012; Maines, 2012; Young, 2012). Certain psychopathologies, such as internet addiction, are associated with spending too much time online or interacting too frequently with online group members (Nichols & Nicki, 2004). Due to these reasons, individuals may be reluctant to admit to being a part of an online group; however, through The President creating a Reddit.com account and interacting with group members, he may have legitimized online group membership. In other words, The President's actions may cause Reddit.com users to see their group membership as appropriate and valuable, due to its ability to garner attention from The President. Therefore, it is hypothesized that Reddit.com users have higher group identity after The President's actions compared to before (H7). Unfortunately, no identifying information was recorded in Study 2, so all comparisons are mean group comparisons.

Second, Reddit.com users may have different reactions to The President's actions based on their group identity. In Study 2, several vignettes were presented to participants to gauge their emotional responses to vignettes related to Reddit.com. A drawback of this method is its artificiality. That is, the vignettes were fake and responses may not have been natural. The President's actions allow for the current study to track emotional responses to an actual Reddit.com event. So, online group identity is hypothesized to be positively correlated with positive emotions and negatively correlated with negative emotions to The President's actions (H8a). The same relations are hypothesized with group identity and emotional responses to the media attention received from The President's actions (H8b).

Additionally, two aspects of group membership are analyzed in Study 3 with no relation to The President's actions. Certain perceptions of group membership can alter an individual's group experiences. One perception is group size, which can be considered majority or minority status. Previous studies have shown that those who perceive their groups as small report higher group identities, although this has usually been shown with artificial lab groups (Bray, Kerr, & Atkin, 1978; Brewer & Kramer, 1986; Lucken & Simon, 2005). While many offline groups are easy to determine whether they are a majority or minority group (race, religion, etc.), online groups are much more difficult. Openly available statistics are not obtainable for most online groups, and group size is likely based on vague notions about group membership. Therefore, it is hypothesized that online group identity is not positively correlated with group size (H9).

Perceptions of group power also alter group experiences, and those who perceive their groups as powerful report higher group identities (Lucken & Simon, 2005; Sassenberg, Jonas, Shah, & Brazy, 2007). Like group size, these effects are usually shown in lab groups with clear distinctions; however, the power of an online group is a much more unclear notion. Online groups do not hold power over other online groups, and they are unable to assert any authority over users of different media. Despite the lack of any control over others, an approximation of group power for online groups can be group popularity. Online groups often vie for popularity. For instance, the popular web forum, 4chan.com, rigged the top 21 positions of the Time 100 Poll to achieve internet notoriety (Fox News, 2009). Although it is unclear exactly why online groups seem to seek popularity, a possible reason is to increase the value of their virtual meeting space. Often, websites and other online activities have their value based on their fame. For example, Menegaz notes that the amount of users on a website is the best predictor of its value, with a single individual's minute being worth 43 cents (2012). Also, a popular tool to estimate a website's worth, Yourwebsitevalue.com (2012), lists "popularity of the website" as one of the four core aspects to a website's value. Thus, an online group's popularity is directly related to its value, which may also be considered its power. It is hypothesized that online group identity is positively correlated with group power, measured through group popularity (H10).

5.1. Study 3 participants/procedure

The sample for Study 3 was recruited from the same website as the Study 2's sample. Using the same method, links were placed on the same areas of the website. Two questions were placed on the survey to check for inadequate responding. If participants did not answer with the correct response, their data was removed. For this study, 363 individuals opened the survey. Of these, seven did not agree to the informed consent, 17 were under 18 years of age, and 40 failed the attention check. Once again, those three standard deviations above the mean in time spent online and time spent on Reddit.com were also removed. This excluded eight participants, leaving the final tally at 291 participants. With these figures, 80% of those who opened the survey completed it. The average age for this sample was 24.6 years (range: 18–78; SD 7.5), and the sample was almost evenly distributed between the sexes (52% male).

5.2. Measures

Since the aim of the current study was to investigate individual's online group identity, a description was given before each measure which read, "For the following questions, this online group refers to the Reddit.com community." Unless otherwise noted, each item was presented with a 7-point Likert scale. Also, reported reliabilities are those found in the current study, as many of the measures have not been tested on online groups.

5.2.1. Online group identity
To measure online group identity, the OGIS was given again, and participants were told to respond in regards to the Reddit.com community.

5.2.2. Emotional reactions
Participants were asked about their positive and negative emotional reactions to The President's actions and the media attention following the actions. The emotions used were identical to those given after the Vignettes in Study 2, that included three negative and three positive worded items.

