



Common voice: Analysis of behavior modification and content convergence in a popular online community



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ABSTRACT

This study analyzes images and associated commentary from an online image-sharing community (www.imgur.com). We hypothesize that, in the presence of overt communication of social rules, site content will reflect a somewhat consistent, content convergence irrespective of who comments, given that an individual's social identity, rather than their individual identity, will dominate their online interactions. We began with a random sample of 5000 images, and we grouped those images into six categories. We then randomly selected 10 images from each category, and conducted a close qualitative analysis of the micro-comments submitted in response to those images. Our results suggest that there is an overt communication of behavioral standards through explicit behavior correction by other site members. Content convergence can also be observed both in responses to a single image, and more broadly in comment similarity across images and even categories. Cultural norms and resulting content convergence suggests that individuals may come to see themselves as representatives of the site when they post – and may modify their behavior accordingly. This may lead to the perception that a *common voice* appears throughout the site, which may have implications for the communication of social support over the Internet, and for more quantitative analyses.

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1. Introduction

Research on computer-mediated communication (CMC) tends to view websites as virtual spaces where individuals meet and interact rather than as social entities whose character or identity influences the interactions that occur within them. In this study, we examine the role that a website's culture can take in determining the types of interactions that occur there. Using Social Identity Theory (SIT) and Social Identification and Deindividuation Effects (SIDE) theory, we hypothesize that as individuals create or join groups online, they will come to identify as members of those groups, and will modify their own behavior so as to affirm group membership. As individuals learn the generally accepted rules of conduct associated with the site, their online interactions will shift to reflect their social – rather than individual – identities. The result will be a *common voice* emanating from the website: a generally cohesive tone, characterized by overall consistent responses, and overt behavior correction.

Imgur.com is an online image-sharing community. The website is currently the 49th most visited site on the Internet, with esti-

mates of over 75 million unique visitors per month. Imgur estimates that in 2012, 300 million images were uploaded, and the site received 364 billion page views (or roughly 1 billion per day). In spite these overwhelming numbers of images, comments, and users, discussions in weblog communities have noted not only the presence of a cohesive community, but have ascribed specific characteristics to Imgur members, specifically as they relate to particular outgroups (e.g., Reddit) (Broderick, 2013; Gannes, 2012). In this study we analyze a stratified random sample of 60 publicly available images and associated commentary from www.imgur.com. We conduct a close textual analysis of the comments submitted in response to the images, and evaluate common voice using three criteria: (1) explicit communication of behavioral standards or behavior correction by other site members, (2) the repetition of comments/content beneath a single image, and (3) the repetition of comments/content across images and categories of images. Better understanding how group identification impacts site content has important implications for the study of online social interaction, including computer-mediated social support exchanges.

2. Theoretical framework

We begin with a brief overview of Deindividuation Theory and Social Identity Theory, with a particular focus on behavioral

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modifications. Next, we review social identification in online social environments.

2.1. Deindividuation

The examination of the role of the social with relation to the self is rooted in the study of “submergence”, by [Le Bon \(1895\)](#). Attempting to explain the mob-like behavior perceived to have dominated during the French revolution, Le Bon held that, and that submergence leads to a loss of self-restraint, making individuals capable of indulging basic and destructive impulses. Submergence held that the social self and the rational self were in opposition, so participation in groups liberated individuals from rational self-restraint. Like submergence, Deindividuation theory built upon the assumption that the social and rational selves exist in opposition. Early empirical work found largely confirmatory evidence that deindividuation correlated positively with heightened hostility in group discussions ([Cannavale, Scarr, & Pepitone, 1970](#); [Festinger, Pepitone, & Newcomb, 1952](#)). In these studies, deindividuation was measured by an inability to attribute arguments or statements to specific individuals following a group discussion.

Among the critiques that have been levied against Deindividuation theory, two have particular relevance here. First, Deindividuation theory holds that only two states are possible – one in which the individual acts entirely rationally, and a second in which an individual is immersed in a group and loses all ability to self-regulate. The second critique comes from empirical counterevidence that suggests that immersion within a group does not always result in anti-normative behavior. Where several studies showed an increase in violent, anti-social behavior ([Donnerstein, Donnerstein, & Evans, 1972](#); [Watson, 1973](#)), in some situations under conditions of anonymity, deindividuation produced pro-social behavior ([Diener, 1976](#); [Zabrick & Miller, 1972](#)). Such empirical counterevidence gave rise to the qualification that, rather than pro- or antisocial, as such, deindividuation promoted behavior in keeping with group norms. According to [Reicher, Spears, and Postmes \(1995\)](#), “. . . the classic deindividuation paradigm of anonymity within a social group, far from leading to uncontrolled behavior, maximizes the opportunity of group members to give full voice to their collective identities” (p. 161). Two alternative explanations for the prosocial behavioral modification found in anonymous groups include Social Identity Theory and Social Identity model of Deindividuation, discussed below.

2.2. Social Identity Theory

Like Deindividuation theory, Social Identity Theory holds that the individual identity is constructed of a personal and a social self ([Tajfel, 1970](#); [Tajfel, Flament, Billig, & Bundy, 1971](#)). However, unlike Deindividuation theory, SIT holds that group participation can affirm personal identity, and that rather than a liberation from internal control, as a person shifts from the personal to the social self, internal controls are replaced by external, social controls, leading to the expression of a social self. Furthermore, individuals can identify with multiple groups, or have multiple social identities. Studies have found that, simply designating a group as such is enough to produce feelings of social identity, and once a group is formed and members begin to identify with the group, members will begin to modify their own behavior so as to affirm their group membership ([Ashforth & Mael, 1989](#); [Brewer, 1979](#)).

This is consistent with the Reicher, Spears, and Postmes quote above: that group membership gives individuals the occasion to express their collective identities. Indeed, some conceive of community as a moral entity that transforms the individual through group pressure ([Poplin, 1979](#)). Moreover, through the process of self-anchoring, an individual’s own positive self-image may

become projected onto the group at large, creating a social attraction towards other members of the group, based simply on co-membership ([Cadinu & Rothbart, 1996](#)).

