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Misinformation and Disinformation in Online Games:
An Exploratory Investigation of Possible Cues

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Abstract

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From election meddling to #fakenews to that “truther” meme shared by your Uncle Vernon on Facebook, we’re inundated with misinformation and disinformation daily, but may struggle to perceive cues to misinformation and disinformation, especially in online environments. Online games, like other online environments, are rife with rumors and speculation. Online games, however, provide a bounded space, separate from the noise of reality, within which places, tools, and individuals’ constructions of meanings may influence the perception of possible cues to misinformation (mistaken information) and to disinformation (deceptive information) with limited risk in the event of failure to perceive

such cues. Unique relative to other online environments, online gamers rely upon their teammates to aid in the perception and judgement of possible cues. This dissertation work leveraged Interpersonal Deception Theory, Information Grounds, Activity Theory, and Symbolic Interactionism to investigate how places, tools, and individuals' constructions of meanings might influence their perceptions of possible cues to misinformation and disinformation in an online game, *Star Wars: The Old Republic* (SWTOR). Methods included 40 weeks of exploratory fieldwork, 70 weeks of participant observation, 180 minutes of naturalistic observation, collection of 72 online artifacts, and 30-90 minute semi-structured interviews with seven players. Possible cues to misinformation included other players' lack of knowledge, timing, technological artifacts – a novel cue, and personal disagreement. Possible cues to disinformation included other players' lack of evidence, participants' negative experiences – a novel cue, other players' success, avatar metadata – a novel cue, information omission, vagueness, improbability, and indirect information. Places influenced perceptions of possible cues when places insufficiently met participants' needs for sociality and information. Participants' game information management tools influenced cue perception through their affordances and limitations. Individuals' constructions of meanings influenced cue perception through participants' social and information curation actions. Implications illuminate possibilities for game design, misinformation as user engagement tool, and disinformation as information management tool. Future work discusses cue investigation, the role of teams in cue perception, the role of deception within Information Grounds and Activity Theory,

the potential for Symbolic Interactionism in information behavior and information literacy, and the cultural and social impact of misinformation and disinformation research.

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DEDICATION

I dedicate this work to my greatest work, my daughter, Aurora Margaret Campen:
Always be true to yourself first

Chapter 1. Introduction

Inaccurate and deceptive information infiltrates all media: print, television, radio, and online. For example, some people believe that vaccines cause autism (John Stone, 2011; Walia, 2017), or the attacks of September 11, 2001 were committed by the United States government (Fetzer, 2011; MacQueen, 2017), and that global warming is a natural phenomenon of no particular interest (Heyes, 2017; Swemson, 2011). Others willingly send their money and identity information to Nigerians via email scams (BBC, 2016; Federal Bureau of Investigation, 2010), or willingly give their money to shady investors (Abdul-Samad, 2017; Clark & McGrath, 2009; Ming, 2016).

In any information situation (e.g., buying a car, finding books in a library, betting on race horses, researching alimony law or skin cancer (borrowing from Case, 2007)), misinformation and disinformation are common, equally true in online games. For example, the rumors about an upcoming game content release for *Star Wars: The Old Republic* (SWTOR) were so wild and numerous that a SWTOR developer entered the fray on the forums (Urael, 2012). When people believe inaccurate or deceptive information, there can be real consequences, thus affecting how they and others view and value health, science, politics, the environment, economics, and other topics. Membership in a team at work or in an online game can complicate these consequences because not all members of a team might believe similarly, and inaccurate or deceptive information might cause intra-team friction as members seek to persuade others or to

position themselves strategically. In Information Science, inaccurate information is called misinformation and deceptive information is called disinformation.

1.1 Background: Misinformation and Disinformation as Terms

Despite the ubiquity of inaccurate and deceptive information and the gravity of their consequences, the information science literature suffers from a dearth of research in the areas of misinformation, disinformation, cues to deception, rumors, lies, speculation, hearsay, gossip, conspiracy theories, propaganda, urban legends, and other related subjects. But there also seems to be some confusion around the terms, 'misinformation' and 'disinformation,' regarding whether they are interchangeable or whether one is a subset of another (Fox, 1983; Losee, 1997; L Zhou & Zhang, 2007). This slippage between terms suggests a need for further research to understand misinformation and disinformation and their respective cues.

1.2 Need for This Study

Calls for additional study indirectly implicate the limited focus of research in the information science field and the narrowness of the field's understanding of what constitutes 'information.' Zhou (2007) suggested that misinformation research is crippled by a lack of theoretical models, by humans' (i.e., researchers') tendency towards truth, by the ethical and legal implications of misinformation, and by the broad variety of sources of misinformation, which makes comparisons challenging. But these elements all offer opportunities to broaden the scope of information science and to increase understanding

of how information functions in naturalistic, real-life settings. Rubin (2010) argued that deception, as an application of disinformation, is stigmatized by the information science field because significant efforts in the field have focused on trust and credibility, whereas disinformation destroys trust, leaves people susceptible to deception, and makes information unreliable.

If information science seeks to understand trust and credibility, then misinformation and disinformation must be included in the research agenda. In information-rich online gaming environments, for example, misinformation and disinformation are ubiquitous. Such ubiquity poses a difficult challenge for online gaming teams because these organizations depend on trust and credibility as they seek agreement on whether information is misinformation or disinformation. These calls for further study highlight the need to understand the natures of misinformation and disinformation, how they might be recognized and used in various contexts and domains (e.g., online gaming environments), and how they might influence how people (including teams) make decisions and judgments about information and information sources.

1.3 Purpose of This Study

This study sought to explore two primary questions. The first question focused on how an understanding of tools, informed by Activity Theory, and an understanding of place, informed by Information Grounds, might influence the perception of possible cues to misinformation and disinformation, informed by Interpersonal Deception Theory, in an online environment, using an online game as an exemplar. The second question sought

to understand how individuals situated within a distributed, networked team might perceive possible cues, informed by Interpersonal Deception Theory, by constructing meaning, informed by Symbolic Interactionism, to misinformation and disinformation in an online environment.

1.3.1 *Research Questions*

- 1) How might places and tools, as informed by Information Grounds and Activity Theory, influence the perception of possible cues, as informed by Interpersonal Deception Theory, to misinformation and disinformation in an online gaming environment?

- 2) How might the constructions of meanings, as informed by Symbolic Interactionism, for individuals situated within a distributed, networked team influence their perceptions of possible cues, as informed by Interpersonal Deception Theory, to misinformation and disinformation in an online gaming environment?

Research question 1 was formed to investigate relationships among places, tools, and possible cues. In persistent online environments, such as the site of this study, technological tools simultaneously transform into gathering places as users interact there. The consequences, however, of the limitations and affordances of tools may affect how they become places, although users may attempt to circumvent limitations and extend affordances. Places, tools, their interactions, and the interactions of users may constrain the types of possible cues created by misinformers and disinformers as well as the extent to which or the manner in which possible cues may be perceived.

Research question 2 was developed to extend research question 1's investigation into places, tools, and possible cues by examining additional sources of potential

influences on the perceptions of possible cues. That is, research question 2 considers individuals' constructions of meanings of possible cues, as well as the potential influences of team members. These extra layers of context and relationships may influence both the perceptions of possible cues and their interpretations. Further, because deception (i.e., disinformation) is dynamic, strategic communication, meanings and interpretations may fluctuate through the course of an information encounter, conversation, text chat, etc. In this way, it can be seen how a cue perceived by one individual may not be perceived by another, or how two individuals perceive the same cue, but construct different, even oppositional, interpretations. This multi-tiered approach (i.e., places, tools, perceptions, possible cues, deception, constructions of meanings, team members, and all the interactions therein) drives the complexity and novelty of this research.

1.4 Motivation of Work

1.4.1 *Misinformation*

Misinformation, inaccurate information, is often viewed as merely incorrect information that needs to be corrected (Lee & Renear, 2008). Misinformation is problematic largely because it can create confusion and mistrust among receivers. Misinformation makes information difficult to use. For example, receivers might feel uncertain about the information, and therefore, uncertain about whether they can take action or make a decision. If receivers recognize the errors, they might seek another information source, repeat their previous work, or compensate in some other way. Misinformation in metadata might cause web pages, for example, to be incorrectly indexed, and absent from

appropriate search results. When confusing or even conflicting information is presented to users, it can 'break' the user experience by disrupting the flow of use.

Misinformation can cause credibility problems as well. When organizations provide erroneous information, for example, receivers might question whether an organization is legitimate and an authoritative source (Gephardt & St. Clair, 2017; Kerstetter, 2017; Mehta, 2016; O'Reilly, 2016; Pagliery, 2016; Jon Stone, 2016; Strauss, 2017; Trigaux, 2017; Zetter, 2016). Receivers might also begin to suspect whether information that appears to be inaccurate might actually be deceptive, disinformation. Additionally, misinformation is, however, not always easily detected. An exploration of how people determine and use possible cues to misinformation can illuminate methods of detection. But the difficulty in detection is only one facet of misinformation.

1.4.2 *Disinformation*

Whereas misinformation is inaccurate information, disinformation is deceptive information. Disinformation has been used as a tool of control and influence by organizations (Hudson, 2016; Jain, 2017; Jerving, Jennings, Hirsch, & Rust, 2015; Knaus, 2017; MacFarquhar, 2016; Scheiber, 2017). Disinformation is problematic for several reasons. First, it can be hard to recognize because it can often seem like the truth, depending on how it is presented and the credibility of the information source. Second, because disinformation can be true, accurate, and current simultaneously, it can reflect the truth and the true state of the world. If identified, disinformation can create mistrust among receivers, and they might feel betrayed.

Disinformation can be used towards many different ends, which might range from socially-motivated goals to personally-motivated goals. Socially-motivated goals might include those considered 'good' or 'benevolent,' such as lying about a surprise party, avoiding an argument, demonstrating performance of community membership (e.g., verbally stating agreement), and adhering to cultural values (e.g., showing respect to elders). Because these goals are intended to ease or facilitate social interaction, they might not be recognizable as disinformation, although they meet the definition of disinformation as 'deceptive.' Personally-motivated goals might include those considered 'bad' or 'malevolent,' such as intimidation, manipulation, control, or profit. These goals might be more easily identifiable as disinformation because they are intended to impede or disrupt social interactions. These wide varieties of uses can cause problems because, when receivers of disinformation recognize it as such, they might be uncertain about how speakers of disinformation are using it.

1.4.3 *Cues to Misinformation and Disinformation*

One of the goals of this study was to understand possible cues to misinformation and disinformation. In this dissertation document, cues to inaccuracy will be called cues to misinformation. Borrowing from the deception detection literature (B.M. DePaulo et al., 2003), cues to deception will be called cues to disinformation. In this study, participants reported that cues came from textual and visual sources, such as blog posts, online forums, avatars, and the user interface. Participants did not report that cues came from physical and verbal sources, for example, face-to-face meeting or via teleconferencing software (e.g., Skype, Ventrilo, Mumble) to have an audio conversation.

Cues to misinformation and disinformation are problematic because they can be difficult to detect. They might be layered underneath cues to credibility and accuracy, such that cues to misinformation or disinformation might be hidden, obscured, or distorted. Many people might fail to consider looking for cues to misinformation or disinformation because of a natural tendency towards truth (Van Swol, Braun, & Kolb, 2015; Aldert Vrij & Baxter, 1999): It is an easier and more efficient use of time and effort to assume an information source (e.g., book, person, website) is true, accurate, current, and complete. Further, accurate cue detection also requires significant previous experience and expertise, which most people lack (Hauch, Sporer, Michael, & Meissner, 2016). It might be that if two people have previous shared experience and history together (i.e., a relationship), then cues to misinformation or disinformation might be easier to detect (B.M. DePaulo & Bell, 1996; George, Tilley, & Giordano, 2014). Many studies of deception use sophisticated equipment in controlled laboratory settings to detect cues to deception (B.M. DePaulo et al., 2003; Hartwig & Bond, 2014). Most people lack access to such technologies, and these would be impractical in social conversation.

If detected, cues to inaccuracy and deception can be difficult to distinguish from ordinary communication cues. For example, in their review of empirical research articles on cues to deception, DePaulo, et al. (2003) found that fidgeting was commonly described as a cue to deception. However, it is possible that fidgeting could be a cue to boredom or nervousness, rather than deception. Cues to misinformation or disinformation are often subtle, and, in online environments, depend almost entirely on textual and visual cues, but such cues are not without major flaws. For example, in a study of email dyads, Zhou,

et al. (2004) concluded that a significantly higher than average number of grammar and spelling errors constituted a cue to deception. In certain online cultures, however, error-laden text is common, even acceptable.

A trend in the information literacy literature has focused on credibility heuristics (rules of thumb), rather than cues to credibility (e.g., Clewley, Chen, & Liu, 2009; Hilligoss & Rieh, 2008; Metzger, Flanagin, & Medders, 2010; Rieh, Kim, Yang, & St. Jean, 2010). This focus is possible only because cues to credibility have been well-studied over many years in numerous and varied domains and contexts. Thus, sufficient knowledge exists to produce formalized heuristics.

However, because cues to misinformation and disinformation have been understudied, it is premature yet to attempt to establish sets of misinformation and disinformation heuristics, particularly in online environments, where cues to misinformation and disinformation have received even less attention. Additionally, because of their formalized nature, heuristics are typically gathered, analyzed, and applied prior to entering a situation, whereas cues are typically used on-demand in a real-time situation. For example, few people use sets of heuristics to know when it is their turn to speak in a conversation. Rather, people rely on cues, during a conversation, to indicate that someone else has finished speaking and it is then their turn to speak (Sacks, Schegloff, & Jefferson, 1974). Similarly, speakers might spontaneously “leak” cues (Ekman & Friesen, 1969) during a conversation, depending on their beliefs and intentions. Further, efforts to demonstrate or prove credible might not always be genuine, as

deceivers might wish to publicly perform credibility (Zhou, et al., 2004), as a means towards gaining trust. Therefore, this study focused on cues.

Cues to misinformation and disinformation are difficult both to perceive and to agree upon. As an illustration, Rubin (2010) described some of the problems with cues to deception. Namely, there are not insignificant discrepancies between the cues people think they use to detect deception and the cues they actually do use; both of which are different from the cues actually used by deceivers. These problems with cues indicate that additional research is needed on how cues are perceived and used.