5.2.3. Group size

Three items were created to measure group size. An example item is, "I believe that this online group is small, out of all the online groups on the internet." The scale had a reliability of .74.

5.2.4. Group popularity

Three items were created to measure group popularity. An example item is, "Many people know about this online group." The scale had a reliability of .85.

5.3. Study 3 results/discussion

It was predicted that The President's actions would create a sense of legitimacy in the studied online group, causing members to report higher levels of group identity. To test the effect of The President's actions on Reddit.com members' online group identity, an independent sample t-test was performed on the samples for Studies 2 and 3. There was no significant difference between the two groups ($F = 1.086$, $p > .05$). Levels of group identity remained stable between Studies 2 and 3, and their differences did not reach statistical or practical significance. Although Hypothesis 7 was not supported, these results may actually lend support to the importance of online groups.

As previously mentioned, online groups are sometimes seen as weak connections between individuals. That is, online group members are a part of short-lived communities, and any associations with the group or group members quickly die out. Thus, group membership and identity is seen as permeable and ever-changing. The results of the current study speak otherwise. Participants showed that they had notable emotional reactions to The President's actions (noted below), but the event did not change their group identities. Therefore, it seems that online group identities are stable, and group membership is not as fleeting as some believe.

Next, the relation between online group identity and positive emotional reactions to The President's actions and subsequent media reactions were significant, evident in Table 6. Hypotheses 8a and 8b were supported. Correlations between online group identity and negative emotional reactions to The President's actions were not significant, but negative emotional reactions to the subsequent media attention were significant (see Table 6).

Finally, a principal components analysis was performed to see if the two scales of group perception, group size and popularity, measured separate constructs. The results supported that the two scales measured separate constructs using the Kaiser rule (eigenvalue < 1) and a Scree plot analysis. Perceived group size was not significantly correlated with online group identity, whereas group popularity was significantly and negatively correlated. Hypothesis 9 was supported, whereas the Hypothesis 10 was not supported.

Although group size has repeatedly been shown to be related to offline group identity, this was not found when an online group was the reference group. This is likely a difference between online and offline groups. As previously mentioned, offline groups often have clear distinctions about group size. Majority groups, such as Caucasians in America and political parties after elections, often have direct statistics about their group size. Alternatively, online groups have no guide for their group's size. Online groups may contain hundreds, thousands, or possibly millions of individuals, but group members have no method to determine their numbers. These results are a single instance of where the dynamics of online groups differ from offline groups. Online group members, since their numbers are relatively unknown, are not affected by perceived group size in relation to their group identity.

Also, the current study measured an approximation for perceived group power. As mentioned, online groups often denote their power by their popularity, which was shown to be separate from perceived group size. Often, members who perceive their group as powerful report higher group identities, but this was not found in the current study. In fact, the opposite was found. This finding may be because online group popularity is only a weak sense of power. That is, although online group popularity is the closest measure of online group power, it is still a small amount of power and does not provide much influence over other online groups. Therefore, since online groups cannot possess much, if any, power, online group members do not have their group identities influenced by perceived group power.

From the results of Study 3, it is evident that online groups have important effects on group members, as group identity positively correlating with emotional reactions. Also, the results illustrate the stability of online group identity, as not even The President's actions shifted member's group identification. Lastly, the results portray a difference between online and offline groups, such that online group size and power do not significantly sway group identity. All together, these results provide previously undiscovered information about online groups, which illustrate some basic pretenses of online groups.

6. Overall discussion

Currently, researchers use measures with poor psychometric properties or concerning construct validity to measure online group identity, largely because no study has investigated the validity of a measure. The current study sought to solve this research problem through analyzing the validity of a measure of online group identity. From the results, the OGIS seems to be a psychometrically sound and valid measure of online group identity. This measure was shown to have a factor structure identical to when an offline reference group was used, excellent internal reliability, high convergent validity, satisfactory concurrent validity, and divergent validity. Additionally, while determining the validity of the OGIS, several previously undiscovered aspects of online groups and online group identity were discovered. Namely, time spent

Table 6
Pearson correlations for study 3.[a]