2.3. Social Identity model of Deindividuation in the online context

The Internet has changed not only the forms and possibilities of communication but also those of group formation. There is extensive early literature on how different conceptualizations of community support or challenge the potential for the development and support of online communities ([Calhoun, 1986](#); [Katz, Rice, Acord, Dasgupta, & David, 2004](#); [Rheingold, 2000](#)).

Online or virtual communities are often characterized by intimate secondary relationships, specialized relationships, weaker ties, and homogeneity by interest ([Wellman & Gulia, 1999](#)). Anonymity, the ability to join and leave groups or lurk, and the limited socio-emotional range of text raised serious questions about the durability and cohesiveness of online communities ([Rice, 1987](#)). Thus some early research on computer-mediated communication (CMC) showed a negative correlation between Internet use and offline social interaction, characterizing Internet users as socially reclusive and anxious, with greater risk of depression and isolation ([Kraut et al., 1998](#); for recent arguments, see [Turkle, 2012](#)). As a result, it is unsurprising that studies of online group interactions assumed that increased anonymity would lead to an increase in disinhibited and antisocial behavior (thus the “cues filtered out” model; [Culnan & Markus, 1987](#)). This assumed negativity in online interactions seemed plausible given reports of “flaming”, or posting inflammatory or indiscriminately negative comments online ([Kiesler, Siegel, & McGuire, 1984](#)).

Yet other and later researchers found the opposite ([Hiltz & Turoff, 1978](#); [Katz & Rice, 2002](#); [Walther, Anderson, & Park, 1994](#)). Rather than an increase in antisocial behavior, studies using the Social Identity model of Deindividuation (SIDE) theory found that Internet users in online environments were more likely to exhibit pro-social behavior and little flaming, particularly when primed with behavioral expectations and under conditions of anonymity ([Lea, O’Shea, Fung, & Spears, 1992](#); [Postmes, Spears, Sakhel, & de Groot, 2001](#)). Unlike physical communities, the anonymity of online communities can make people *more* willing to help each other ([Wellman & Gulia, 1999](#)). However, in keeping with the proposed influence of a salient group identity, [Douglas and McGarty \(2001\)](#) found, in four studies, that identified in-group CMC users described anonymous out-group users more abstractly, or in accordance with their own group norms. Over time individuals can come to categorize, identify and compare themselves as part of various online groups ([Howard & Magee, 2013](#)), and online communities can impose community standards as a way of fostering group identity ([Albrecht, 2006](#); [Tepper, 1997](#)). Further, as users gain more experience with computer-mediated communication, they become better able to express emotions ([Rice & Love, 1987](#)), and develop and maintain relationships as well as or even better than in face-to-face communication ([Walther, 1996](#), referring to his Social Information Processing theory and the concept of “hyperpersonal” online interaction). Due to this increased intimacy in online settings, potential for identification, and the imposition of community standards, we expect to see site content converge towards more cohesive content.

2.4. Research objectives

Social Identification and Deindividuation Effects (SIDE) theory implies, then, that despite the ease of entry and exit from online groups, large group membership, extensive content, a lack of personal accountability, and user anonymity, online groups may develop a common group identity, separate from individual users’

identities. Further, as members come to identify with a group, those members will attempt to modify their, and others', behavior so as to align with their understanding of the social rules governing that group.

In the following analysis of www.imgur.com, our research objectives are (1) to determine whether behavioral norms are communicated through group interactions (e.g., comments), and to examine whether site content converges towards shared behavioral norms, through (2) consistent responses to individual images, and (3) common responses across images and image categories. In the setting, we should see evidence of behavioral modification, and the emergence of a common voice, as each site member comments as a representative of the site culture, and gives voice to his or her common identity as an Imgurian.

3. Method

3.1. Setting: www.imgur.com

The story of Imgur.com is intricately linked to the structure of Reddit.com. Reddit is a social news and entertainment website, whose format mirrors that of a typical discussion board. Registered site members generate content in the form of links or images. Other registered users can “up vote” or “down vote” content, make a comment in response to the original post or respond to any of the prior comments. Both original content (OC) and user comments are eligible for up votes and down votes. The number of points associated with a specific post determines its placement on the website, and most popular posts are featured on a Reddit “front page”. Reddit tracks users’ up and down votes and each user receives an overall score (their “notoriety”), based on the total number of points they have received for all OC and comments. As such, it can be assumed that Reddit users who post OC hope to have that content seen by a large audience, because it increases their notoriety. Initially, many of the images on Reddit were hosted through sites like TinyPic, ImageShack, or PhotoBucket – where images could be hosted for a certain amount of time, and were removed when the images began to generate excess traffic. This time- and space-constrained format was frustrating to Reddit users.

Begun in 2009, Imgur was designed by Computer Science student and Reddit user Alan Schaaf to be an image-hosting site that was more compatible with Reddit’s point-based format. Originally, the site was intended as a simple repository for visual web content in the form of pictures, memes and *gifs* (“graphical interchange format” allowing short static or moving images, often captioned but without sound), and the bulk of the site’s visits came through Reddit and other external sources (e.g., Facebook, Twitter). In November 2010 the comments feature was added, and Imgur began to attract more direct visits. In February 2009, Imgur received 45,995 unique visits per month, with an average of 49 seconds per visit. Currently, Imgur is the 49th most commonly visited site on the Internet, with 75.5 million unique visitors each month, and an average of nearly 11 min per visit. Still, over 60% of Imgur traffic comes from links posted to outside websites – predominantly Reddit.

While the site’s creator insists that Imgur does not compete directly with Reddit in the sense of community it offers users, bloggers (Broderick, 2013; Gannes, 2012) have suggested that the addition of micro-comments and comment responses has contributed to the formation of a virtual community of Imgur users. Given the symbiotic relationship between the two sites, some of the site characteristics appear to be based on the Reddit format described above.