1.4.4 *Teams*

Teamwork is a key component of many online games, and so games are social spaces. Teams are a rich expression of the social experience of many games (Bardzell, Bardzell, Pace, & Reed, 2008; Chen, 2009; Williams et al., 2006). Players self-organize into teams, which might be called guilds or Clans or Corporations (a detailed explanation of guilds in SWTOR is provided in 3.2.1.). These teams are typically distributed and asynchronous, except when playing together. The role of teams in shared information behaviors, such as disinforming other players, and in facilitating social bonding and bridging (Fine, 1983; Williams et al., 2006) illuminated shades of social complexities behind misinformation and disinformation.

Information-rich games are designed to reward membership in a team and team coordination via successful advancement. Effectively, individuals become required to join

a team. Further, although individuals might work through a process of distinguishing misinformation from disinformation, they might return to the team or to another team member and discuss, thereby building meaning. Also, some individuals do not actively engage in this process until they encounter discussion with another teammate. Much of the misinformation, disinformation, and cues literature (Buller & Burgoon, 1996; Carlson, George, Burgoon, Adkins, & White, 2004; B.M. DePaulo et al., 2003; Derrick, Meservy, Jenkins, Burgoon, & Nunamaker, 2013; Ekman & Friesen, 1969; D Fallis, 2009; Fox, 1983; L Zhou, Burgoon, Zhang, & Nunamaker, 2004; Zuckerman, DePaulo, & Rosenthal, 1981) has focused on individual deceivers or pairs of conversants. This research's investigation of the influence of other team members on an individual highlighted the core elements of misinformation and disinformation: relationships and context.

1.4.5 *Games*

Some researchers have been interested in games as artifacts (Galloway, 2006; Greenfield, 1996) or as narratives (Aarseth, 1997; Lindley, 2005). This research, however, focused on games as social experiences. Games provide shared experiences, create memories, and can reinforce existing relationships among players, described as bonding social capital (Putnam, 2001). By providing a current event or objective, and topics of conversation, games can help foster new relationships, described as bridging social capital (Putnam, 2001).

Games are unique, relative to other media, because they represent the many rich dimensions of human activity – sociality, economics, achievement, etc. They also offer –

simultaneously – competition and safety. Because many games are inherently competitive, they are good cases to research misinformation, disinformation, and cues. Players might find it worthwhile to disinform their competitors either to give themselves an advantage or to disadvantage their competition. More experienced players can also disinform newcomers, often simply for fun. Players can disinform, however, only because games are safe spaces for them.

It has been argued (Huizinga, 1938; Salen & Zimmerman, 2004) that a “magic circle” exists when players come together to suspend reality temporarily and to play within a space of their own imagining [for counter-arguments, see (Consalvo, 2009; Taylor, 2007)]. Games enable players to misinform and disinform because players play in a state of uncertainty (i.e., their own and other players’ imaginations) and information asymmetry (e.g., the game developers typically know more about the game and its future than players do). Within this space, players are free to “believe that the game contains nonexistent elements and imagine the world [of the game] accordingly,” (Juul, 2005, p. 139)(Juul, 2005, p. 139). Because players play within an imaginative world, misinformation and disinformation can easily masquerade as true, accurate, credible information.

Other media, such as Twitter, Facebook, Tumblr, YouTube, require users to live in a shared reality, but fail to afford users’ imaginations to the same extent. Users, for example, might imagine that musician Jon Bon Jovi has died (D’Zurilla, 2011; Kuperinsky, 2011), but this misinformation is quickly corrected by a large number of other users. In a game, a rumor that seems believable might be often believed. This believability might be

due to players' limited access to complete information, often unpredictable announcements from the game developers, and the variability of the Player Experience (PX) among individual players. Additionally, other media, as mentioned above, fail to support competition and teamwork, prominent features in most games.

1.4.6 *Massively Multiplayer Online Games (MMOs)*

Because games are social spaces, they are also inherently information spaces as well, as described by Nardi (2008). Massively Multiplayer Online games (MMOs) are strong candidates for an empirically-grounded investigation of misinformation and disinformation. Compared to other game genres (e.g., First-Person Shooters, platformers, puzzles, Action, etc.), MMOs are differentiated by their scale and scope of player engagement, supported by both social and technological networks. Most MMOs require deep knowledge in a variety of literacies, such as reading, writing, mathematics, social and technological networks, economics, etc. (Steinkuehler, 2007). For example, as players develop their skills, there is some evidence to suggest that they develop "avatar literacy." That is, they can "read" an avatar, visually, and learn a great deal of information. MMOs are saturated with information required to advance in the game: how to slay a creature, how to set up your character, how to choose a good team, how to cast spells, etc. These are all opportunities to spread disinformation, to become misinformed, and to buy, sell, trade, and steal information, misinformation, and disinformation alike.

MMOs present the challenges of computer-mediated communication, such as a lack of physical cues, but offer opportunities for players to use other cues to distinguish

between misinformation and disinformation. MMOs offer the richness and dynamism of misinformation and disinformation in a real-life setting. While the work on textual cues in email exchanges begins to address the lack of physical or verbal cues, work in 3D, immersive environments, such as MMOs, might provide additional or alternate sets of cues, such as avatar-embodied cues, title or affiliation cues, statistics cues, gear or accessories cues, etc. These new sets might prove useful as immersive environments continue to become increasingly common in classrooms and boardrooms.

1.5 Theoretical Frameworks

An exploratory investigation into possible cues to misinformation and disinformation offered four avenues for exploring how theory can help make sense of data, as the research blended deception, information behavior, technology, and social interaction. Interpersonal Deception Theory (Buller & Burgoon, 1996) understands deception as a social act of interactive, goal-oriented communication, which is well-suited for investigating possible cues to disinformation in a highly social setting, such as an online game. Information grounds provided tools with which to view the ways individuals situated within guilds created places to share information and how these places may influence possible cues. Activity Theory was well-suited to understanding how technological tools, with their limitations and affordances, have the potential to influence how places are created by users and how possible cues may be perceived. Symbolic Interactionism helped identify how individuals situated within a guild may construct meanings and interpretations of their perceptions of possible cues.

1.5.1 *Interpersonal Deception Theory (IDT)*

As first articulated by (Buller & Burgoon, 1996; Buller, Burgoon, Buslig, & Roiger, 1996; J. Burgoon, Buller, Guerrero, Afifi, & Feldman, 1996; J. Burgoon et al., 1996; J. K. Burgoon, 2014), IDT, “emphasizes what happens between people rather than within people,” (J. K. Burgoon, 2014). Eschewing a purely psychological approach, IDT views deception as a social phenomenon, and, thus, embraces the interactions between receivers and deceivers. The emotions, thoughts, and communication of both parties are equally important, as they each must respond to the other’s signals and cues. Because deceivers seek specific goals or outcomes of their communication, IDT positions deception as strategic communication activity.

Importantly, IDT defines cues as, “... “nonstrategic” activity, actions that create disruptions of normal communicative patterns and betray emotional and cognitive states different from what the sender or receiver intends to project,” (J. K. Burgoon, 2014). Finally, IDT assumes that both deception and detection dynamically fluctuate throughout the course of an interaction, such that deceptive and detective strategies used in one part might be different than those used in another part of an interaction.

Because this research focuses on the complexities of communicative and social interactions, IDT is well-suited to this research. Its weaknesses are the same as the other theories of deception (see Table 5 for summary): a focus on dyads in face-to-face conversation, as opposed to the distributed individuals situated within teams embedded in a networked community spotlighted by this dissertation. Of course, this limited focus

has provided a testable means to understand deception and its cues in detail. Some deception research has started to explore groups¹ (L Zhou & Zhang, 2006; Lina Zhou, Wu, & Zhang, 2014; Lina Zhou, Zhang, & Sung, 2013) and computer-mediated communication (Hancock, Curry, Goorha, & Woodworth, 2008; Ho, Hancock, Booth, & Liu, 2016; Pak & Zhou, 2014; Warkentin, Woodworth, Hancock, & Cormier, 2010; L Zhou, Burgoon, Zhang, et al., 2004; Lina Zhou, Sung, & Zhang, 2013). However, no theories or models have yet been proposed.

1.5.2 *Information Grounds*

Many scholars have written about the information behaviors that people use to conduct everyday life, including Chatman (1999), Pettigrew (1999), Fisher (2006), Erdelez (1997), and Savolainen (1995). These examples of information behavior studies view information and information behavior as elements of a broader social world, in which the context is neither professional nor work-oriented. Although SWTOR can sometimes feel much like work (Yee, 2006), it remains a predominantly leisure time activity. Because they focus on the social aspect of information, Savolainen's ELIS (Everyday Life Information Seeking), Erdelez's Information Encountering, and Fisher's Information Grounds (IG) allowed me to approach the research from a point of view emphasizing sociality. Ultimately, Information Grounds proved the best tool for analysis due to its spotlight on place.

¹ Groups are a starting point, but they are different from teams. Groups are sets of people (and, certainly, flex easily into experimental designs), but teams are people who have individually chosen to jointly pursue a shared vision. This sense of cohesion and shared purpose creates an intimate atmosphere lacking in arbitrarily assembled groups.

Savolainen's ELIS model of information seeking emphasizes the socially-constructed nature of non-purposeful information seeking and the routinization of information habits. Because SWTOR is inherently an 'everyday' context, this research observed how individuals' routine information habits shaped those of their guild, and their understandings of misinformation and disinformation. Erdelez's Information Encountering describes non-purposeful, serendipitous information discovery. Given the considerable amount of information inside SWTOR, it is unsurprising that Monahan (2009) has already documented this information behavior in World of Warcraft (WOW); this research differed due to its focus on how guild members perceived cues to misinformation or disinformation upon encountering them.

Fisher defined an Information Ground as a place created by people gathering and interacting, thereby exchanging information. In the context of SWTOR, an Information Ground could be an online forum, a server, or a chat stream – wherever players gather and interact. Fisher's work outlined seven propositions for an Information Ground; this research confirmed, refined, and extended some of these propositions.

1.5.3 *Activity Theory*

Making meanings may be shaped by the technology of the online game context. To explore the influence of this technology, both Actor-Network Theory (ANT) and Activity Theory (AT) were considered for how they positioned the relationships between humans and technology. Actor-Network-Theory (ANT) highlights human agency, while simultaneously highlighting the symmetrical agency of non-human artifacts, such as door

closing devices or car seatbelt alerts (Latour, 1992). Latour later clarified that humans have inherent agency, while non-human objects, being designed by humans, have imbued agency (2005); yet the symmetry of agency is not mitigated in its power and equivalency. Social and cultural aspects of human agency are thereby rendered insignificant. Lastly, ANT's notion of assemblage (Callon, 1986; Wise, 2005) proved insufficient due to its limited focus on technological assemblages and its exclusions of information as an independent concept and sociality as a driver of human action.

The limitations of Actor-Network Theory led me to Activity Theory (AT). Activity Theory (see Table 1) posits that human activity is motivated by need (e.g., food, shelter, socialization, information, etc.), thereby emphasizing human agency since needs can only be met by living in and interacting with the world (i.e., non-human artifacts cannot have true 'needs.'). This need is the Object of the "activity system" (V Kaptelinin & Nardi, 2006). To apply the activity system concepts to the research described here: an Object might be to determine whether an information source is confused or lying; a Tool might be the text chat of the 'whisper' channel; a Subject might be an individual player; the Rules might be either the rules set forth by Bioware or the social 'rules' valued by the community of players; the Community might be the Subject's Guildmates or the broader player community; and the Division of Labor might mean that the Subject was chosen by her Guildmates for this task because she's their 'Intelligence Officer.'

Table 1: Activity System Elements in Activity Theory

Tools*	Artifacts used to fulfill the Object; access point into Community.
Subjects	Individuals with needs.
Rules	Actions that can or cannot be taken.
Community	Subjects' situatedness within a Community may influence other elements of the activity system.
Division of Labor	How the work to fulfill the Object gets done
Goal	To generate an Outcome by fulfilling the Object.

*Tools was the element used in this work.

Activity Theory (AT) has been used by other scholars in their research on another online game, World of Warcraft (WOW) (e.g., Ang, Zaphiris, & Wilson, 2010; B Nardi, 2010; Sherlock, 2009). For the purposes of this research, however, AT's conception of Tools (particularly its embeddedness within a larger system; see Table 1) suggested ways that individuals' perceptions of cues to misinformation and disinformation may be influenced by their uses of technological tools and those tools' affordances and limitations.

1.5.4 *Symbolic Interactionism*

Because many theories of information behavior seek to model how an individual seeks, uses, or shares information, there is limited emphasis on social interaction. For example, how might a highly influential individual shape how her guild, collectively, perceives the credibility of an information source? Or, to what extent might this individual sway even the definition of an information problem? To understand the relationships between information and sociality in SWTOR, I reviewed theories of social capital from Sociology. Specifically, those theories described by Bourdieu (1986), Coleman (1988), and Granovetter (1973;

1983) were considered, but Symbolic Interactionism's focus on the creation of meaning suggested possible explanations for individual differences in perceiving cues to misinformation and disinformation.

As initially advocated by Blumer (1969) and later explicated by Snow (2001) (see Table 1), Symbolic Interactionism (SI) describes processes by which meanings are created, changed, and negotiated by individuals within a social setting (see Table 2). Specifically, Snow's Principles of Interactive Determination and of Symbolization provided means to understand how different participants might perceive the same cue, and yet, attach different meanings and interpretations developed from their interactions with others, as well as their individual personality, among other influential factors.

Table 2: Snow's Principles of Symbolic Interactionism

Interactive Determination*	The object of analysis must be understood by how the object interacts with and relates to its broader, external contexts, including its relationships with other entities.
Symbolization*	The processes through which events, people, objects, etc. are imbued with specific meanings, which might be culturally embedded and restricted.
Emergence	The processes that cause changes to daily routines or behaviors.
Human Agency	Human actions might be constrained in range by culture and social structure, but less constrained in character and expression.

*Interactive Determination and Symbolization were the principles used in this work.

1.5.5 *Summary of Theoretical Frameworks*

Taken together, Interpersonal Deception Theory (IDT), Information Grounds (IG), Activity Theory (AT), and Symbolic Interactionism (SI) provided lenses with which to craft an exploratory study into places, tools, perceptions, possible cues, deception, constructions of meanings, team members, and all the richness of how these elements mutually shape

each other. By positioning deception as a dynamic, strategic communication, IDT is best-suited for the online social setting of this research. With an understanding that people that create places through their interactions there, IG dovetails well with AT's notion of tools as sites of community cohesion; therefore illuminating how places, tools, and their interactions may influence perceptions of cues and types of cues created. Lastly, SI suggested ways that individuals might build meanings of possible cues, and how these meanings may influence their interpretations.