Variables	Mean	SD	1	2	3	4	5	6	7
(1) Online group identity	4.25	.92	.90						
(2) Group size	1.76	.82	.08	.74					
(3) Group popularity	4.63	1.02	−.13[*]	.16[**]	.85				
(4) The president's actions PA	4.34	1.51	.48[**]	.12	−.07	.85			
(5) The president's actions NA	1.54	.86	.06	−.00	.00	.12	.82		
(6) Media attention PA	3.26	1.53	.39[**]	.01	−.03	.58[**]	.11	.91	
(7) Media attention NA	1.92	1.19	.19[**]	.04	−.09	.20[**]	.52[**]	.16[**]	.89

[*] $p < .05$.
[**] $p < .01$.
[a] PA = positive affect, NA = negative affect.

online only weakly correlated with online group identity, while social support received from the online group strongly correlated with online group identity. These results show that individuals identify with these online groups and receive their positive benefits, while avoiding detriments like internet addiction. Therefore, showing that the OGIS is a valid measure is valuable in itself, but the relationships discovered in the validation process also uncover previously unknown dynamics of online group identity.

Only a sparse amount of studies have shown that individuals identify with online groups. Not only did the current study determine whether individuals identify with online groups, but individuals' identification with online and offline groups were concurrently compared. The results show that individuals identify with online groups, albeit lower than their identification with offline groups. Additionally, these results were shown in a general student sample, indicating that a common population consists of individuals who identify with online groups. Previously, most studies on online group identity recruit their samples from certain websites or online games. Now, researchers can utilize general student samples to recruit their participants.

Due to an unexpected coincidence, the current study showed that online group identity is stable. In the online group of interest for Studies 2 and 3, not even the president's actions altered mean levels of group identity, although the participants reported emotional reactions to the event. This indicates that online group identity is not as weak as often believed.

These results provide several theoretical and practical implications. First, online group identity can now be measured reliably. No longer should authors use single item measures or scales created for alternative constructs, which draw doubt to the validity of their findings. Instead, future studies should incorporate the OGIS, in order to make stronger claims about findings. Thus, the OGIS can help researchers explore the effects of online group identity, which may then lead to a better understanding of online interactions.

Second, the OGIS is adapted from a multidimensional scale of group identity. This scale can be used to explore multiple components of online group identity, and allows for targeted analysis of the specific dimensions of online group identity. Similarly, the OGIS can be used to determine if individuals identify with certain online groups differently. For example, some online group members may strongly identify with their online group, but still have low scores in the satisfaction dimension. Alternatively, some members may weakly identify with their online group, but have high scores in the satisfaction dimension. While overall OGIS scores may lead to important outcomes, differences within the subdimensions may also lead to notable effects. Therefore, the OGIS not only leads to future research on online group identity in general, but it also creates possibilities for research on its subdimensions.

Third, these results add to the legitimacy of online groups. Online group members were shown to identify with their group, some members were shown to strongly identify, and members' identity was not shown to shift based on a large-impact event. Future researchers and practitioners should take note to the importance that members place on their online groups, as they were shown to be powerful bonds.

Fourth, the current study demonstrated that some aspects of online groups, such as the relationship of size and power with identity, are different than in offline groups. This should spark future research, as the findings insinuate that the processes and factors that influence online group identity may be different than processes and factors that influence offline group identity. Notably, time spent with the online group in Study 2 was not significantly related to online group identity, which is counterintuitive based on findings and propositions given for offline groups (Cheryan & Monin, 2005; Verkooijen, de Vries, & Nielsen, 2007). Perhaps more importantly, these findings also insinuate that the outcomes of

group identity are different for online group identity. Given these notions, the current results will hopefully be a building block to discovering and understanding more about the antecedents, processes, and outcomes of online group identity. With these findings in mind, several considerations for future studies should be made.

6.1. Implications and future studies

The implications of the current study are widespread. Now that a valid measure of an online group identify scale exists and individuals have been shown to identify with online groups, future studies can take this measure to identify further relationships of online group identity. In particular, online group identity's influence on perceptions and motivations of group members should be investigated. News stories often report on the amazing acts performed by online group members (Fox News, 2009), but little is known about the processes which motivate online group members to perform these acts. An especially motivating factor of these acts is likely online group identity, which can now be adequately measured. Therefore, the current study only investigated a small amount of possible relationships, and many more with important practical implications are yet to be discovered.

Future studies may want to consider examining alternative constructs which may compose online group identification. Although Leach et al.'s measure encapsulates previously identified aspects of group identity (2008), it is possible that they failed to include some or that they have yet to be discovered. It is also possible that some aspects of group identity are only relevant to online groups, and online-specific subdimensions should be added to the OGIS. It would be foolish to claim that the current measure of online group identity is complete, as there is always the possibility of undiscovered aspects.