Imgur was created primarily as an image hosting website. As such, a backdrop of humorous and visually appealing images is

to be expected. Users upload content is most often humorous, or visually appealing, imagery. This content is featured in a “user submitted” gallery. Registered site members are then able to up vote or down vote the images. Content that receives a net score (total up votes, minus total down votes) of 300 or more make it out of the “user submitted” gallery to a “most popular” gallery. This is the gallery that Imgur defaults to, and is the most popular gallery for casual browsing. Users may also comment on images, or respond directly to other users’ comments. Comments are in micro-blog format (140 characters or fewer) and can also receive up votes and down votes. Image comments are generally listed in order of popularity – with the most popular comments directly beneath the image. Any comments with overall negative scores (more down votes than up votes) are censored (moved to the bottom, requiring clicking a link to “show bad comments”). As with Reddit, site users have ratings that are calculated based on users’ OC and comment scores combined.

There are no criteria for being allowed to use the site. Users are functionally anonymous – generally not associated with a picture or any identifying information. Non-members are able to lurk, general members are able to post original images up to a certain size and to comment on others’ images, and “pro” members may comment and post original content with no size restrictions. Imgur users are overwhelmingly male (83%), and the site skews young – with over 71% of users under the age of 35.

However, as noted above, research in Social Identity Theory holds that simply being defined as a group is enough to create a sense of identification among group members. Further, SIDE suggests that behavioral effects can be even more pronounced in anonymous settings when members are primed with particular behavioral expectations. In the case of Imgur, the group designation comes from two sources: the blogger community, and the site members themselves. The blogs cited above refer to “Imgurians” and an “Imgur community”, and have ascribed certain characteristics to the site and its members. Meanwhile, images and comments uploaded to the site show that site users also adopt a similar language in referring to themselves, and to fellow community members. Original content (OC) uploaded to the site often calls out to “fellow Imgurians”, and comments submitted in response to OC will reference an “Imgur family”.

3.2. Sample

We generated a list of 38,000 images that had been uploaded to Imgur during the period between January and April 2013 and that had reached the front page on Imgur. From the initial sample of 38,000 images, we used a random number generating function in Visual Basic to select a sample of 5000 images. Given the dynamic nature of the site, however, 145 of these images had been deleted by Imgur staff or the OP him- or herself by the time we began coding, so were not included in the analysis.

3.3. Coding

Imgur hosts widely variable image content, and we anticipated that response comments would vary by the content of the original image. Months of participant observation and image categorization by the first author gave rise to a list of 12 initial image categories, including: inside jokes, popular interest, shared experience, community policing, social support, confession, positive experience, general humor, visually appealing imagery, original art, information and mobilization. The original 12 categories were then grouped into six general categories, based on common aspects of the original categories and similar responses to the images. For example, the three initially separate categories of inside jokes, popular interest, and community policing were grouped into the single

category of community identification. Table 1 presents the initial 12 and the final six categories, and the category definitions.

Rather than participation in the community, posting original content (OC) to the site is more like broadcasting, because by itself it does not involve any interaction. We therefore limit our analysis to the commentary submitted in response to the images. We theorized that comments submitted, e.g., in response to a post announcing a cancer diagnosis, would be sufficiently different from e.g., a post of a cat licking a vacuum cleaner hose, so that some distinction and categorization of the source image (OC) would be necessary to effectively evaluate common voice. Therefore, after the final six categories were established, the authors met to discuss the categorization of images. We reviewed the definitions and boundaries of each category, and looked at exemplars. The final sample of 5000 randomly generated Imgur images was then divided up between the authors with two authors taking 2000 images each, and one taking 1000 images.

We allowed for the possibility of cross-categorization into two or more categories. For example, a visually appealing image of a popular Imgur celebrity with a humorous caption could be categorized into “community identification”, in that it communicates a perceived shared interest between the original poster (OP) and the Imgur community, into the “visually appealing imagery” category in that the image is meant to be appealing to viewers, and into the “humor” category in that the caption is meant as a joke. Of the 4855 images, only 68 were categorized into three categories, and only three images into four separate categories. Table 2 provides a list of all single and double categorizations. Note that the percentages on the diagonal add up to more than 100%, given dual, triple and even quadruple categorization. After all 4855 images were categorized, the first author reviewed 100 images from each of the

other authors to assess inconsistent categorization and establish reliability. Of the 100 images, no images had to be reclassified. This initial categorization of images took two months.

3.4. Final analysis sample

Results from a separate survey indicated that respondents viewed an average of 187 images per day. We therefore assumed that average respondents are viewing images from multiple categories each day. Note that we coded only 4855 images from the initial sample of 38,000, so we do not know the actual proportional representation of any category of images. Finally, we wanted to make sure we had sufficient examples from all the categories, which might not be the case with proportional sampling. We therefore decided to generate a stratified random (but not proportional) sample of 10 images from each of the six categories, for a total of 60 images and their related comments, for close analysis of common voice in the image comments. Each of these images occurred in only one of the six categories.

4. Results

4.1. Indicators of common voice

We examine the comments beneath each of the 60 selected images for evidence of common voice. Indicators of common voice are outlined in Table 3, below. Objective (1) is determined by evidence of Communication of Acceptable Behavioral Standards. Such communication can be made directly or indirectly. Direct correction includes requests for more or less of a specific type of content,

Table 1
Image categories and definitions.

Category	Initial categories	Definitions
1. Community identification	Inside jokes, Popular interests, Community policing, Shared experience	Inside jokes, references to popular interests or media, direct communication of behavioral expectations
2. Social support	Social support, Confession	Requests for emotional, material or informational support during difficult life circumstances, confessions
3. Capitalizing	Positive experience, Original art	Celebratory posts related to positive life events ranging; or a place to exhibit original art, or a particular talent
4. Humor	General humor	Memes, images, and gifs designed to be funny. May be original images, or existing images placed in a new/humorous context
5. Visually appealing	Visually appealing	Widely varied images – often images of nature, but may include visual art, people, or technology
6. Information/mobilization	Information, Mobilization	Ranges from quotidian “life hacks” (ways to make life easier) to mobilization of individuals around a specific political cause

Table 2
Percent of images within category (diagonals), and across multiple categories (off-diagonals) in full sample.