1.6 Summary of Introduction

Misinformation and disinformation constitute our daily reality. The first goal of this exploratory research was to investigate how places and tools may influence the types and perceptions of possible cues to misinformation and disinformation (i.e., deception). The second goal was to explore how individuals situated within a team may construct meanings of possible cues, and how these meanings, in addition to places and tools, may influence their perceptions of possible cues to misinformation and disinformation.

As mistaken information, misinformation may be easy to identify and to correct because of the benevolent intent behind an error. Disinformation, however, is deliberately deceptive information with the goal of creating a false belief in the receiver. This goal may serve an ultimately beneficial social goal, such as to show respect or to avoid hurt feelings. But disinformation often is motivated by a malevolent intent, such as the Russian disinformation campaign during the 2016 elections, largely conducted via online environments (Office of the Director of National Intelligence, 2017). Navigating

misinformation and disinformation requires being able to perceive cues, unintended hints presented by misinformation and disinformation.

In many online environments, however, cue perception and interpretation can be challenging, which may have contributed to the recent rise of misinformation and disinformation in such environments. For example, fake news has become a persistently trending hashtag across many online environments (“#fakenews - Facebook Search,” n.d.; “#fakenews • Instagram photos and videos,” n.d.; “News about #fakenews on Twitter,” n.d.), as well as a source of consternation for journalists, politicians, and the general public alike (“Fake news,” 2018; “Fake news,” n.d.; Kiely & Robertson, 2016; Titcomb & Carson, 2017).

To investigate these challenges, the research setting for this exploratory study was *Star Wars: The Old Republic (SWTOR)*, a massively-multiplayer online (MMO) game. Leveraging the complex sociality of this online environment, this exploratory research viewed deception (i.e., disinformation) through the lens of Interpersonal Deception Theory, which positions deception as a dynamic, strategic social communication act. Seeing both misinformation and disinformation as social acts reinforces the position of Information Grounds that places are created when people gather and interact. And yet, taking an Activity Theory view of online environments, both sociality and the creation of places are simultaneously limited and afforded by technological tools. In this way, both places and tools may influence the types of possible cues generated as well as the manner in which or extent to which such cues may be perceptible. While individuals may

be influenced by the places and tools of the online environment and by guild members or other players, Symbolic Interactionism argues that they also construct meanings of possible cues they may perceive, and attach various interpretations to these cues.

Chapter 2. Literature Review

Information scientists have long debated the nature of information² : what it is, where it comes from, the kinds of actions it affords humans, etc. Misinformation and disinformation tend to understudied areas in efforts to understand the nature of information (Rubin, 2010; L Zhou & Zhang, 2007). This chapter explores how misinformation and disinformation extend theoretical understandings the nature of information, and how misinforming and disinforming fit within current information behavior frameworks. The problems of truth and intent presented by disinformation are challenged, since, as types of information, misinformation and disinformation can be informative. Informativeness, however, depends on the perception of cues, as modeled by Interpersonal Deception Theory (IDT). Although IDT has not been studied in a naturalistic setting, an MMO game, such as Star Wars: The Old Republic (SWTOR), offers lush, and singular, prospects for the study of possible cues to misinformation and disinformation in online environments.

² Such debates over the nature of information assume 1) that there is a sufficiently robust definition of information, if only it could be theorized and 2) that information science requires such a definition. As a scholar and a researcher, multiple and conflicting simultaneous definitions of a core concept serve only to inspire innovation and support intellectual diversity. Therefore, such arguments are ultimately futile, and possibly harmful (e.g., the Savolainen/Bates debates in JASIST).

2.1 Review of Research Questions

- 1) How might places and tools, as informed by Information Grounds and Activity Theory, influence the perception of possible cues, as informed by Interpersonal Deception Theory, to misinformation and disinformation in an online gaming environment?

- 2) How might the constructions of meanings, as informed by Symbolic Interactionism, for individuals situated within a distributed, networked team influence their perceptions of possible cues, as informed by Interpersonal Deception Theory, to misinformation and disinformation in an online gaming environment?

Research question 1 examines how relationships among places (Information Grounds) and tools (Activity Theory) may influence perceptions of possible cues (Interpersonal Deception Theory) to misinformation and disinformation. Players create places through their usage of tools, and may replicate both limitations and affordances of such tools; conversely, they may also bypass limitations and expand affordances. This interplay of creation and usage may influence the types of possible cues as well as the extent to which or the manner in which such cues may be perceived.

Research question 2 expands the investigation of places and tools to include team members and individuals' constructions of meanings (Symbolic Interactionism) as potential sources of influence on the perceptions of possible cues (Interpersonal Deception Theory) to misinformation and disinformation. As players negotiate the complexities of places and tools, they construct meanings and interpretations of possible cues they perceive. But players may perceive the same possible cue, but interpret it differently, if it is perceived at all. Study participants were all active members of their

guilds, and so their guild members may also have potentially influenced both their perceptions of possible cues and their interpretations.

2.2 Review of Theoretical Frameworks

This exploratory study used a combination of theoretical frameworks to address the complexities of possible cues to misinformation and disinformation, places, tools, and constructions of meanings. Interpersonal Deception Theory (IDT) normalizes deception (i.e., disinformation) as dynamic, strategic communication (see 2.7.1 Cues for discussion of cues). Information Grounds (IG) highlights how people gathering together creates places. Activity Theory (AT) details how people use tools to participate in their communities. In this study, participants' use of tools to create places may influence their perceptions of possible cues. Symbolic Interactionism (SI) explains ways that people understand their worlds by constructing meanings of experiences, objects, events, etc. Such constructions were illuminated by the research participants' accounts of their perceptions and interpretations of possible cues.

2.3 Information

The history of theories of information starts with Shannon and Weaver's (1949) idea that information can be quantified as bits of a signal transmitted between one sender and one receiver; lack of clarity in the message was termed, 'noise.' Misinformation and disinformation fail to fit into this model because they might carry multiple levels of bits and signals, and because describing misinformation and disinformation as merely 'noise'

dismisses their informativeness (see 2.1.2. for further discussion). The limitations of Shannon and Weaver's theory became apparent when the difficulties of information retrieval caused some information scientists to examine the nature of "the conscious within-brain description of the [information] need," (Taylor, 1962, p. 391). Taylor's model acknowledged the difficulties of information retrieval systems designed around systems, rather than users, and suggested that an understanding of how users organize information in their minds (i.e., their information needs) might improve information retrieval systems.

Later scholars expanded Taylor's ideas beyond information retrieval systems to the nature of information itself. This cognitive view of information, notably advocated by Belkin (1978, 1984; 1982; 1976), was adopted as a way of describing an intellectual process of how users of information systems formulated, expressed, and satisfied information needs. In a ground-breaking move, Belkin and Robertson (1976) wrote about information as, "that which is capable of transforming structure," (p. 198); "structure" here meant the manner in which information is structured internally inside a user's mind. The cognitive view is problematic in discussions of misinformation and disinformation because it removes individuals from their contexts (e.g., history, culture, language, situation). In the cognitive view, misinformation, for example, in one context must also be misinformation in another context – regardless of any external change in the user's environment. Thus, the cognitive view is insufficient for understanding the socially-mediated complexities of misinformation and disinformation.

While information might be inside users' minds (e.g., needs), this information might also be influenced by users' roles and environments, such as social, political, and physical (Wilson, 1981). Misinformation and disinformation are certainly tied to users' roles and environments, but Wilson's model limits itself to users' information-seeking behaviors. Further, like previous models (e.g., Shannon and Weaver's, Taylor's, Belkin's), Wilson's model assumes that the information being sought by users is true, accurate, complete, etc. and that the information provider is open, honest, and forthcoming. None of these models consider the possibility that the information and/or the information provider might be inaccurate or deceptive.

Considering users' roles and environments, however, started to shift how some information scientists understood the nature of information. A watershed moment in the debate about the nature of information came when Dervin and Nilan (1986) argued that information ought to be viewed "as something constructed by human beings," (p. 16) because information systems ought to be built by first seeking to understand the needs (e.g., informational, social, technological) of users. Compared to the previous cognitive approach, this view of information posited that what users consider information is information, regardless of its utility for an information system. This argument, while not explicitly addressing misinformation and disinformation, emphasized the contextual aspects of information, which are crucial in definitions and understandings of misinformation and disinformation. Importantly, this article laid the groundwork for a user-centered view of information, which allowed Tuominen and Savolainen (1997) to articulate a social constructionist view of the nature of information as a "communicative construct

which is produced in a social context,”. They focused on discursive action as the means by which people construct information.

A constructionist view of information, such as that articulated by Tuominen and Savolainen, is useful when discussing misinformation and disinformation because this view emphasizes social context and conversations among people as ways of determining what information is. Misinforming and disinforming are information behaviors which might occur in discourse between people, and so, through this conversational act, misinformation and disinformation are information people use to construct some reality. Thus, while misinformation and disinformation are independent types of information, they share three features: meaningfulness, informativeness, and subjectivity.

2.3.1 *Meaningfulness*

A discussion of misinformation and disinformation begins with Fox (1983) as he provided relevant understandings of information and misinformation, and focused on statements as sources of information (rather than on documents). Fox rejected various theories of information, either for being too broad, too specific, or too vague. However, he supported the need for a theory of information in information science in order to conceptually ground the field as well as to help explain how the field is unique from other fields. After a lengthy examination of what information is not, Fox (1983) stated that:

... the information carried by a sentence, or a set of sentences, is determined by meaning, and hence relative to meaning. ... Without an adequate theory of meaning, we lack the means to determine accurately what information is carried by a given sentence or set of sentences. (p. 97) (*italics in original*)

Here, Fox emphasized the role of meaning in determining what information is. This is important because information without meaning might not be informative. As a hypothetical example, if Jill spoke to Frank in a language he did not understand, Jill's statements have no information because that language has no meaning for Frank. Similarly, if a statement does not provide new or previously unknown information, it might not have meaning, thus the statement is not informative. The connection between information and meaning illuminates misinformation and disinformation, as concepts, because misinformation and disinformation are only such if meaning both is present and is mutually understood, to some extent, between parties. The idea of a meaning-dependent and, thus, subjective, understanding of information was strongly supported by later scholars.

2.3.2 *Informativeness*

Buckland (1991) held a similar view when he wrote that, “[b]eing “informative” is situational,” (double quote marks in original). In this sense, “informativeness” is dependent on the meaning of the informative thing (e.g., sentence, photo, etc.). Situations imbue meanings on informative things, and these meanings might depend on the knowledge of the receiver. Buckland's idea illustrates why misinformation can be difficult to define and to identify: what is misinformation in one situation might not be in another because the meanings might be different. The act of disinforming might be less situation-dependent than misinforming because the intent of the speaker is a constant, even if the speaker does not act on that intent. A deceiver will intend to deceive, regardless of the situation, but someone who simply misinforms does not intend to do so.

However, the success, or failure, of the deceiver might be strongly situation-dependent if some aspect of the world changes unbeknownst to the deceiver between the time that he speaks and the time that the receiver acts upon the disinformation. As a hypothetical example, Jack wishes to deceive Sierra and tells her that the movie starts at 3:30pm, even though he knows that it starts at 3:00pm. However, Jack is unaware that the movie theater projector is broken and the movie start is delayed by 30 minutes. When Sierra arrives in time for a 3:30pm showing, she might not realize that Jack made a false statement in his intent to deceive. This hypothetical example illustrates two important aspects of disinformation. Here, the deceiver failed to disinform, despite intent to do so; the informativeness of (dis)information might depend on the situation.

In his influential article, Buckland advocated the view that information is a thing, a process, and knowledge because he focused on wanting to understand informativeness. Misinformation and disinformation might also be informative whether by implying some information or by revealing some information. Misinformation tends to be accidental, but the informativeness of it might depend on the relationship between the speaker and the receiver. Disinformation could possibly be more informative than misinformation, perhaps because any reveal or implication might be deliberate.

Consider a hypothetical instance in which a speaker provides partially distorted information to the receiver (e.g., "My party starts at 6pm," when, in fact, the party starts at 9pm). In this instance, the receiver is partially informed about the fact that the speaker is having a party. Disinformation might reveal the malicious intent of the speaker. If the

receiver happens to know that the party in fact starts at 9pm, she might suspect that the speaker is intending to deceive her. Here, the receiver is informed about the potential intention of the speaker, which is external to the message actually being delivered.

Additionally, disinformation (as well as misinformation) might reveal the ignorance of the speaker. Disinformation might imply partial disclosure or a false state of the world. As a hypothetical example, imagine that Alicia is an expert on elk and Eric, perhaps unaware of the extent of her expertise, confidently tries to convince her that elk are officially listed as an endangered species. From this exchange, Alicia might: 1) suspect that Eric is trying to deceive her and start questioning his intent, and/or 2) believe that Eric is simply misinformed about the state of the world (both of these responses are equally possible). These hypothetical examples suggest that perhaps misinformation and disinformation provide different levels of informativeness, dependent on the situation.

This idea of informativeness aligns with the meaning-dependent understanding of Fox. Buckland's multiple views of information provide insight into the similarly multifaceted natures of misinformation and disinformation. Both Fox's and Buckland's views of information provide support for Hjørland's argument (Hjørland, 2007) about the subjective nature of information.

2.3.3 *Subjectivity*

In Hjørland's (Hjørland, 2007) article, he contrasted the notion of the subjectivity of information with the idea that information is objective and exists independently outside

human awareness. The idea of objective information entails two primary problems. One problem is the implication that objective information must exist independently of the observer. However, simply by virtue of being observed, information becomes dependent on the subject's viewpoint, and, when observed by multiple subjects, becomes intersubjective as well as subjective. Even when information is observed by an instrument, tool, or machine, the specific constraints, affordances, and imbued values of that device color the information. Similarly for misinformation and disinformation, they cannot be objective forms of information because they are observed by specific subjects and might be created or disseminated by specific devices.

Another problem is the implication that objective information must exist independently of the situation. However, information is always in some situation, regardless of whether it is being used or unused and of whether it is known or unknown. Information cannot be context-free because of the problems described above with its observation and collection. Misinformation and disinformation also depend on the situations because, over time, misinformation and disinformation might change into one another or into information. Hjørland's view that information is subjective provides strong bases for subjective understandings of misinformation and disinformation. Hjørland stated that, "[t]o consider something information is thus always to consider it as informative in relation to some possible questions," (p. 1451; italics in original). Hjørland's statement demonstrated the highly subjective nature of misinformation and disinformation because they can still be informative, dependent on the observer and the situation. This statement's focus on relation also shows that misinformation and disinformation are only

such, relative to other information. While misinformation and disinformation share three main features (meaningfulness, informativeness, subjectivity), they are also different from each other.