Additionally, the most dominant theory in regards to group identity is Social Identity Theory (Tajfel & Turner, 1979; Tajfel et al., 1971). Although not applied in the current article, Social Identity Theory has been used to explain certain group behaviors, such as discrimination. Since individuals were shown to identify with online groups in the current study, it should be examined whether they have biased perceptions towards other online groups. If found, interesting real-world ramifications could be considered, such as online group discrimination made in hiring practices.

Finally, several typologies of online groups have been created (McKenna, 2008). The current study only sampled from a single online group. Although it is not expected that other types of online groups would provide notably different results, it is still extremely important for future studies to investigate the aspects of online group identity in different contexts.

6.1.1. Limitations

While the current study is a large step for online group research, it is not without limitations. A common axiom in scale development research is that the validation process is never over (Messick, 1988). There are almost a countless number of alternative constructs that could have been measured in order to bolster the validity of the OGIS. Several psychometric qualities could have also been investigated, such as test-rest reliability. The validation of the OGIS is surely not complete, but future studies have much to build upon. Additionally, it would be beneficial for future studies to replicate the findings of the current study.

Certain methodological improvements could have been made to the study. While the two samples were very diverse in several aspects, they were largely Caucasian and American. The natural online group sampled, Reddit.com, is an English-language website, precluding the membership of non-English speakers. It may be beneficial to include different ethnicities and nationalities in future

studies. Also, all data recorded in the current study is cross-sectional. A longitudinal design could greatly improve the current methodology, and discover the dynamics of the relationships discovered in the current study. Most notably, online identification is a process, and individuals gradually become more identified with an online group. With longitudinal designs, information can be obtained about the gradual development of online group identity, and how it differs from offline group identity. Causal factors which contribute to online group identity could also be discovered.

7. Conclusion

The current article unveiled several factors about online groups. Among these were that individuals from a general student sample identify with online groups, online group identity has several significant relationships, and members' ties to online groups are stable. In the course of discovering the factors about online groups, a measure of online group identity was validated. These findings open the door for future researchers to investigate the dynamics of online group identity, including how online group identity changes perceptions and behaviors of members and how members form their online group identity.

Appendix A. The online group identity scale[1,2]

Online groups are three or more people who perceive a common identity, and their main form of communication is through the internet (instant messaging, message boards, video chat, voice chat, etc.). Social media websites (Reddit.com, Digg.com, etc.), online games (World of Warcract, Call of Duty, etc.), and others (Pinterest, deviantART, etc.) are internet activities which would likely form online groups. For example, individuals who play online games often talk to relative strangers online, and they may think of themselves as a part of a collective group. Worded differently, they often interact with others online that they rarely or never interact with in-person, and think of themselves as a member of an online community. However, not all internet actives regularly form online groups. For example, when using Facebook.com, people usually talk to others they know in "real life" and rarely think of themselves as "Facebookers."

The following questions ask you about your online group membership. What online group do you feel most apart of or feel most a member of? Remember the characteristics of online groups, and be as specific as possible. For example, instead of writing "online game," please write "My Group in Second Life." Even if you only slightly feel a part of an online group, please write it in the space below, and answer the following questions in regards to this group.

Also, if you do not feel that you're a member of any online group, please write "N/A" and mark N/A for the questions on the current page.

What is your online group?

(1) I feel a bond with this online group.
(2) I feel solidarity with this online group.
(3) I feel committed to this online group.
(4) I am glad to be a member of this online group.
(5) I think that this online group's members have a lot to be proud of.
(6) It is pleasant to be a member of this online group.
(7) Being a member of this online group gives me a good feeling.
(8) I often think about the fact that I am a member of this online group.
(9) The fact that I am a member of this online group is an important part of my identity.
(10) Being a member of this online group is an important part of how I see myself.
(11) I have a lot in common with the average member of this online group.
(12) I am similar to the average member of this online group.
(13) This online group's members have a lot in common with each other.
(14) This online group's members are very similar to each other.

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[1] These instructions were given to a general student sample. When using the OGIS for a specific website, the instructions were changed. Instead of giving a definition of online groups and asking participants to write their chosen online group, participants were simply instructed that "this online group" refers to the website of interest's community, such as Reddit.com.

[2] Since the internet is rapidly changing, it is suggested that future OGIS users alter the online groups mentioned. It is likely that some of these online groups will be nonexistent in several years, and will make the scale nonsensical.

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