Image category	Community identification	Support seeking	Capitalizing	Humor	Visually appealing imagery	Information/mobilization
Community identification	421 8.7%	11 0.2%	12 0.2%	330 6.8%	81 1.7%	23 0.4%
Support seeking		140 2.9%	15 0.3%	47 1.0%	8 0.1%	11 0.2%
Capitalizing			270 5.6%	49 1.0%	100 2.1%	14 0.3%
Humor				3313 68.2%	304 6.3%	116 2.4%
Visually appealing imagery					1376 28.3%	77 1.6%
Information/mobilization						436 9.0%

Note: Due to double, triple and quadruple categorization, the numbers on the diagonal add up to more than 100%. However, the final 10 images for each category were selected based on inclusion within a single category. For example, an image classified as “humorous” and “visually appealing” could potentially have been selected as a representative image for either category.

Table 3
Common Voice characteristics and evidence.

Characteristics	Evidence
1. Communication of acceptable behavioral standards	Direct reference to Imgur rules/standards of conduct <ul style="list-style-type: none"> • Complaints about behavior on Imgur • Requests for specific content or behavior • Requests for specific design features
2. Consistent response to a single image	Identical comments beneath a single image <ul style="list-style-type: none"> • Identically worded comments • Comments conveying a similar message • Identification with original poster
3. Common responses across images and categories	Continuous content between images in a single category, or over multiple categories <ul style="list-style-type: none"> • Identical comments or similar messages • Use of common language • Use of common humor/inside jokes

or requests for specific design features. Indirect communication of behavioral standards includes up/down votes, or positive/negative reactions to comments.

Evidence of limited content variability can occur at both the micro and macrolevels. Micro-level convergence includes similar comments within or between images, while macro-level convergence includes broad tendencies in the style and nature of comments. Thus for evidence of converged content, we use (2) Consistent response to a single image and (3) Common responses across images and categories.

Table 4 lists examples of common voice attributes within each category as reflected in image comments. There is strong evidence that behavioral expectations are explicitly communicated in each category of response, and of consistent content within image categories, as well as between image categories.

4.2. Criterion 1: Communication of acceptable behavioral standards

Posts and comments were often very explicit in the communication of behavioral standards. According to Schaaaf (2012), Director of Community at Imgur, the Imgur site administration team does not restrict or regulate site content. The administrators only stipulates that the site will not host content that is not safe for workplace viewing, and that administrators will delete content reported as offensive. As such, additional behavioral standards are largely generated by community members themselves, and, while they can appear contradictory at the outset, some general patterns of behavioral standards emerge.

One pattern emerging from the data is the expectation that comments will respond in accordance with the original post. Posts eliciting sympathy will generally garner sympathetic responses; while critical posts will garner additional critical responses. For example, nearly 3% of total posts were OC requesting support for a difficult time. Some of the posts were minor problems such as a broken cabinet, while others were users seeking support following the cancer diagnosis of a family member (<http://imgur.com/gallery/UTwU2>), or a nephew who is not responding well to chemo (<http://imgur.com/gallery/BPKIZ>). Comments to support-seeking posts were largely well wishes and requests for follow up. However, one OP criticized these support-seeking posts, by posting an image of a paper cut on a finger with the caption, "I cut my finger and cannot deal with the problem I created so I came here to get sympathy and let you know my life is awful." Interestingly, while most support and capitalizing posts garner almost uniquely positive comments, not a single user disagreed with this post denouncing "sob stories" on Imgur. In fact, users posted comments ranging from, "Yeah, we're not your personal therapists, I for one don't give a shit about your dead pets and relatives or ex/cancer/weight problem." Some lamented a perceived mistreatment at being down voted for not expressing more sympathy on support seeking posts: "I hate how just because I don't think a suicidal girl should be in the gallery it means I should be downvoted to hell." Others comment on the downfall of Imgur as a formerly funny site, "+10 for the irony and making fun of those who post crap on this formerly awesome site."

Conversely, a gif of Symba from Disney's The Lion King crying after the death of his father with the caption, "MFW I learned my

Table 4
Evidence of common voice in the 60 sampled images for each category.

Image category	1. Communication of acceptable behavioral standards	2. Consistent response to a single image	3. Common responses across images and categories
Community identification	<ul style="list-style-type: none"> • Comments on gif quality • Explicit discussion of browsing habits, and image indexing 	<ul style="list-style-type: none"> • Repeated comments: reference to "I'm Blue" by Eiffel 65 in response to "The Color Blue" post 	<ul style="list-style-type: none"> • Common language: +1, TL; DR, TIL <i>Found across all 6 categories</i>
Support seeking	<ul style="list-style-type: none"> • References to support coming from an "Imgur family" or "Imgur Community" • Encouraging OP to keep Imgur posted 	<ul style="list-style-type: none"> • Supportive comments: "on your side OP", or "stay strong" 	<ul style="list-style-type: none"> • Formulaic humor: focusing on an element central to the image but not central to the message <i>Found in humor, community identification, and social support</i>
Capitalizing	<ul style="list-style-type: none"> • Complaints regarding the material that makes it to the front page 	<ul style="list-style-type: none"> • Support and encouragement for friend's music video 	<ul style="list-style-type: none"> • Reference to material in previous posts: Eagle Ceremony <i>Found in information/mobilization, capitalizing, and community identification</i>
Humor	<ul style="list-style-type: none"> • Complaining about "sob stories" posted on Imgur as inconsistent with the tone of the site 	<ul style="list-style-type: none"> • Repeated comments expressing disdain for Chris Brown 	<ul style="list-style-type: none"> • Formulaic humor: correcting grammar, wording or mislabeling of images <i>Found in capitalizing and humor</i>
Visually appealing imagery	<ul style="list-style-type: none"> • Denouncing reposts 	<ul style="list-style-type: none"> • Repeated jokes on marriage post regarding "player 2" 	<ul style="list-style-type: none"> • Formulaic humor: anthropomorphism <i>Found in Humor and Visually appealing</i>
Information/mobilization	<ul style="list-style-type: none"> • Requesting sources of Information 	<ul style="list-style-type: none"> • Repeated comments expressing dissatisfaction with Pixar's Cars II in response to cancelled Pixar movie 	<ul style="list-style-type: none"> • "Thank you" comments to servicemen and women <i>Found in information/mobilization, capitalizing</i>

mother has cervical cancer,” received 84 comments, 83 of which express sympathy and encouragement, and implore women to get regular medical examinations and screenings. The single detracting comment criticized the selection of venues and images for sharing news and receiving support, “You logged onto Imgur and posted a MFW Lion King gif. That’s your response? Pretty screwed up.” However, this comment was not only down voted (–1 points) and censored, but received four additional comments from the OP, herself, as well as from three other community members condemning the insensitivity of the response. One responder commented, “Thank you for being the exception that proves the rule ‘Imgur has a great community.’” While these two posts and their comments may appear contradictory on the surface, together they demonstrate the willingness of Imgur users to respond in keeping with the tone and requests solicited in the original image. It appears that opinions displayed in OC give both sympathizers and empathizers permission to speak.