2.4 Misinformation

Unfortunately, misinformation does not seem to earn the attention it deserves. Few authors have taken up the topic in detailed discussion. Some authors simply cited the Oxford English Dictionary's definition of misinformation (Bednar & Welch, 2008; Stahl, 2006). Fox (1983) described misinformation on p. 193:

Since information might be false, we see that misinformation is a species of information, just as misinforming is a species of informing ... informing does not require truth and information need not be true; but misinforming requires falsehood, and misinformation must be false.

Fox (1983) did not consider disinformation, although he seemed to be hinting at it in this quote. When Fox (1983) wrote that, "misinformation is a species of information," he drew the relationship clearly: misinformation, albeit false, is still information and, therefore, can still be informative. How is it that we can be informed by false statements? Fox (1983) stated that, "information need not be true." The speaker might reveal some information (perhaps accidentally) or might imply some information or state of the world. In the quote above, Fox (1983) explicitly described the conditions that allow misinformation to occur, and how misinformation can still be useful. Fox (1983) avoided issues of why "misinformation must be false," and did not delve into related issues such as context and time.

In an article about the nature of information, Losee (1997) also presented three forms of misinformation. First, he stated that misinformation might be simply information that is incomplete. Zhou & Zhang (2007) added to this discussion with additional types of misinformation, including concealment, ambivalence, distortion, and falsification (because they do not disambiguate between misinformation and disinformation). However, incomplete and even irrelevant information might still be true, accurate, current, and informative, and, therefore, meet many of the same qualifications accepted for information. Information that is incomplete might also be a form of deception, which frequently qualifies as disinformation. Additionally, misinformation might be inaccurate, uncertain (perhaps by presenting more than one possibility or choice), vague (unclear), or ambiguous (open to multiple interpretations).

Second, Losee also described misinformation as, “information that is not justified,” because one’s belief might be based on the “wrong reasons,” and one is thereby misinformed (p. 267). Losee seems to have conflated the thing (misinformation) with the status (being misinformed). Being misinformed is often a matter of perception. One might have received information, but still be misinformed, or vice versa. For example, when President Obama was elected, some people questioned his legitimacy because they believed he was not an American citizen (“Obama conspiracy theories,” 2008). Despite the empirical evidence presented in the form of his Certificate of Live Birth from Hawaii, many people persisted in being misinformed because they perceived the world in a particular way. The nature of belief and the reasons for choosing to believe some information are complex and frequently socially-mediated. So it seems somewhat unfair

to describe one's reasons for believing misinformation as "wrong." Nonetheless, the content of a belief might not be justified.

Lastly, Losee (1997) cited Fox (1983) and Dretske (1983) to support his conclusion that misinformation, "is information that is partly or wholly false," (p. 267), but Losee's meaning is much different from Fox's [Zhou & Zhang (2007) err similarly]. Directly following the Fox (1983) citation, Losee (1997) asked readers to, "[c]onsider a "lie" told by an individual or an organization," (p. 267; double quote marks in original). However, Fox (1983) did not examine the nature of lying, and did not investigate misinformation or misinforming as varieties of deception. While Fox (1983) wrote that misinformation must be false information, Losee (1997) took this to imply that misinformation must also be deceptive. However, other authors make the argument that deceptive misinformation is actually disinformation.

2.5 Disinformation

The Oxford English Dictionary states that the term, 'disinformation,' comes from a Russian term, *dezinformacija*, coined in 1949. Given the political and cultural milieu in the Soviet Union around that time, the strong association between disinformation and negative, malicious intent probably developed as a result of Stalinist information control policies. Since the term disinformation has been created relatively recently, perhaps it is not surprising that not much work has explored the concept. Some authors have treated disinformation as a kind of misinformation (Losee, 1997; L Zhou, Burgoon, Nunamaker, et al., 2004). Fallis (2009) analyzed disinformation to uncover some sets of conditions

under which disinformation might occur. He concluded that, "...while disinformation will typically be inaccurate, it does not have to be inaccurate. It just has to be misleading. So, disinformation is actually not a proper subset of inaccurate information [misinformation]," (p. 6). Going back to Hjørland (Hjørland, 2007)'s subjective nature of information as informative in relation to some context, Fallis's view of disinformation builds further support for information being subjective. While disinformation might be true, accurate, and current, and thereby informative, it need only be misleading, relative to some situation. Since misinformation must be false (Fox, 1983), and since disinformation might be not false, misinformation and disinformation must be distinct, yet equal, sub-categories of information.

2.5.1 *The Problem of Truth*

Some philosophers of information, however, have argued that both misinformation and disinformation are not sub-categories of information. Building from Dretske (1983), Floridi (2005, 2010) argued that because false information is not information and because misinformation and disinformation are false, neither misinformation nor disinformation qualifies as information. Floridi based his claim on the notion that information is only such if it is true, and this truth condition is the branching point between reality and non-reality. False information is not information because things that are false cannot exist in reality. However, the consequence of this idea must be that reality is objective, independent, and not socially-mediated. This idea is similar to the idea of an objective nature of information, and faces similar objections (see 2.1.3).

Scarantino & Piccinini (2010) rejected Floridi's idea that false information is not information. They argued that information cannot be either true or false because we are not always able to evaluate the truth of the information. Again, because 'objective' information cannot exist outside our socially-constructed reality, we also cannot judge what constitutes truth. On the point of misinformation being false, Floridi's stance supports Fox (1983)'s conclusion that misinformation must be false. However, as illustrated earlier by Hjørland (Hjørland, 2007) and by Fallis (2009), disinformation might be true but misleading relative to the situation (i.e., relative to the current reality) through implication or revelation. Therefore, regardless of the extent to which disinformation might be true or false, it is still a form of information.

2.5.2 *The Problem of Intent*

The difference between misinformation and disinformation depends on whether the speaker intended to deceive (Bednar & Welch, 2008; Stahl, 2006). Disinformation can be motivated by both malevolent and benevolent intents. However, the central problem here is that intent is often unclear or even unknowable. The presence of intent in communication cannot be denied, but to hinge definitions of terms on some unknowable aspect is less than satisfactory. As evidence of the need for further research and more formal definitions, Rubin (2010) cited Walczyk, et al. (2008), who argued that deception allows us to accomplish goals both malevolent and benevolent (such as lying about a surprise party). However, deception does not guarantee success in the accomplishment of such goals, even when the intent to deceive remains. Given the somewhat ambiguous

nature of intent, it seems somewhat unsatisfying to define disinformation exclusively on the unknowable intent of the speaker.

2.5.3 *Other Theories of Deception (Disinformation)*

This section briefly reviews three deception theories evaluated for potential relevance to this research (see Table 3 for summary). Deception theories based on cognition (Lane & Wegner, 1995; Sporer & Schwandt, 2007; A Vrij, Granhag, & Porter, 2010; Walczyk, Harris, Duck, & Mulay, 2014; Zuckerman et al., 1981) were rejected outright due to their focus on the cognitive mechanisms of deception (for example, whether deception increases cognitive load, or whether deception requires both working memory and long-term memory) rather than on perceptible cues. While each theory offers its strengths in a specific element of deception, Buller and Burgoon's "Interpersonal Deception Theory" (IDT) (Buller & Burgoon, 1996) most strongly influenced the understandings of deception and its detection in this dissertation (see 1.5.1 for fuller discussion of IDT).

Table 3: Cue-based Theories of Deception

Acronym	Name	Author(s)	Summary
IDT*	Interpersonal Deception Theory	Buller & Burgoon	Deception and its detection are dynamic interaction strategies.
IMT	Information Manipulation Theory	McCornack	Violations of Grice's Maxims
IMT2	Information Manipulation Theory 2	McCornack et al.	Information determines deceit or truth
PLM	Park-Levine Model	Park & Levine	Truth-lie base rates make deception detection accuracy linearly predictable

*IDT provided the definition of cues and of deception for this work.

2.5.3.1 Information Manipulation Theory (IMT)

McCornack (1992) proposed his “Information Manipulation Theory” (IMT), based entirely on the ways in which deception and deceptive communication violate Grice’s maxims. Grice proposed four conversational maxims (see Table 4) based on the cooperative principle that guides effective communication in conversation (Green, 1996). These maxims are not rules for conversation, but explain how speakers cooperate to have a conversation.

Table 4: Grice's Maxims

Quantity	Speakers will only say as much as necessary, and not more.
Quality	Speakers will not deceive and will not say something without enough evidence.
Relation	Speakers will say only what is relevant.
Manner	Speakers will be obvious, be brief, and be orderly.

IMT posits that deceivers manipulate the information they possess by violating, to varying extent, one or many of Grice’s maxims. Thus, receivers may recognize such violations as

cues. Because of these violations, McCornack characterized deception as, "...a particular sub-class of uncooperative acts," (p. 13). This characterization, however, fails to serve the research questions of this dissertation.

IMT was rejected from consideration as a poor fit for this dissertation. First, IMT focuses on deceiver-receiver dyads, which poses a limitation on relevance to this research's focus on teams. The research site's online immersiveness also provides a wider variety of possible sources of deception beyond just face-to-face conversations. It is also unclear how IMT translates to cues to deception for untrained lay people, since some violations of Grice's maxims may be used for ordinary communication purposes, not deception. DePaulo, et al. (B.M. DePaulo et al., 2003) postulated and Zhou, et al. (2004) evidenced that deceivers produce more verbiage (violating maxim of Quantity) than prior studies had indicated (A Vrij, 2000). In fact, in Zhou, et al.'s (2004) study, some of this verbiage served to establish credibility, although it might not have been topically relevant to the exchange. Additionally, the maxim of Manner might be violated for comedic effect, or the maxims of Quantity or Relation might be violated to provide context or speaker credibility. Lastly, deception is hardly "uncooperative"; rather, deception can ease social situations by saving face for one or more parties, for example. Taken together, IMT is unsuitable for this research.

2.5.3.2 Information Manipulation Theory 2 (IMT 2)

IMT2 (McCornack, Morrison, Paik, Wisner, & Zhu, 2014) describes discourse as functions of parallel-processing in the brain and shifting cycles of consciousness during the talking-

turn. The authors criticized current deception research as lacking both breadth and depth; for example, failing to incorporate advancements in artificial intelligence (p. 352). The main premise of IMT2 is that people will deceive depending on, "...the nature of the information they possess ..." (p. 370). Describing deception as "anti-social," the authors stated that, "...deception is actually an outcome of ...negative traits," (p. 370).

IMT2 highlights the significance of information in deception; however, it seems that the authors restricted their interpretation of information to empirical facts, despite the catholicism of their theory. The relevance of artificial intelligence to improving human deception detection is not clear, except perhaps for text mining or sentiment analysis (usually the domain of machine learning), but the authors did not elaborate. Information can be a motivating factor in deception, but relationships or impression management might be equally motivating. As with IMT above, deception viewed as "anti-social" takes an unnecessarily narrow view of deception and its goals. Again, IMT2 cannot be used for this dissertation.

2.5.3.3 Park-Levine (PL) Model

The PL Model (Park & Levine, 2001) presents a statistical probability model to argue that both truth detection and deception detection success rates are linearly predictable, and that either truth or deception detection accuracy cannot be measured without first establishing truth-lie base rates [i.e., the ratio of truthful to deceptive messages judged accurately (Levine, Clare, Green, Serota, & Park, 2014)]. Essentially, with an increased quantity of truthful messages, deceptive messages become easier to identify. For

example, as the number of blue bubbles increases, the fewer teal bubbles become increasingly obvious. Or, less abstractly, at the school bake sale fundraising event, as the number of parents bringing beautifully symmetrical store-bought cookies increases, the humbler provenance of your tragically misshapen home-baked cookies becomes increasingly obvious. Significantly, the PL Model assumes dichotomous judgements: "...messages presented by sources are either truths or lies," and "[r]eceptors are assumed to judge messages as either truths or lies," (pp. 202-203).

The PL Model works well for empirical experiments in laboratory settings, but its limitations prevent its use in exploratory qualitative research, such as that in this dissertation. Its emphasis on linearity of detection success seems to discount the nuances and subtleties of human communicative goals and strategies, and thereby limits the model's use outside of a lab. The authors do not articulate how the discernment of truth-lie base rates can aid understanding or recognizing cues to deception. Certainly, it's a clever means to quantify human superiority in pattern recognition, but the authors treat this base rate as a constant, despite receivers' contextual flux among conversations. Further, the assumption that communication is composed of only truths or lies, rather than shades of both, creates an unnecessary and false dichotomy, unhelpful for this research. Finally, the PL Model is inappropriate for interactive communication, such as real-time text chatting, because it relies on analyzing deceptive communications after the fact.

2.6 Information, Misinformation, and Disinformation

Regarding the natures of information, misinformation, and disinformation, there are some similarities which might suggest possible future research. Information and

informativeness cannot exist independently of human consciousness. Both information and informativeness depend highly on context and time, as advocated by Hjørland (Hjørland, 2007). With these understandings regarding the nature of information (and informativeness), the information science field can progress to understandings of the natures of misinformation and of disinformation. Misinformation is false information (Fox, 1983), yet it might be still informative because the speaker might imply or reveal something else. Thereby, we can be informed by false information.

Disinformation can fall anywhere on the true-false continuum, but still be informative. Since it is informative, it is a kind of information (cf. Buckland 1991). While Hjørland (Hjørland, 2007) considered context in his discussion of the nature of information, none of the other authors considered context or time in their discussions of either misinformation or disinformation. For example, false information (misinformation) or misleading information (disinformation) can become information depending on how the world might change over time and depending on the specific context in which false or misleading statements are used.

2.7 Cues to Disinformation

For this research, deception was understood to be interactive and goal-oriented social communication (Buller & Burgoon, 1996). Therefore, understanding cues to deception can help describe and recognize features of disinformation. This section will explain cues, review three types of cues (physical, verbal, and textual), and conclude with a discussion of four relevant deception theories.