Users also monitored fellow site members’ behavior by policing information - to ensure accuracy. Comments on posts in the “Information and Mobilization” category frequently included requests for sources, and even support-seeking posts occasionally called for some proof before responders were willing to provide supportive comments. Posts referencing previous Imgur content often responses with a link to the referent post, and users were often quick to point out evidence that an image had been photoshopped (e.g., <http://imgur.com/gallery/1U3G7>). However, the responses took a very negative tone when someone was thought to be posting false information, or false claims to social support. For example, one user posted a gif from the movie Ironman of the main character preparing for battle with the caption, “My friend was murdered 10 yrs ago today. Cause of him I wanted to be a cop, tomorrow I will be. I honor him to protect people.” Suspected falsehood led other users to look past the functional anonymity of the site (avatars, no personal information) and to seek out additional information on the OP, himself. The top comment (of 213 total comments) was, “The same guy that posted the Ironman GIFs also posted about getting your doctorate to be able to avenge the death of your sister that died from cancer.” Another suspected this user of being a new account of an older, exposed falsifier of information: “You’re the same guy who made the post about a woman slapping a guy in the face at a bar. . .you’re the new account of Devoux, aren’t you?” The conversation then turned to the story of Devoux for the benefit of newer users, or users unfamiliar with the backstory. Posts included angry responses like “Fuck you OP. . .Stop messing around with people”, “Devoux is Imgur’s Bond villain,” and “Get out devoux”. This type of response by the larger community sends the message that false information is a crime that is not tolerated by the Imgur community.

4.3. Criterion 2: Consistent response to a single image

Evidence of the second criterion was present in each category, and, more specifically, repetition was found in all 60 of the images analyzed. Evidence of consistent response took four forms: (1) identically worded comments, (2) comments worded differently but that express similar meaning, (3) up and down voting, and (4) the silencing of dissenting opinions. Often multiple forms were present within a single image. For example, an image uploaded in December of 2012 depicted a coffin draped in an American flag, being carried by six servicemen, and being saluted by a seventh in front of a small crowd of people. The images caption reads, “To all men and women who have, are, and will serve their country. . .Thank you.” (<http://imgur.com/gallery/vVSnx>) The image received 82,949 views at the time of analysis, and had scored a total of 689 points, with 754 up votes, and 65 down votes. The image received a total of 68 comments that can be categorized into

roughly five categories conveying similar messages: thanks, condolences, antiwar, comment policing, and other. The top comment, “Thank you! Be at peace soldier,” conveys both thanks and condolences and received a total of 53 points. Nevertheless, comments expressing thanks and/or condolences were repeated another 17 times. Some repetition acknowledges other content with similar content, “I concur! Thank you!!! To all the military men and women who are overseas, come home,” or emphasize the commenter’s status as the member of a group that is particularly affected or sympathetic, “As someone who is enlisting in the army later this year. . .” or, “As an aspiring marine. . .” Other comments express a similar sentiment with no regard to the content of other comments, “Thank you to the brave Men and Women in our Military¹.”

Despite the repetition of multiple comments that could indicate a common reaction, the image was not universally approved. It is not uncommon for comments to criticize a post like this as “pandering for upvotes”. However, several users’ comments also conveyed an antiwar message. The antiwar comments also demonstrated a common tone expressing ulterior motives for war like “politics”, “oil” and “money”. For example, one commenter wrote, “Lets face it, these people were not fighting for your freedom. They died for some political bullshit. That’s what’s sad.” Despite this dissension (16 comments), other site members were quick to condemn both those who would down vote the image, as well as those who expressed antiwar sentiment. According to one commenter, “Awful lot of hippies commenting/voting on this image. . .” Another says, “I may not agree with what some of you say, but I will defend to the death your write (sic) to say it. . .” While some commenters responded to the group as a whole, others responded directly to specific antiwar comments. For example, in response to the abovementioned antiwar comment, HoriSmoku replies, “They died for someone’s freedom. I served. I made a difference in someone’s life. I sleep well at night.” Another user (fishingfordownvotes) also responds, “How do you think that you get your freedom? Magic freedom fairies? No, it’s the ‘political bulshit’ that makes it.” Other users simply up voted positive comments expressing thanks and condolences, and down voted posts they deemed inappropriate.

Up voting and down voting were also tools used to express opinions on Imgur, and may contribute to an apparent common voice. This is due to the fact that the Imgur site orders comments based on their popularity, with most popular comments listed first, followed by less popular comments. Those comments that receive negative points – or more down votes than up votes – are eventually censored. For example, comments that portrayed soldiers as unwitting victims generally netted positive point scores, but comments showing soldiers as agents in American politics netted negative scores. One censored comment stated, “To all men and women who help America getting oil. . .Thank you.” The tone of the responses develops into an almost harmonious “pro soldier, anti war” sentiment. This repetition of comments and management of content was universal in each of the 60 images analyzed, and many followed the pattern exhibited by the image analyzed above: repeated comments, limited variability, policing and use of up or down votes to promote certain comment, and censor other content.

One post, categorized under “community identification” is entitled “The color blue”: <http://imgur.com/gallery/hYURk>. The post consists of three panels. Panel one is a text box that says, “did you know? The color Blue is calming and releases calming hormones in the brain. That’s why Twitter, Facebook and Skype are

¹ All comments are written exactly as they appear on Imgur, with the exception of final punctuation. Given the variety of grammar, spelling and punctuation styles we have elected not to use the [sic] each time the grammar does not correspond to written English grammar rules.

Blue.” The text box then displays the logo for Twitter, Facebook and Skype. Panel two is the Yao Ming Face (AKA the “bitch please” face), which is shorthand on the site for disagreement with a previously posted statement. And the final panel is the Windows “Blue Screen of Death”, the Windows screen indicating a system crash, followed by a smiley “derp” face transposed over a rage face. The post received 452,563 views, 791 points (824 up votes, 33 down votes) and 97 individual comments. While not all comments were repetitions of other comments, most comments could be easily categorized into one of four groups. Of the 97 comments, 25 referenced the song, “I’m blue” by Italian group, Eiffel 65. Some users posted song lyrics, others posted comically incorrect lyrics, while still others jokingly complained that the song would become stuck in their heads. Four separate users posted jokes referring to the popular show “Arrested Development”, and five complained that the content of the OC had come from 9gag, and that Imgur should be made up of original content rather than reposts of old 9gag jokes. Finally, and perhaps most interesting, five separate people posted the same fact: that Facebook was, in fact, blue because Mark Zuckerberg is red–green colorblind and blue was one of the colors he could see best.

Generally, it can be assumed that each person will respond to a specific stimulus in his or her own specific manner. On Imgur, our evidence shows that rather than individual responses, users tend to respond in clusters – repeating responses, jokes and information, often several times beneath a single image. Further, this consistency in responses not only occurs beneath a single image, but also became a pattern reflected in all 60 of the images we analyzed. This categorical consistency in responses provides compelling evidence that there are rules of conduct that provide parameters for acceptable response. No longer are responses as varied as the individuals responding, the responses are more of a multiple choice selection based on a certain rules governing political viewpoints and standards of humor, among other things. Behavior may be modified subconsciously, or users may be adapting their behavior to curry favor within the community. In either case, the limited number of responses shows that individuals experience normative pressure that is influencing how they respond to diverse stimuli.

4.4. Criterion 3: Consistent responses across images and categories

Social support requests commonly received repeated responses of sympathy and empathy, while capitalizing posts received compliments and congratulations. However, perhaps more interesting than simple comment repetition are more broad similarities that were observed across images and even categories. Four examples of this type of content agreement emerged: (1) common language and common referents, (2) formulaic humor, (3) detracting/distracting in the form of ignoring primary content, shaming and fact correction, and (4) validation and empathy.

4.4.1. Common language and common referents

Given the limited space users have to express opinions to some emotionally charged OC – such as a child’s diagnosis with cancer, or the death of a fellow user’s close relative – users have constructed a unique shorthand to express complicated ideas in limited space. Similar to LOL and other early Internet shorthand, the language appears to both save space and establish group membership, but is unique to Imgur as much of the shorthand refers to features of the site. In one example, a man and his girlfriend constructed a 7’ × 8’ perler bead rendition of the scenery from the game Chrono Trigger. The caption reads, “After two years and 47,096 beads, my girlfriend and I finish this tribute to my favorite game of all time (OC)” (<http://imgur.com/gallery/2GujB>). Response comments were supportive, and included pro forma statements like “wife her” – Imgur shorthand indicating that the man should

marry his girlfriend for having spent so much time with him on such an interesting project. (Women, and male homosexual couples, may receive the message “husband him”.) Of the 372 largely congratulatory comments, 13 comments included the statement, “wife her”. Other standard form comments on this image included references to up votes. 23 comments included explicit reference to up votes. Comments ranged from “+1 for...”, e.g., “+1 for Chrono Trigger”. This indicates that the user is familiar with, and also a fan of, the game being represented in the images and is willing to vote for the images based on a shared interest. Other standard form comments on this image included “banana for scale” – a common Imgur shorthand indicating that the scale of the image is difficult to determine from pictures, and a banana could be used to help determine object size; and “I’m relevant” – indicating that the member’s selected username pertains to the content of the image.

4.4.2. Formulaic humor

While language is one level on which in-group membership is established across images, inside jokes and references to earlier Imgur content are another way in which users demonstrate group membership and establish norms. For example, one image classified as “community identification” was captioned, “We all know what’s in the vault” (<http://imgur.com/gallery/SsbNGTA>). The image displays a gif in which a safe opens and a series of upward facing arrows falls from a vault.² At the macro-level, this post refers to a previous post on Imgur captioned, “A friend of mine moved into a former drug house and found this HUGE safe. How do we get it open?” The post goes on to show a gate leading to a basement, and an underground vault (<http://imgur.com/gallery/A8vF2>). Despite clear interest in the image (2,164,332 views, and 7708 up votes) and frequent comments requesting the OP follow up once the safe had been opened, the post was never followed up on, and became an inside joke on Imgur, giving rise to several original gifs featuring a vault opening and varied, often silly objects falling out. Yet even within this post, other inside jokes emerged from the comments. For example, in response to the “community identification” image, one commenter responds, “If that safe is empty, I will cry, and then, eat a sock.” The sock eating joke originated within a rather involved series of images. In the first, an Imgur user posted a picture of an orange square with the caption “for St. Patrick’s Day”. The top comment was a user who stated that if the post received 300 up votes, the commenter would eat a sock. The original post received 4290 votes, and the promise to eat a sock received 3916 votes. In response, the commenter posted a picture of himself with a sock in his mouth. Later, another user stated that putting a sock in your mouth did not constitute “eating a sock”. That user then posted a series of picture of himself cutting up a dress sock, frying it with eggs and bacon and eating the entire sock (<http://imgur.com/gallery/TdG9T>). Imgur users tended to appreciate these references to insider knowledge, and the sock joke was found not only on the vault post referenced above, but as the fourth most popular comment on another of the 60 images we studied.