2.7.1 *Cues*

Throughout this dissertation, 'cues' is the term used to describe perceptible, yet unintended, identifiers of deception. In their seminal work on deception detection, Ekman and Friesen (Ekman & Friesen, 1969) described how deceivers unintentionally reveal hints that they are deceiving, called "leakage". Building from this earlier work, Burgoon defined cues as, "... "nonstrategic" activity, actions that create disruptions of normal communicative patterns and betray emotional and cognitive states different from what the sender or receiver intends to project," (J. K. Burgoon, 2014). Deceivers do not intend to reveal these cues, and might not be aware that they are revealing such cues. Receivers might not notice or might disregard cues. Other possible terms, such as signal or indicator, are inappropriate because these terms imply communicative intent (Donath, 2007). Senders intend their signals and indicators to be seen and noticed. Because (successful) deceit requires being unseen and unnoticed, cues is the term best-suited to describing these subtle hints.

Cues require being perceived – to some extent. Cues may be strongly perceived by individuals, with high confidence in their perceptions. Cues may also be weakly perceived by individuals, with low confidence in their perceptions. Cues exist only for those who perceive them. A cue unperceived is not a cue because it cannot exist without being perceived.

2.7.2 *Physical Cues*

DePaulo, et al. (2003) reviewed 120 studies in the deception literature. They defined deception as a, “deliberate attempt to mislead others,” (p. 74), which supports Fallis’s (D Fallis, 2009) understanding of disinformation. However, DePaulo, et al. did not distinguish between deception, which might be true but misleading, and lying, which is entirely false, thus leaving no distinction between true and false statements. From this review, DePaulo, et al. extracted 158 unique cues to deception, and then sorted these cues into five categories. Deceivers tell tales that tend to be, “less forthcoming, less compelling, more negative, more tense, and suspiciously bereft of ordinary imperfections and unusual details,” (p. 104).

Most of the studies reviewed by DePaulo, et al. (2003) focused on students in labs, and so the researchers limited their understanding of cues to those cues that can be sensibly perceived (e.g., dilated pupils, higher pitch in voice, fidgeting, elevated heart rate, etc.). However, in many online environments, these kinds of physical cues are often not available. This lack of cues could explain the growth of disinformation online (Hernon, 1995). DePaulo, et al. (2003) hinted at this limitation when they wrote that, “people’s self-presentational strategies can be more imaginative and their goals more complex than much of the current literature on cues to deception might suggest,” (p. 106). Given the complexity of most people’s social worlds, there is a significant need for additional research.

2.7.3 *Verbal Cues*

While physical cues can provide information about deception, some verbal cues can as well. Buller and Burgoon (1996) developed what they term an 'Interpersonal Deception Theory'. Although they considered noninteractive and nonverbal communication modes to fall under the purview of IDT, in this specific article, they were motivated by deception in verbal communication, such as a live, face-to-face conversation because they considered this mode of interaction the most interpersonal and interactive. Buller and Burgoon (1996) presented eighteen propositions to demonstrate, "how deception is played out in interpersonal contexts," (p. 211). Although they did not present specific cues, they described some conditions which might lend themselves to deception, particularly in oral conversation. Specifically, they explicitly discussed the influences of context and personal relationships between the speaker and the receiver. Buller and Burgoon explained:

When deceit is motivated by desires to aid the [conversation] partner, a third party, or simply to conform to standards of politeness or good taste ... senders [speakers] might experience less detection apprehension and actually consider deception an acceptable, desirable alternative. (p. 222)

These influences mentioned by Buller and Burgoon illustrate why deception is so complex, and why the nature of intent is often unknowable. For example, if some deception is occasionally socially acceptable under the right conditions, then the idea of intent as either malevolent or benevolent becomes a false dichotomy and challenges whether these are the appropriate views on the topic of intent. People often disinform in the service of social expectations, such as the performance of community membership, adherence to some cultural values, avoidance of an argument, etc. In these cases, it

seems inappropriate to describe people's motivations as malicious, yet neither do they seem explicitly, actively beneficial either, except perhaps to the speaker. Therefore, it might be best to view cues to deception as context-dependent or relationship-dependent, such that there might be different sets of cues for different contexts or relationships. Further research might uncover different cues in spoken conversation than in written communication.

2.7.4 *Textual Cues*

Text requires different techniques for communication, and offers various affordances and constraints. For example, textual communication can be asynchronous, thereby providing the sender sufficient time to carefully craft a message without risking any inadvertent physical cues [see discussion of "leakage" in 2.5.1]. In Zhou, et al. (2004), the authors divided students into dyads, and assigned one participant in each dyad the role of deceiver and the other one the role of truth-teller. The participants in each dyad emailed each other to convince the other of which items ought to be salvaged from the wreckage of their vehicle in the desert (known as the DSP [Desert Survival Problem]).

Compared to both truth-tellers and respective receivers, they found that deceivers displayed higher and/or more: quantity, expressivity, positive affect, informality, uncertainty, nonimmediacy, and less complexity and diversity (see Table 5).

Table 5: Summary of Zhou, et al. (2004) textual cues to deception

Higher/More:	Lower/Less:
Quantity Expressivity Positive Affect Informality Uncertainty Nonimmediacy	Complexity Diversity

The authors also found that deceivers used these cues towards different ends, such as proving trustworthiness to build a relationship. For example, some deceivers stated that they had had desert survival training and therefore could offer expertise about which items would be best to salvage. Deceivers also used these cues to overcome the gaps presented by electronic communication. They “might have converted [physical] cues ... into text by providing more and richer language,” (p. 102). This leveraging of receivers’ expectations demonstrates that deceivers are mentally agile and highly context-aware (a finding supported by (Buller & Burgoon, 1996): Whenever more or less verbosity is required or allowed, then that is what they use. Again, this points to the strongly context-dependent nature of deception, and the significant role of context in determining which cues might be employed.

2.7.5 *Discussion of Cues to Deception*

Cues to deception include physical, verbal, and textual cues. Each type of cue set offers different cues, depending on the mode of communication. Many cues are unclear but can serve as potential evidence. For example, DePaulo, et al. (2003) listed fidgeting as a cue to deception, but this easily could be just nervousness or boredom. Some standard verbal

characteristics of oral conversation, such as spontaneity and adaptability (Buller & Burgoon, 1996), are not easy to distinguish from deceptive cues. Some textual cues, such as demonstration of credibility through quantity of text (Zhou, et al., 2004), might be just a desire to achieve some social goal (such as impressing someone).

Zhou, et al., (2004) reported that text-based, electronic communication increased informality (described as increased typographical errors and decreased punctuation), which might indicate deception. However, this style of writing is common across electronic communications, and therefore it is unclear at which point 'too much' informality becomes a cue to deception. Further, informality could easily serve as another tool for deceivers in a text-based, electronic communication situation as they use it to demonstrate relevance by publicly adhering to the communication practices of the receiver(s).

DePaulo & Bell (1996) replicated a study from Bavelas, et al. (1990) in which they formed a "defensibility postulate." This states that people, "communicate in ways that could be defended as truthful ... but that would also mislead the [other conversant] about their true opinions". As a hypothetical example, when your husband asks your opinion of the steak he fails to realize he overcooked, you respond by asking about how it was seasoned or by complimenting the wine choice.

This review illustrates the difficulty of defining a cue specific to deception, and differentiating it from the wide array of possible social actions. Some authors (Buller & Burgoon, 1996; B.M. DePaulo et al., 2003; Rubin, 2010; L Zhou, Burgoon, Nunamaker,

et al., 2004) advocated for an increased understanding of how cues might be influenced by context. However, of these authors, few provide specific ideas as to what they mean by context. Buller & Burgoon (1996) mentioned personal relationships, and Zhou, et al. (2004) mentioned the specificities of the content of a conversation (i.e., if the participants had discussed a topic other than the DSP, then the 'context' would have been different). Future research might uncover additional relationships among information, possible cues to misinformation and disinformation.

2.7.6 *Limitations of Prior Studies*

The lab studies conducted by Zhou, et al., (2004) presented evidence of linguistic cues in asynchronous text-based online communication; however, both their data collection and analysis methods are somewhat insufficient to capture the richness of deception. Their participants were college students, who represent a specific group, which might not be generalizable. As noted by the authors (p. 103), these participants were not specifically incentivized to succeed in their deceptions, and so might have had little motivation to deceive their partners. Additionally, the dyads and the topic of the deception were pre-set by the researchers, rather than emerging from the participants themselves. Zhou, et al., (2004) used an automated approach to analyzing deception data. On p. 100, they state that a, "machine learning approach to deception detection has the ability to adjust to different strategies of deception that appear in different contexts". Thus, automated methods provide one view on a complexly multi-faceted problem, particularly given the ambiguity of cues to deception and the lack of clear understandings of misinformation, disinformation, and the relationships between these terms. Cues to deception can be

inconsistent and unreliable, and there is limited conceptual discussion of and even less agreement on the meanings and importance of misinformation and disinformation.

Because so much about misinformation, disinformation, and cues to deception is unknown, unclear, and uncertain, exploratory research stands as a suitable approach – in particular, a naturalistic approach that examines these topics in the wild. Rubin's (2010) content analysis of text from blogs freely available online is closest to the approach of this research. An exploratory, naturalistic approach has produced rich examples of misinformation, disinformation, and possible cues that might provide sufficient information necessary to classify various cues and build a taxonomy. Over time and from research performed in many different settings, a taxonomy of cues could be developed that could then be analyzed for similarities or trends across different contexts, contents, and other features. Most importantly, a naturalistic approach in the thick of human expression and action allowed lay actors into the research process, resulting in strongly user-centered research meaningful for both academics and lay people.

2.8 Misinformation, Disinformation, and Cues in MMOs

To advance research into misinformation and disinformation, a naturalistic approach captured the richness and dynamism of possible cues to misinformation and disinformation. While the work on textual cues in email exchanges begins to address the lack of physical or verbal cues, work in 3D, immersive environments might provide additional or alternate sets of cues. These new sets might prove useful as immersive environments continue to become increasingly common in classrooms and boardrooms.

Online games are strong candidates for an empirically-grounded investigation of misinformation and disinformation. Because games are social spaces, they are also inherently information spaces as well, as described by Nardi (2008). But the information is often asymmetrical, as players' knowledge of the game world is limited by what the game developers choose to release (Juul, 2005). Thus, players freely consider numerous possible options and variations, and thereby create misinformation and disinformation; every rumor and bit of gossip might seem like a cue to deception.

Online game players' information worlds are rich and dynamic, which is why most online games require deep knowledge in a variety of literacies (Steinkuehler, 2007). A key element of many online games is teamwork. Players self-organize into distributed, often asynchronous teams. Much of the misinformation, disinformation, and cues literature has focused on individual deceivers or pairs of conversants (as reviewed in 2.5.5 and 2.5.6). A focus on individuals situated within teams highlights the core elements of misinformation, disinformation, and cues: relationships and context.

2.9 Other Game Genres

Although humans have always lived in social networks, the recent increase in technological networks, particularly broadband internet access at home, has fostered the development of a new kind of gaming experience, Massively Multiplayer Online Games (MMOs). The success of MMOs depends on players utilizing their pre-existing social networks as well as forging new ones to tackle game content. In this dependence on the sociability of players, they share many qualities with previous forms of gaming. Yet MMOs

represent a new style of gameplay marked by networkedness, which creates alternative views on management, communication, and information. Such massiveness has consequences, both social and technological, as can be seen in the ways that players utilize their management, communication, and information skills.

Huizinga (1938) argued that play pre-dates culture, and so it is unsurprising, even obvious, that MMOs have a long pedigree from non-gaming, open-ended play, such as 'pretend' or 'dress-up', and from non-digital games, such as card, board, and table games. These games have a physical materiality, manifested by cards, boards, tokens, figurines, etc., which MMOs attempt to mimic through digital objects, such as armor, pets, weapons, etc. Non-digital games require a social network to call upon to enjoy the company of other players, but do not require any specific technology to play; one could imagine playing Monopoly on a camping trip using rocks for tokens and leaves for money. Many of these games also support, and are designed for, multiple players playing simultaneously; yet the number of players might be limited by the number of tokens (as in Sorry), by the design of the game (e.g., Checkers is designed for only two players), or by some social factor (e.g., wanting to maintain exclusivity in a weekly Poker game).

Non-MMO, digital games played on either a computer or console (e.g., Wii, Xbox, etc.) typically do not share the physical materiality of non-digital games needed to play. Instead, these games require physical hardware to play, a trait they share with MMOs. The sociability of non-MMO, digital games varies widely, as some games are designed for solo play (e.g., Solitaire, Minesweeper) and the degree and type of sociability of other

games depends on whether players are collocated or distributed. For collocated players, some games offer a multi-player mode in which players take turns (e.g., Guitar Hero, Mario Party), and other games feature a 'co-play' option which allows multiple players to play at once (e.g., DanceDanceRevolution, Mortal Kombat, Rock Band). For distributed players, there are an increasing number of options to play synchronously, via internet connection, with distant friends, such as Xbox Kinect Dance Central and Mario Kart Wii, as well as with unknown strangers, such as Halo: Reach and Red Dead Redemption. Typically, games that offer distributed play also offer collocated play (when each player has a controller). Although these games do share features with MMOs, such as online, multiplayer play, they remain separate because these games can still be played without internet connections and there is typically a cap, usually 4, 8, or 16, on the number of players playing synchronously, so these games cannot be called massive.

Digital games are also played on mobile devices, such as smartphones, PSPs, DSis, might differ significantly from their full-fledged counterparts, and are best considered a separate category of games. In terms of technology, mobile games require some device to play as well as the software installed. Similarly to the games described above, some games are designed for solo play (e.g., Angry Birds), and others are designed for asynchronous, collaborative play (e.g., Scrabble). Some games feature synchronous, collaborative play when players are collocated (e.g., Lego Star Wars III: The Clone Wars). The unique feature of mobile games is that players are mobile in the world, and location-based games exploit this fact (e.g., Blackbeard's Treasure). Foursquare, which allows users to 'check-in' at various physical locations, might be

considered a game, although its strictly ludic elements are limited and derive primarily from a user's personal enjoyment. Mobile games share the same features with MMOs as do non-MMO, digital games, as described above. Mobile MMOs, such as Pocket Legends, Parallel Kingdoms, and TibiaME, exist as an emerging genre and have yet to fulfill their massive label (Hindman, 2011; Oxford, 2011).

Alternate Reality Games (ARGs), such as I Love Bees, Year Zero, The Beast, and Majestic (see Taylor & Kolko, 2003) interestingly combine most of the features described above: physical materiality, (a)synchronous, multiplayer, collocated/distributed, online, and location-awareness. ARGs typically start with a fictional mystery, perhaps a kidnapping, and then players work collaboratively to solve the mystery. I Love Bees famously required players to figure out, from the game's website, combinations of timecodes and GPS coordinates to answer ringing payphones. Year Zero started when players discovered usb keys in the men's restroom at a Nine Inch Nails concert in Paris. ARGs have received some criticism for serving primarily as marketing ploys; a notable exception is World Without Oil⁴, which challenged players to find solutions to living without oil.