While users establish their status as in-group members through inside language and inside jokes, many users also exhibited knowledge of Imgur culture through the use of *formulaic humor*. Unlike repeated jokes, formulaic jokes are often very different in content, but follow a similar construct. Two particular examples found in the 60 images we analyzed are anthropomorphism, and detracting/detracting. Anthropomorphic humor often included talking for an animal, or suggesting what the animal in an image may be thinking. For example, one humorous image captioned “Just

² Of note is that the arrows are red (the color of up vote arrows on Reddit) and not green (the color of up vote arrows on Imgur), indicating that the original image was hosted on Imgur, but posted to Reddit

washed my dog, I think it's safe to say the games are over," shows a white husky lying on the ground with his muzzle and chest entirely covered in dirt. Top comment was, "This is how dogs tells you to fuck off and mind your own damn business." In fact, 16 of the images total 32 comments made anthropomorphic jokes ranging from "Try washing me again, I dare you," to, "the look of 'yeah... what are you going to do about it". This pattern was also found in another animal image. This image was categorized as "visually appealing" and was captioned "A year later and she's still a big baby" (<http://imgur.com/gallery/PUWSw>). The image displays two photos, assumed to be taken one year apart. One image depicts a man holding a puppy, and the second shows a man holding a full-grown dog. While fewer anthropomorphic jokes were present in the second image, the image included jokes attributing thoughts, language or feelings to the dog such as, "Puppy: 'What's that shiny thing?' Adult 'IT'S A SHINY THING! HI, SHINY THING!'" In our sample, four posts were photos of animals, and three included anthropomorphic jokes (the final was a dog named Harry, which garnered more Harry Potter references). This type of formulaic humor shows that users become familiar with the types of jokes that are well received by Imgur users, and receive positive response by way of up votes.

4.4.3. Detracting or distracting

This category involved taking the emphasis off the focal point of the image and focusing on some irrelevant feature in the background or title of the image. This technique included a deliberate misunderstanding of the image's focus, or mockery of an image caption or comment. For example, in the image analyzed above of the man holding his dog as a puppy, and again as a full-grown dog, users made several jokes centered on a deliberate misunderstanding of the image's focal point. The second most-popular comment reads, "Coffee Pot Lasergun!" in reference to the red light illuminated on the coffee pot in the background of the image. Other comments focused on the man in the picture, rather than the dog, with comments like, "An[d] you're still adorable" Another example of shifting the focus in the image comes from an image classified as "support seeking." The image is a photo of a broken cabinet with the contents strewn about the counter and floor. The caption reads, "We had too much on our shelf and in our cupboard, so it broke and made a huge mess. But it would have been worse if we didn't have Pam." Beneath the cabinet, a can of Pam cooking spray is holding the cabinet partially up, and thus preventing the microwave and various bottles of liquor from falling (<http://imgur.com/gallery/9HTLV>). Here, too, many formulaic jokes can be found focusing on the contents of the cabinets. Comments ranged from, "+2 for sriracha and bulleit burbon", to "Cavenders It's amazing... <http://www.amazon.com/Cavenders-Purpose-Greek-Seasoning-12x8oz/dp/B000LPHKB6> try it...", and "Why isn't the vodka in your freezer?" The deliberate misconstruing of an image's focus may serve to redirect other users' attention, thereby distracting and diverting attention away from the OP's original image.

Detraction can also involve redirection of user attention from the image itself to a grammar flaw or incorrect information. This may happen in either the image caption, or in the comments beneath an image. For example, one image categorized under "visually appealing imagery" was captioned, "My friend has started making 3d personalized pens, I think they're pretty cool." The image features pictures of the personalized pens (<http://imgur.com/gallery/ACIYq>) where the base of the pen was carved into a string of contiguous letters. While most comments are complimentary, or suggest that the pens may be difficult to write with, one commenter notes, "Thank god. I was getting pretty tired of using my 2d pens." As such, the focal point becomes the caption, rather than the image, itself. In another post, (<http://imgur.com/gallery/6GJkF>) a user notices a grammar error in the top comment. The

commenter's misuse of "your" for "you're" then becomes the focus in a series of response comments. "I wish to upvote you, but my grammar-naziness will not allow. D=", says one. And, "I feel bad for doing this but 'you're,'" says another. While the comments appeared generally good-natured, they serve to funnel attention away from the OC, and onto the comment.

4.4.4. Validation and empathy

One final trend that could be observed across images and across categories was an empathy or validation through shared characteristics or shared experience. These posts went beyond the standard sharing of support to the establishment of an unofficial subgroup. These types of posts were found primarily in social support, capitalizing and mobilization/informational posts and took one of two forms. In the first form, individuals used the shorthand, "as a" to denote membership in a particular subgroup. For example, posts range from "as a woman", to "as a Christian/Quaker, Sikh" and can imply a counter-perspective on an issue or emphasize a particular understanding of an issue. For example, in one image a young man's prom invitation is rebuked rather rudely, and he requests support from the Imgur community. One of the comments states, "As a woman I apologize for that stupid girl, I hope it comes back to bite her right in the arse." In another post, a user states that his or her religious exboyfriend broke up the relationship while possessed by the devil. Another user responds with, "As a Christian, imma call bullshit." The second form of empathy or validation was highlighting a shared experience and an empathy based on that shared experience. For example, in the image of the military funeral, referenced above, several users used the "as a" formula to state that they had a special connection to the military. Users qualified their thanks, and their sentiments with statements like, "as a USAF Soldier", "As an army wife", and "As an aspiring marine". In another post, also referenced above, a user posts that his or her mother had been diagnosed with cervical cancer – and several users responded with their stories of cancer survival, or the cancer survival of someone close. One user states, "My Mom survived breast cancer when I was 14. It was really hard, but we made it. It's not a death sentence. STAY BY HER SIDE. She needs you." Another user shared an experience, "Keep strong OP, my ma recently had Bowel Cancer and has pulled through fine after a long year of worry." These shared experience qualify sentiments, and created a subgroup of users who possess a more intimate understanding of the OP's situation.

5. Discussion

We examined Imgur.com site content – images and their comments – to determine whether there was any evidence of convergent content. Ultimately, we found that there is evidence that site content converges by the correction or communication of behavioral standards, comment repetition in response to a single image, and comment repetition across multiple images or categories of images.