A striking difference with MMOs is the ephemeral nature of ARGs since they are not intended to last or to be playable beyond the (usually rather limited) timeframe allotted by the game designers. This means that a player might start on a Friday afternoon, only

⁴ WWO also exemplifies the 'serious' game genre, focused on social issues. While the content of serious games (or health games) does not prevent adapting an MMO-style structure, no serious game has yet to do so.

to find on Monday morning that the game has already been solved by players, and the game designers are not releasing further content. In most MMOs, the persistence of the gameworld allows players to start, stop, and then pick up where they left off [see Pearce for a detailed account of a player community faced with a sudden shut-down of their gamespace (2009)]. ARGs, as a genre, are not inherently massively multiplayer; nothing about them mandates massiveness. They only become such if enough people start playing synchronously; if not, then a given ARG is not massively multiplayer.

No definitive understanding of 'massive' exists because the degree of massiveness is highly variable. Eve Online, for example, boasts 357,000 players ("Eve Online - Players," 2003); while this number is impressive, it pales in comparison to the massiveness of WOW's 12 million players (Blizzard Entertainment, 2010). Massively multiplayer could be defined as hundreds or (usually) thousands of players playing simultaneously in a shared gamespace ("MMOG," 2004). For example, thousands of people distributed globally and playing Boggle simultaneously does not make Boggle a massively multiplayer game because only very small subsets of these players are interacting with each other; Boggle players in Moscow, Idaho are not playing with Boggle players in Moscow, Russia. Although players might be playing on different planets in different servers in SWTOR, they are playing within a shared gamespace. Compared to other game genres, MMOs are differentiated by their scale and scope of player engagement, supported by both social and technological networks. The complexity of these networks is mirrored in the difficulties posed by management, communication, and information in MMOs.

2.10 Management and Teamwork in MMOs

Many MMOs utilize teams to help individual players advance in the game, and these teams often require management of people and resources to be successful, a task made more challenging by the distributed nature of the teams. Powell (1990) framed an emergent style of organizing a firm, which he called “network forms of organization,” from an economic viewpoint, focused on transaction costs. He contrasts this newer form with the more traditional forms of organization, the market and the hierarchy. In market forms of organization, communication is driven by prices and contracts, personal relationships are limited, and trust is not needed because future transactions do not rely on it. Hierarchical forms of organization feature divisions of labor established by administration, centralized decision making, and clear lines of authority, which determine communication paths.

Powell’s analysis of network organizations provides a useful way of thinking about this type of organization even outside the domain of commerce, such as in non-profit, community, volunteer organizations and self-organizing virtual teams of online game players, a view supported by (Ducheneaut, Yee, Nickell, & Moore, 2007, p. 847). Powell (1990) describes network organizations as marked by three primary features (see Table 6).

Table 6: Powell's hallmarks of network organizations

Expectations of reciprocity of actions, which might influence reputation
Communication based on relationships
Rapid absorption, diffusion, and utilization of information, especially for innovation and technological advancement

These features can also be found in many MMOs. For example, players commonly perform favors, such as loot⁵ sharing (Malone, 2009, p. 298) or buffing⁶, for other players to build a good reputation and with an understanding that the recipient player will perform a similar favor for another player in need at some point in the future. This expectation of reciprocity might also mean that a player who seeks to disinform another will be later disinformed by that other player or that the other player might spread disinformation about the player who disinformed her. The type and frequency of communication can depend on the level of relationships players have with others; for example, players might talk about different topics with the Friends on their Friends list than with their Guildmates.

The speed of information in a network organization like a guild might lead to innovations in play strategies, such as when a Guild's members have certain needs that force the guild to reconsider the standard options for conquering a dungeon. In terms of management, these distinctive features of network organizations suggest commitment from both guild Leaders and guild members, equally, to create good reputations for the guild and for themselves within the guild and the player community (Ducheneaut et al.,

⁵ Loot is the rewards, such as gold, weapons, armor, or other items, that come from a monster after it has been killed during a raid.

⁶ Placing a helpful spell or effect on another player.

2007, p. 846), to build relationships and communicate with most guild members, and to learn, share, and use information quickly.

It should be noted that while some guilds do organize themselves in a hierarchical fashion [i.e., “barracks” (Williams et al., 2006, p. 350)], the distributed nature of that hierarchy lends itself to features associated with networks, particularly the rapidity of information, because all members have access to external sources of information, such as WOW-related websites and their own social networks of friends both inside and outside the guild. Jang (2007) described a guild that started as strictly hierarchical, but the distributed nature of its members and changes in the design of the game forced the guild to demonstrate its flexibility, a hallmark of network organizations.

The network form of organization, however, only marks noticeable differences from previous forms of organization and does not eliminate the challenges faced by teams, such as communication and trust. In their study of how communication patterns affected organizational identity in virtual teams, Wiesenfeld, et al. (1999) found that frequency of communication among team members and between team leaders and members was the single factor most strongly correlated to a strong sense of identity with and commitment to the team, a finding supported by (Chen, 2009, p. 69; Williams et al., 2006, pp. 351–353). Although Pisan (2007) found that the “affective” element, liking fellow guild members and enjoying time with them, had the strongest influence on organizational identity, it is likely that this element might be highly correlated to the frequency of communication. These findings suggest that guild leaders communicate frequently with guild members

and, perhaps, should create reasons, such as special projects like re-designing the Guild's webpage, for members to communicate among themselves.

Piccoli & Ives's study of trust in virtual teams (2003) found that formalized behavior control policies, such as weekly reporting, significantly declined trust among team members because these rules emphasized individuals' failures and ignored individuals' successes; self-directed teams that did not implement such rules demonstrated high levels of trust. guild leaders, then, might be better off by 'leading from behind' and allowing guild members to self-govern and to determine their own policies (Chen, 2009, pp. 69–70). Similarly, Williams, et al. (2006, p. 348) found that guilds with formalized, but unclear, policies tended to experience increased negativity and arguments, which might indicate reduced trust among guild members. Jang (2007) described formalized behavior control policies in a guild, but did not comment on the length of time data was collected or the effect of these policies on trust.

In a study of the differences between collocated workers and isolated, distributed workers (Bos, Shami, Olson, Cheshin, & Nan, 2004), collocated workers formed an "in-group" and the isolated workers formed their own "out-group." While guilds are typically entirely distributed (and therefore individual members are isolated), it is not impossible that some Guildmates might be collocated, either temporarily, because they got together for a particular session, or longer term, perhaps because they live together. Many players, especially female, join WOW because someone with whom they are already collocated also plays (B Nardi, 2010, pp. 21, 153; Williams et al., 2006, p. 348). In order to avoid

these in-group/out-group effects, both guild leaders and guild members must perform additional work, through communication and involvement, to forge an inclusive environment, perhaps through the creation of smaller, yet interdependent, groups (Ducheneaut et al., 2007, p. 845).

After studying whether the composition of a virtual team affects the team's problem-solving performance, Turel & Zhang (2010) concluded that differences among team members' perceptions of difficulty of the problem negatively impacted the team's overall performance. guilds frequently recruit players to achieve balance in the Guild's talent pool, and the conclusions from this study emphasize the importance of utilizing effectively each member's skills, which can contribute to the Guild's success, a finding supported by earlier work (Chen, 2009, p. 54; Ducheneaut et al., 2007, p. 843).

Another concern to which network forms of organization are not immune is resource management, specifically the distribution of loot, which might influence a Guild's success and survival. There are a large number of different strategies for distributing loot ("Loot system," 2006a; "Loot system," 2006b). Jang (2007) described the evolution of a highly structured loot distribution system, using a points system, based on decisions made by guild administration. As the game changed, however, the author noted that the rules for distribution kept changing, and eventually were left to the groups of individual players participating in a specific raid. In Malone's (2009) study of a Dragon Kill Points

(DKPs) system⁷ used by a high-end raiding guild progressing toward end-of-game content, she found that DKPs served as a mutually agreed upon system members used to rationalize and justify their distribution of loot to reduce in-fighting and provide guild cohesion. Chen, however, commented (Chen, 2009) that DKPs might increase competitiveness within a guild, and described his experiences with a guild that used a distribution system which prized friendships and sociability over rewards.

2.11 Communication in MMOs

As described earlier, communication within a guild is crucial to its success because it is the primary means through which distributed team members build trust and friendliness, both of which are important to a Guild's success. Communication is not limited to in-world functions; a large number of out-of-world sources are also critical communication tools, such as web pages, wikis, and forums. Because MMOs are supported both by technological and social networks, their communication modes start as technological tools and, through use, become sites of sociability.

2.11.1 *Technological Aspects: Text Chat*

Nearly all MMOs feature real-time text chatting, similar to an Instant Messaging program. Generally, this text chat is simultaneously public and local, such that any avatar within a certain range can see the text in a chat window. SWTOR, for example, offers several

⁷ DKPs is a system used by many, but not all, guilds that allots points to members for working hard to kill monsters. DKPs are then used by members to bid on loot via a guild auction.

different chat channels (see Fig. 1), including private chat channels that players can create for small raid parties or for groups of friends, similar to other MMOs. Additionally, SWTOR text chats offers players varying levels of closeness (see Table 7).

Table 7: Three types of text chat in SWTOR

Say	to communicate with players in the immediate local area
Yell	to communicate with players slightly outside the local area
Whisper	to communicate privately between individuals

SWTOR also features Mailboxes, usually near major bind points (e.g., villages, cantinas), which players can use to send and receive messages and objects from other players, NPCs⁸, and the Galactic Trade Network. Insights from other MMOs can illustrate the importance of other design possibilities, and how these might affect communication.

Moore, et al. (2007) studied awareness cues in an MMO because online spaces tend to lack those communication cues that people depend on in the physical world. They found that animating an avatar when its associated player is typing text signals to other players the desire to communicate. But having the animation continuous until the player is finished typing served the additional function of indicating when a player is finished, so that other players can take a turn in the conversation. Using a customization feature of that MMO, the authors created a script that generates chat bubbles above the avatar when the player is typing; these chat bubbles are on others' screens even when the avatar

⁸ NPCs are Non-Player Characters, bots built and controlled by Blizzard to perform specific functions in-world.

is out of view. They argued that these visual cues are important for communication, but crucial for coordinating activities during intense gameplay. In SWTOR, players can set a status, such as AFK⁹, but the text chat is limited to a small corner of the screen on the upper left (see Fig. 1).



Figure 1: Text chat window in SWTOR

In a separate study across multiple MMOs, Moore, et al. (Moore, Gathman, Ducheneaut, & Nickell, 2007) examined the role of communication in facilitating the extent to which a social setting is recognizable as such. In online environments with reduced cues, it is not always possible to know what other players are doing, such that players might not be able to coordinate their actions, including conversations. They conclude that, “entirely private player activities should be avoided,” (p. 298) so that players can know what other players are doing. In SWTOR, this level of detail might actually provide too

⁹ AFK means Away From Keyboard; a player’s attention is focused elsewhere than on the game.

much communication and prove distracting. While the authors make a good point that increased communication cues might support improved player interaction, it is unclear which cues, used when, and in which contexts would be best, or whether these increased cues would reduce deception or increase the ease of detecting deception.

2.11.2 *Technological Aspects: Voice Chat*

In addition to text chatting, some MMOs offer voice chat. Often, this form of chat is the preferred format for rapid, specific coordination during periods of intense activity, such as raids. Sometimes players use third-party add-on programs, such as Ventrilo, Mumble, or TeamSpeak. In their study of voice chatting in Second Life, a massively multiuser social virtual world, Wadley, et al. (2009) suggested that voice capability might actually be of little benefit to users who do not wish to maximize their social presence while managing their online and offline environments. The authors cited participant views that voice was only appropriate for business uses (including sex work), that those who do not use voice might face social stigma, and that voice might create additional “drama” because it lacks the asynchronicity of text and because it allows sounds from the user’s physical environment (e.g., children playing, people talking, television) to be heard in-world. Other participants cited concerns about their own voice not matching their in-world identity and the lack of anonymity. Female users cited sexual harassment and general belittlement as their reasons for not using voice, a finding supported by Nardi’s (B Nardi, 2010) account of the masculinized language in World of Warcraft (WOW).

Williams, et al. (2007) studied the introduction of voice into the WOW community. They found that guilds that used voice communication strengthened weak ties, as demonstrated by the number of Guildmates on individual players' Friends list. These strengthened ties helped these guilds remain together during the social upheaval of guild mergers. Another finding indicated that players who physically lived in similar local geographical areas tended to use voice more frequently as a way of either gaining or maintaining local friendships. SWTOR players might face many of the concerns described in Wadley, et al. (2009), but have developed a culture which values the convenience of voice over its drawbacks, especially for its ability to help players progress toward game goals. The relationship, if any, between voice chatting and misinformation or disinformation is unclear.

2.11.3 *Social Aspects*

While the technological aspects might constrain or strengthen social relationships, they do so through being used by players. Usage transforms these technological tools into sources of sociability. In their study of socioemotional and task communication in MMOs, Pena & Hancock (2006) found that most communication was not task related, but was related to socioemotional expression instead; for example, players frequently encouraged each other and made jokes. Further, they found that most of the socioemotional communication was positive in nature, especially among experienced players.

Chen's (Chen, 2009) work supports these findings. He wrote that his guild used voice and text chat and their online forum to coordinate fighting, division of labor, and social support in the face of failure. After an especially frustrating evening unsuccessfully

fighting monsters, the players were in-fighting and confused about roles. The following day, players communicated to each other their support for one another, their enjoyment of each other's company, and their understanding that not every outing can be successful. They also restated the Guild's stated goal of having fun and enjoying the experience, and reflected on how they could improve their communication with each other. Here, players reaffirmed their social bonds and demonstrated their valuation of guild cohesion above game rewards. In this way, players used tools to maintain the sociability of their guild.

Beyond mere friendliness and camaraderie, some players use the communication tools available to flirt or to become intimate, either through a very deep friendship or through romance. Pace, et al. (2010) studied intimacy in WOW, and found four major themes regarding intimacy:

- often crosses boundaries between the gameworld and the physical world
- begins with typically banal experiences, rather than interesting
- requires reciprocity
- grows over time and people experience this time differently

Creating intimacy is one way players use communication tools to generate a world-within-a-world, outside of, yet constrained by, both technology and designer intent. Nardi (B Nardi, 2010) described intimacy in WOW as another variant on play, except for the "e-hos" and "e-pimps" for whom the generation of false intimacy was a variant on work. Intimacy is a sign of trust, and could be used to mislead or deceive, but the influence of intimacy in MMOs on how cues to misinformation and disinformation are used or received is unclear.

2.12 Information in MMOs

The information-richness of MMOs demand that players process information quickly to advance in the game. The volume and variety of information required can be overwhelming. In SWTOR, players are required to make choices about their avatar (see Fig. 2): Republic or Empire? Male or female? Mirialan or Twi'lek? Jedi or Smuggler? The information becomes increasingly complex: complicated statistics, rumors, opinions, and social norms. Monahan (2009) investigated players' information seeking behavior in WOW, and found that information was often acquired serendipitously. She found that players vigilantly watched the official forums for new information. This information acquisition indicates that WOW and SWTOR challenge players with a large volume of information, and that this information is broadly distributed among players, the game itself, and other resources, such as forums, wikis, and blogs.



Figure 2: Choosing character options presents an information-rich task.

Steinkuehler (2007) demonstrated that the amount and array of information in MMOs supplemented traditional literacies (e.g., reading, mathematics) as well as generated new literacies (e.g., avatar literacy, network literacy). She documented the many types of writing players engage in, such as storytelling or explaining a problem, due to the text-based nature of available communication formats (e.g., text chat, online forums). Reciprocally, this large amount of writing also means a vast amount of reading, including blogs, wikis, walk-throughs, etc. In addition, she showed how many players were able to 'read' an avatar based on its visual presentation to learn about the status or experience level of other players. Many players in her study were able to articulate sophisticated, nuanced understandings of many of the properties of networks described by Powell above (see Table 6). In MMOs, it remains to be seen whether players develop 'deception literacy' as a specific skill.

Nardi and colleagues concluded that MMOs, using World of Warcraft as their exemplar, are information-dense (2008; 2010; Nardi & Harris, 2006; Nardi, Ly, & Harris, 2007), which make them excellent sites for information research. Their 2006 study examined the many forms and functions of collaboration in WOW, which included game-oriented arrangements (e.g., guilds, Raids, etc.) that served dual functions of building friendships and working towards game advancement. They also described the many forms of non-instrumental collaboration that facilitate 'fun' among players, such as dancing, drinking, parties, and treasure hunts. They published, in 2007, a study of how players learn WOW through conversation with other players, including Guildmates,

random strangers, and Raid groups. Nardi and her group found three types of learning (see Table 8).

Table 8: Categories of learning in an MMO

Basic game facts	e.g., how to access a dungeon, how to use certain items, where to go for particular services, etc.
Strategy development	e.g., how to beat particular characters or monsters, ways of advancing in the game, etc.
Cultural immersion	e.g., the values and customs of the community

This shared learning is necessitated by the complexity of WOW and other MMOs, such as SWTOR, which are too difficult to learn on one's own, but also provide opportunities for more experienced players to teach and mentor. The extent to which players might use their status as teacher or mentor to mislead or deceive other players is certainly an area for future work.

In 2008, the text of Nardi's ISIC2008 keynote outlined the ways that MMOs are creating "mixed reality" information spaces. Because players play the game in-world, out-of-world (e.g., wikis, forums, etc.), and in the physical world (e.g, LAN parties, producing maps, wearing WOW-licensed t-shirts, etc.), the separation between worlds is remarkable only for its shrinking presence. For example, during especially intense play, a player might ask her roommate to act as a seeker on her behalf of game-related information.

2.13 Summary of Literature Review

The breadth of the literature reviewed here reflects the complexity of this exploratory research. Misinformation and disinformation are not well-studied in Information Science. But this review demonstrated that the existence of misinformation and disinformation depends on their meaning. When meaningful, misinformation and disinformation can be informative. Meaningfulness and informativeness, however, suggest that misinformation and disinformation must be subjective because they must exist within one or more contexts. Through their meaningfulness, informativeness, and subjectivity, misinformation and disinformation are types of information, and, therefore, misinforming and disinforming are types of information behavior. To reiterate, misinformation is mistaken information. Disinformation, while deceptive, is still information, regardless of the truth, because of its subjectivity. A speaker's intent may be either malevolent or benevolent, but may be also be unknowable.

When reviewing theories of deception, cognitive theories were inappropriate due to their focus on the types of cognitive functions demanded by deception. IMT did not address cues for untrained lay people, who are the focus of this research. IMT2 viewed deception as anti-social, and limited its understanding of information to empirical facts existing externally. The PL Model assumed human communication is constituted of only truth or lies, rather than a mix of both, and sought to predict linear success both in truth detection and in deception detection.

This exploratory study considered cues to be unintended, or “nonstrategic” (Burgoon, 2014), hints from misinformers or disinformers. Because signals or indicators suggest conscious intent, they are inappropriate terms. Most previous research on cues has occurred in psychology laboratories, often limited to dyads, so conducting this research in an online social setting contributes to its novelty.

This research occurred in a massively-multiplayer online (MMO) game called, *Star Wars: The Old Republic (SWTOR)*. MMOs are information-intensive online environments, and highly social. The sociability, however, depends on both the relationships among the players and the contexts in which such relationships develop. Thus, MMOs were a good fit for this research because misinformation, disinformation, and their cues are also dependent on relationships and context. Other game genres lack the sociability of MMOs, including the advantages of guild membership. Because team membership can entail such complex interactions, team members may also be influential on individuals.

Such influence begins with the volume and variety of learning required in *SWTOR*. Like other MMOs, this game is saturated with information, and requires of players advanced information management skills, including collaboration with guild members and other players. In such an information-rich online environment, misinformation, disinformation, and their possible cues become interesting targets for investigation.

Chapter 3. Methods

This chapter details the research methods of an exploratory investigation into how places, tools, and individuals' constructions of meanings might influence their perceptions of possible cues to misinformation and disinformation in online environments. This study was conducted in an online social setting, *Star Wars: The Old Republic* (SWTOR), which is a popular Massively Multiplayer Online (MMO) game. Methods of investigation included exploratory fieldwork, participant observation, online artifact collection, naturalistic observation, and individual interviews. Online artifacts and individual interviews were coded according to the same codebook. Lastly, limitations and trustworthiness are discussed. Table 9 connects the methods and theories used to address the research questions in 3.1. Table 10 shows a timeline of when methods were used, based on starting and ending months. Table 11 lists the time and artifact counts of each method.

Table 9. Relationships between Methods and Theoretical Frameworks

		Theoretical Frameworks			
		Interpersonal Deception Theory (Cues)	Information Grounds (Places)	Activity Theory (Tools)	Symbolic Interactionism (Meanings)
Methods	Exploratory fieldwork	✓	✓	✓	
	Participant observation	✓	✓	✓	
	Artifact collection	✓	✓	✓	✓
	Naturalistic observations		✓	✓	
	Individual interviews	✓	✓	✓	✓

Table 10. Methods Timeline with Starting and Ending Months

Artifact collection								
IRB approval								
Exploratory fieldwork								
Participant observation								
Individual interviews								
Naturalistic observations								
	Jan 2012	Aug 2013	Apr 2014	May 2014	June 2014	Sept 2014	Aug 2015	Sept 2016

Table 11. Methods counts

Method	Results
Exploratory fieldwork	40 weeks, average 14.5 hours per week
Participant observation	44 weeks, average 14 hours per week; 26 weeks, average 14 hours per weekend (with guild)
Artifact collection	72 artifacts
Naturalistic observation	2 sessions, 90 minutes each
Individual interviews	7 interviews, 30 – 90 minutes each

3.1 Review of Research Questions

- 1) How might places and tools, as informed by Information Grounds and Activity Theory, influence the perception of possible cues, as informed by Interpersonal Deception Theory, to misinformation and disinformation in an online gaming environment?

- 2) How might the constructions of meanings, as informed by Symbolic Interactionism, for individuals situated within a distributed, networked team influence their perceptions of possible cues, as informed by Interpersonal Deception Theory, to misinformation and disinformation in an online gaming environment?

Research question 1 probes the manner in which and the extent to which the relationships among places (as per Information Grounds) and tools (as per Activity Theory) may influence the perceptions of possible cues (as per Interpersonal Deception Theory) to misinformation and disinformation. When players create places through their uses of technological tools, they may deliberately or inadvertently duplicate the limitations and affordances of such tools. In their usage, they may also seek ways to circumvent limitations and extend affordances. The creation of places in this manner may influence

the types of possible cues perceived as well as the extent to which such cues may be perceived.

Research question 2 sustains the investigation of research question 1 by broadening its scope to include the potential influences of individuals' constructions of meanings (as per Symbolic Interactionism) and of team members on perceptions of possible cues (as per Interpersonal Deception Theory) to misinformation and disinformation. When individuals traverse the connections among places and tools, they also build meanings and interpretations of possible cues they perceive. However, individuals may perceive different possible cues, or not perceive them at all. Not all individuals will attach similar interpretations to the same perceived cue. The participants of this research study all belonged to teams, so it is conceivable that they may be influenced by their team members, especially regarding cue perception and interpretation.

3.2 Review of Theoretical Frameworks

The complex and exploratory nature of this study required Interpersonal Deception Theory (IDT), Information Grounds (IG), Activity Theory (AT), and Symbolic Interactionism (SI) (see 1.5 Theoretical Frameworks for fuller commentary). Each framework guided data analysis (see 3.13 Data Analysis), and the coding reflects this guidance. IDT views deception (i.e., disinformation) as a dynamic, strategic communication strategy designed to deliberately mislead others. IG spotlights the processes by which people create places, and AT explains how people use tools with community goals in mind. Participants' reports of how they created places through their usages of tools illuminate these concepts. SI

contends that people construct meanings of experiences, objects, events, etc. to aid their understandings of the world. Participants' descriptions of their perceptions of possible cues and their interpretations brought this contention to life.

3.3 Review of Cues

This study used the term cues throughout because it is best-suited. Other terms, such as signals or indicators, are poor fits because they suggest intentionality on the part of the sender. Ekman and Friesen (1969) used the term "leakage" to describe the accidental, yet perceptible, cues that deceivers may reveal. Cues have been described as "nonstrategic" interruptions in normal communication patterns by Interpersonal Deception Theory (see 1.5.1 Interpersonal Deception Theory). Misinformers and deceivers alike may be unaware that they are 'leaking' cues. Receivers may not perceive cues, or disregard cues that are perceived, or interpret cues wrongly or imprecisely. See 2.7.1 Cues for further detail.

Again, cues are accidental on the part of the mis- or disinformers. Cues require being perceived in order to have an effect. Misinformation is mistaken information and disinformation is deceptive information (see 2.4 Misinformation and 2.5 Disinformation). Thus, a cue to misinformation is such only when perceived and then interpreted by receivers as meaning misinformation; the same conditions are true for a cue to disinformation.

3.4 Research Setting

3.4.1 *Description of Setting*

Star Wars: The Old Republic (SWTOR) is a 3D, online gaming environment. Players purchase the game software, install it on their computers, and then the software connects to the game via the players' broadband internet connections. Players pay a monthly subscription fee to continue to have access to the online game. Playing the game requires three conditions simultaneously:

- the game software installed on a computer
- a paid, active membership
- a live internet connection

The game cannot be played if any of these elements is missing.

Bioware Corporation produces SWTOR. Bioware creates the software, and releases additional version, updates, and expansions. Bioware also hosts online forums for players and provides technical support and customer service. Importantly, Bioware employees frequent the gameworld to check on any technical issues and to check on players' experiences by interacting with and observing players. Bioware employees also closely monitor the forums to see how players are reporting on their experiences with the game.

Despite (or perhaps, due to) this close interaction between players and Bioware developers, the SWTOR community has developed a degree of enmity toward Bioware and its developers (e.g., Mr. Meh, 2012; vexx, 2012). The result is that players may not

trust statements made by developers, or by Bioware. Such statements are often deliberately vague, evasive, or deceptive because players, developers, and Bioware understand that the game hinges on information asymmetry between players and Bioware. Players can only speculate about the game's direction or development, whereas Bioware already knows the details. This information asymmetry nurtures misinformation and disinformation of many types.

Players try to counter such misinformation and disinformation by seeking information from sources other than the official forums (e.g., websites, YouTube channels, blogs, podcasts, Twitter feeds, etc.). Then, the problem becomes information abundance. There are so many sources of information that it is difficult and time-intensive to determine each source's credibility, relevance, etc. Further, many sources are of low quality: unclear, vague, contradictory, incomplete, out-of-date, etc. If anything, the variety, volume, and low quality of these sources might spawn misinformation and disinformation in addition to the original misinformation or disinformation players were trying to verify.

3.4.2 *Justification of Setting*

This research study investigated possible cues to misinformation and disinformation in an online setting, SWTOR, to capture the complexities of naturally-occurring online communication and to build from previous research (Hancock et al., 2008; Joinson, 2001; Karlova & Lee, 2011; Riordan & Kreuz, 2010; Rubin, 2010; Rubin & Liddy, 2006; L Zhou, 2005; L Zhou, Burgoon, Nunamaker, et al., 2004; L Zhou & Zhang, 2006). While online communication might not offer the same cues as physical, face-to-face communication,

it does offer a different set of possible cues, such as those related to avatars or to technological infrastructure, and this research explored these possible cues. As online communication increases in both quantity and variety, the importance of recognizing possible cues increases concomitantly.

Many online settings, such as Tumblr, Twitter, or eBay, might make good candidates for researching possible cues to misinformation and disinformation, but online game environments are stronger candidates (for reasons elaborated in 1.4.5. and 1.4.6.). To investigate possible cues to misinformation and disinformation, an online game, SWTOR, served as the research site. Although many MMOs are available, such as Lord of the Ring Online, DC Universe Online, and Rift, SWTOR was a 'best fit' with the goals of this research. As a newer game (it opened in December 2011), many aspects remained unknown because Bioware, the developer, is still releasing fresh content, which presents the possibility of significant game changes (e.g., abilities of specific levels and classes, difficulties of specific bosses). Consequently, the SWTOR community's social protocols and values shift in accordance with these changes. In many ways, much of the SWTOR game and its culture is constantly shifting.