According to Preece (2000), "When people experience the same [system-designed] response repeatedly, they come to expect it in similar circumstances in the future and behave accordingly" (p. 193). Our results suggest that we can amplify this statement. As users come to understand the culture and rules of engagement on a site, those users may come to anticipate the types of responses that are generally well-received by the community in response to certain original content. As a result, users will modify their own responses to gain the favor of their audience by conforming to perceived behavioral and site-culture norms.

Evidence of response conformity could be found at a very basic level, with each of the analyzed 60 images exhibiting comment

repetition. Comment repetition beneath a single image could result from (1) concurrent responses, (2) failure to read all comments, or (3) reading a comment and reposting the same comment. Options (1) and (2) provide compelling evidence of integration of and behavioral modification in keeping with site norms – as it would involve two (or, in some images more than five) users having the *exact same* reaction to an image. And while these similar responses may be expected in instances of pro forma support transmission (e.g., sorry for your loss, thank you for your service), comment repetition becomes more remarkable when the responses are more specific, as in the information about Mark Zuckerberg's choice of Facebook colors. Option (3) may indicate that, when a response carries favor among the larger community, other users may repeat the same comment with the expectation that their response will receive the same positive feedback. This would suggest that, rather than an integration of site culture, the modification of behavior is done in a direct attempt to curry favor.

Evidence of behavioral modification also emerged in the comparison of responses across images, involving the use of common terms, the repetition of specific jokes, reference to old posts, and the use of formulaic humor. More interestingly, different users repeated similar comments in response to different images (e.g., common shorthand, or formulaic humor). This common response across images has two important implications. First, this common response indicates that commenters expect that fellow site members will understand and appreciate a specific type of response. It is important to note that this perceived appreciation may be false, and individual site users might not appreciate repeated comments or formulaic humor. Nevertheless, this continuity of language and humor in comments depicts a shared language, history and culture among Imgur users. We surmise that this perceived shared culture functions alongside the explicit behavioral correction to communicate behavior norms and expectations; and we recommend this for further empirical testing. The second implication is that when commenting, users try to capitalize on a perceived shared language, history and humor. The observed common response is due to users' willingness to modify their own posting behavior to capitalize on what they perceive to be common behavioral standards, and that they are rewarded with upvotes and positive feedback.

One unexpected finding was a contradiction in the general theme of responses. At certain times, when a site member called out to other Imgur users for support, the response was overwhelmingly positive. Yet other posts show a much more negative rhetoric surrounding support-seeking on the site – referring to support seeking as “sob stories”, “attention/upvote whoring” and an inability of fellow site users to deal with their problems. Nevertheless, this perceived contradiction in response content could potentially be explained by the original content to which the comments were submitted. The supportive comments were submitted in response to a post requesting support, whereas the negative comments were submitted in response to a post bemoaning the frequency with which “sob stories” were being posted on the site. Each set of comments was in keeping with the tone set by the original post. As such, we hypothesize that polarizing posts may give individual users permission to speak. Otherwise stated, an individual user may be disinclined to go against the perceived grain and post something negative in response to a post that's received overwhelmingly positive comments. In this case, the user may self-censor. Conversely, in instances where a user does not self-censor, our evidence shows that dissenting comments tend to be downvoted. However, once the tone of a conversation or thread has been set in the opposite direction, users may feel as though they are no longer alone in their opinions, and may voice an opinion more confidently. The result is that until two original posts are in direct opposition (e.g., pro gun control vs. anti-gun control), the group appears to have fairly consistent, sanctioned and uncontested opinions.

Common language, common history, and formulaic humor coupled with limited dissension and response continuity may create the sense among users that the website speaks with a singular, common voice. Further, because our evidence finds that the group is quick to highlight and chastise behavior that deviates from acceptable behavioral standards, individuals who choose to speak may alter their own behavior in accordance with those standards, or may simply self-censor to avoid having their behavior corrected. These are all hypothetical relationships, supported by our close reading of qualitative data, but warrant further empirical study as the results have implications in the field of both online social support, as well as online bullying.

5.1. Limitations

We use qualitative data to assess content convergence based on comment repetition, trends and the overt communication of behavioral standards. Our assumption is that the convergence of content is evidence that individual site users are modifying their behavior in accordance with their interpretation of site culture and rules of conduct. Otherwise stated, it is unrealistic that web content generated by 75 million unique visitors will exhibit consistency without some behavioral modification on the part of individual users. However, in order to test that underlying assumption, it would be necessary to look at each site member's posting behavior longitudinally, over time – to test whether an individual users' comments come to align with site culture over time. Alternatively, we could trace comments back to individual users and measure content convergence as a function of the amount of time the user has been visiting Imgur, or each member's involvement. However, this approach assumes that group identification in online settings increases with the amount of time a user has been visiting a site, when the relationship may be more complicated with identification and convergence peaking early and leveling off, or peaking and decreasing with time. These remain empirical questions for future papers. Our qualitative results provide a framework for how content convergence can be measured, and would be greatly benefited by subsequent quantitative studies to test for generalizability across sites and in larger, more representative populations of Internet users.

6. Conclusion

Research increasingly acknowledges the fluidity between on- and offline social support networks (Rheingold, 2000), and even proposes instances where online social support may be advantageous (Mikal, Rice, Abeyta, & DeVilbiss, 2013). Acknowledgement that websites can function as a collective unit may enable researchers to better measure online support networks and their impacts and to explore questions related to the quality of support received. Research in social psychology has conceptualized social support as a function of number of relationships, or number of interactions. Yet the notion that online groups function as a single unit due to the normative pressure of cultural norms means that these models would need to be reconstructed to accommodate online support exchanges. Even with over 75 million unique but anonymous visitors per month, Imgur seems to support sufficient group identity that users modify their behavior to align with the site culture, so that the message of the site is likely to exhibit some consistent content regardless of the individual users present at the time of the posting. As such, each individual user interacts with the site as a single entity, a general virtual source of community identification, social support, positive experience, humor, appealing visuals, and information/mobilization.

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