This uncertainty means that the SWTOR community is rife with misinformation, disinformation, rumors, gossip, hot debates, and a wide variety of presentations of 'evidence' and 'credibility'. SWTOR's open-ended gameplay allows players to have a great deal of flexibility in how they structure their tasks. The virtual world of SWTOR, as well as its associated online forums, blogs, and wikis, provides space for playing the game

and achieving game goals, but it also provides space for activities tangentially related to primary game goals, for example, socializing, learning, teaching, buying, selling, trading. This wide array of activities available to players foments a rich space for exploring possible cues to misinformation and disinformation.

3.5 Scope of Analysis

This research focused on possible cues to misinformation and disinformation. Due to its exploratory nature, the scope of the research focused on individuals, critical incidents, and features of those Incidents. This incident-driven approach underscores the tentative character of the research because no prior research in this specific domain exists; therefore, this research represents a small first piece of a larger project to understand cues to misinformation and disinformation in online environments, including, but not limited to, online games such as SWTOR.

3.5.1 *Scale of Analysis: Individuals*

This study looked at possible cues through the perspective of individuals. By considering the experiences of individuals, I learned how they might construct meanings and interpretations of possible cues. Through interviews, I obtained various viewpoints on recurring instances of possible cues and anecdotes on single instances of possible cues. Further, because a handful of studies have investigated groups (Giordano & George, 2013; K. Marett & George, 2013; L. Marett & George, 2004; Lina Zhou et al., 2014), this study aligns with the bulk of previous research in its focus on individuals. Although at least

one study (Lina Zhou et al., 2014) investigated multiple individual receivers versus a single deceiver, none have yet explored the dynamics of multiple individual receivers with potential multiple deceivers.

3.5.2 *Level of Analysis: Critical Incidents*

For the purposes of this research, critical incidents constitute experiences told as stories to me via interviews or relayed to other community members as forum posts or blog posts or other media. Interviews served as the primary data source. Participants were asked about critical incidents of when they recognized or suspected possible cues to misinformation or disinformation, such as their experiences with rumors or gossip. For example, a participant might say something like, “I heard that Wookie will be available as a Race in the new 1.2 Update coming out soon.” The phrase, “I heard that,” might signal that the participant has obtained information which they believe needs to be verified. Another variant might be something like, “Someone told me that ...” or “I read that ...” or “I didn’t know until after...”. Similar phrases identified incidents in forum posts, etc.

3.5.3 *Unit of Analysis: Features of Critical Incidents*

Possible cues to misinformation and to disinformation constituted the relevant features of the critical incidents. For example, participants might describe facets of an information source, such as, “I know she was lying because she hates me,” or “He was drunk so you can’t really trust what he was saying,” or “He’d obviously been twinked [(“Twinking,” 2003)]. There’s no way a lvl 10 could have a STAP rifle,”. Aspects of the rumor might also

include its timing; for example, a Bioware announcement about the possibility of taxing the Galactic Trade Network might lead to rumors about players trading goods via eBay.com instead. Such features were analyzed and collected into sets of possible cues to misinformation or disinformation.

3.6 Data Gathering

Data were collected via exploratory fieldwork, participant observation, naturalistic observation, and online artifact collection. Data were generated via interviews with seven participants (n=7). This multi-method approach ensured deep, rich data gathering from a variety of sources.

The distinction between data collection and data generation is significant. While forum posts, for example, exist without my involvement and screenshots are easily captured without requiring other people, interview data exists only because I interacted with participants. Therefore, interview data was not collected; it was generated through the process of a researcher and a participant agreeing to an interview¹⁰. Understanding this difference recognizes and acknowledges the power and privilege of being a researcher. Although I cannot speak for participants, I can let their voices be heard in venues to which they might not have access. This is a heavy responsibility because my entire research hinged on the informed consent and willful participation of individuals who

¹⁰ In colloquial language, an interview is something a researcher does to participants to get data from them.

did not have an obvious, extrinsic motivation to help me. This delicacy required me to forge respectful and communicative relationships with participants.

3.6.1 *Position as Researcher*




In communications with the SWTOR community, I was clear about my role as a researcher and about my research goals. This openness is both an ethical practice and a best practice. Members of any community want and need to know who is in their community and what their goals are (e.g., Neighborhood Watch programs, No Soliciting signs); this knowledge helps them maintain and support their community. It is, frankly, dishonest and disrespectful to hide my privileged and powerful position as a researcher from those who have a right to know. No one likes feeling betrayed; thus, it is dangerous to deceive the people on whom my research depends. If the SWTOR community had turned against me, I would have been shut out and unable to obtain the data I need. For example, Dmitri Williams, a widely-cited and respected game studies scholar, described his challenges with the World of Warcraft (WOW) player community (2009, p. 135):



... special-interest communities like these develop strong norms of language, behavior, and interactions that make involvement by outsiders difficult. To these communities, academics might as well be snake oil salesman because they do not share a common set of interests, goals, and practices ... researchers run a great risk of alienating potential subjects if they do not disclose enough information about the research.




Williams's insights about online gaming communities suggest that they are fickle, hostile to outsiders, and demand significant amounts of information about the research – including me as the researcher. If enough information is not provided, the community will

shun the researcher. Williams's experiences illustrate the importance of openness about being a researcher to maintain good relationships with the community.




I heeded Williams's guidance when I experienced difficulties with community engagement myself. I posted on a SWTOR Reddit forum to recruit potential participants. Due to my Russian-sounding name, it seemed that some community members thought I was a Russian hacker phishing them (as evidenced by the exchange in Fig. 3). I initially used my personal website to host study information and documents because it was not clear if my uw.edu website would remain when I was 'On Leave' status. I did also post study information and documents on the .edu site provided by the university, but this action resulted in little to no effect in recruiting.




 [-] **buffydaslaya**  -3 points 3 years ago
 "The confidentiality of information sent by email cannot be guaranteed." This is not good ethics when conducting research.
[permalink](#) [embed](#)




 [-] **kirbattak** 14 points 3 years ago
 Going out on a limb you probably must state that you cannot guarantee email confidentiality because you don't control the network end to end (someone sniffing packets, unauthorized access, accidentally sent to the wrong person, etc)...
 I don't think ANYONE could make the claim that they can guarantee email confidentiality.
[permalink](#) [embed](#) [parent](#)

 [-] **deathfrom_above**  Harbinger 11 points 3 years ago
 | This is not good ethics when conducting research.
 It **is** good ethics letting someone know the potential risks of sending information via email because email is not secure. That's a stupid comment and anyone who upvoted it is an idiot.
[permalink](#) [embed](#) [parent](#)

[-] [deleted] 3 years ago
 [deleted]

 [-] **Cathgirl**  [The Red Eclipse] [Jung Maa] 1 point 3 years ago
 I know I would add that to my phishing site if I used a real persons real mail address to get some credibility. (EDIT: Though I don't see why anyone would go through the trouble of making this type of phishing form.)
[permalink](#) [embed](#)

 [-] **nkarlova**  [S] 1 point 3 years ago
 Hi, My name is easily googleable.
 If you have questions or comments about my study, please contact me: nkarlova [at] uw [dot] edu
 or check out the link in my original post.
 Best, --NK
[permalink](#) [embed](#) [parent](#)

 [-] **Cathgirl**  [The Red Eclipse] [Jung Maa] 1 point 3 years ago
 | Hi, My name is easily googleable.
 ... which is why someone who sets up a phishing site (away from a .edu URL) would use it to gain credibility, while saying that email isn't safe and ask that people use a web form instead.
[permalink](#) [embed](#) [parent](#)




 [-] **nkarlova**  [S] 0 points 2 years ago
 <http://students.washington.edu/nkarlova/team-judgments-of-information.html>
<http://students.washington.edu/nkarlova/>
 Please contact me if you have other questions: nkarlova@uw.edu
 Thanks!
 Best, --NK
[permalink](#) [embed](#) [parent](#)

Figure 3: Some SWTOR community members thought I was phishing them.

3.7 Exploratory Fieldwork

It was during exploratory fieldwork that I first suspected that places and tools might be influential in the perception of possible cues (see 3.12.1 Exploratory Fieldwork for further detail). Exploratory fieldwork included a variety of community involvement activities (while being open and plain about my position as a researcher and about my research goals):

- frequently reading the official forums as well as 3rd-party forums
- engaging with players in-world:
 - chatting with them via text chat (e.g., refusing PvP¹¹ challenges)
 - playing with them by joining a PUG (Pick-Up Group)¹²
 - maintaining a friendly persona while spending time in-world (i.e., being “on”)

I conducted these activities during short, 2-3 hour sessions two or three times during the weekdays, and longer, 4-6 hour sessions on the weekends. Some weeks, I was not able to conduct fieldwork at all; other weeks, I could conduct fieldwork only during weekdays or only during weekends. In total, over the period from August 2013 to May 2014 (40 weeks), I accumulated 580 hours of logged-in time (mean of 14.5 hours per week). During this time, I was able to experience or observe SWTOR’s changes (e.g., allowing same-sex companions¹³), updates (e.g., releases of new content¹⁴), and emergent community behaviors (e.g., playing hide ‘n seek¹⁵). This time was a chance to learn:

¹¹ PvP means Player Versus Player, a type of play in which two players battle each other.

¹² A PUG (Pick-Up Group) is a short-term, task-oriented group of players unknown to each other, usually about 4-6 people.

¹³ (Katz, 2013)

¹⁴ (“Strongholds | Star Wars: The Old Republic,” n.d.)

¹⁵ (“STAR WARS: The Old Republic - Fun Things to Do Besides Operations and WZs IN SWTOR,” n.d.)

- lingo/slang
- customs/values
- how to use the game software
- keystrokes & keyboard shortcuts
- how to read the user interface
- rules and structures of the game

It was also a chance to learn from mistakes, which ranged from the social [e.g., calling something by its formal name (e.g., Mandalore the Indomitable), rather than by its casual name (e.g., Mando)] to the technological (e.g., mistyping emotes). I avoided voice chat with unknown players to reduce the risk of being harassed, as online game communities can be hostile to women (Beyer, 2012; Braithwaite, 2014; Crisell, n.d.; Fletcher, 2012; “Gamergate controversy,” 2018; “Girls keep out,” 2016; “Online Harassment Gets Real For Female Gamers,” n.d.; “Sexism in video gaming,” 2018; “Time For Harassers To Be Held Accountable, Female Gamer Says,” n.d.; MailOnline, 2016; March 14, 2016, & Pm, n.d.; O’Halloran, 2017; O’leary, 2012; Rosen, 2015). In fact, NotInTheKitchenAnymore.com posts audio clips and their transcripts to document online harassment of female players via voice chat (“Not In The Kitchen Anymore,” n.d.). Therefore, although avoiding voice chat may have limited my potential experiences, it was a necessary boundary for my personal safety.

Importantly, exploratory fieldwork helped condition me to the environment so that I was better prepared to understand participants’ experiences. For example, during interviews, when participants mentioned NDF, I understood that they were referring to the

Nightmare Dread Fortress expansion¹⁶. Or, when they mentioned the Exploitgate¹⁷ controversy, I understood: 1) what that event was, 2) why it was controversial, and 3) how it was relevant to our conversation. See 3.12.1 for further justification.

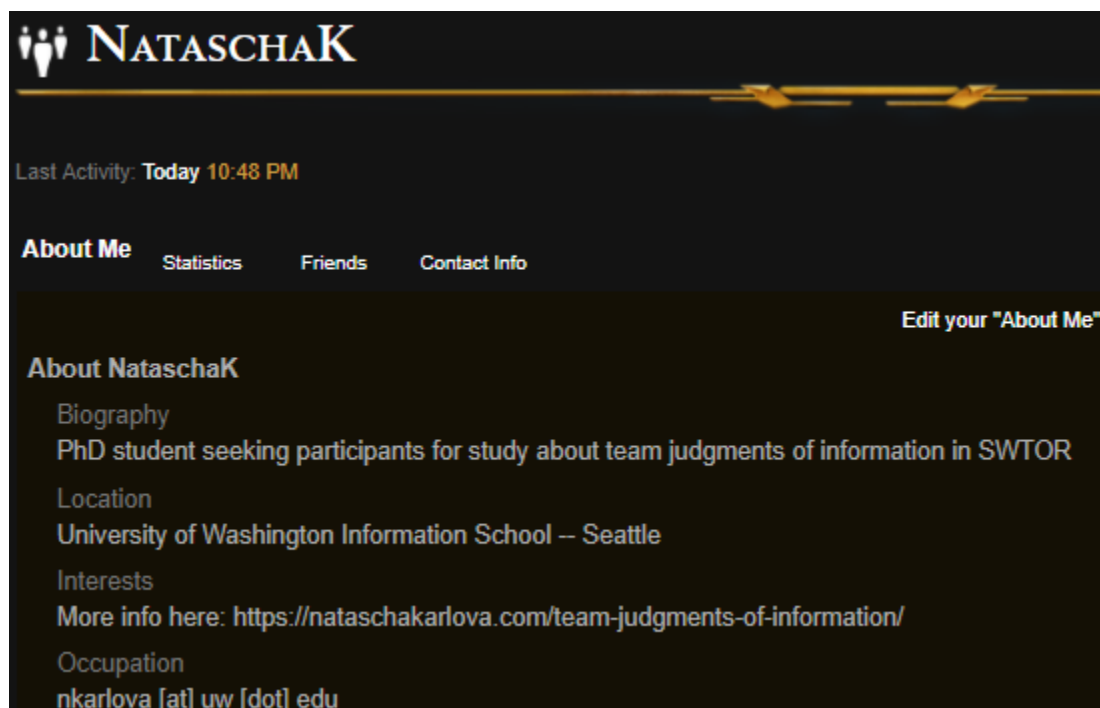


Figure 4: I included recruitment information in my profile for the official forums.

During exploratory fieldwork, I wanted to write copious notes as would qualify as “thick description” (Geertz, 1973). SWTOR, however, proved more dynamic than anticipated. First, the on-screen User Interface (UI) (see Fig. 5) presents densely packed, detailed information, requiring full expansion of the window, and it was tedious to keep switching screens between SWTOR and Microsoft Word. Second, typing notes requires

¹⁶ (“STAR WARS: The Old Republic - Nightmare Dread Fortress,” n.d.)

¹⁷ (Kamper, 2015)

simultaneous use of both hands – as does SWTOR. Consequently, my field notes are sufficient, and supplemented with still image screenshots. Audio and video were not captured due to my concerns about other players' lack of consent, and the logistical impossibility of obtaining consent. Further, audio and video would have been significantly more technologically challenging to anonymize, compared to still images.



Figure 5: The gameplay interface of *Star Wars: The Old Republic*

It was during this early time in the gameworld when I first noticed how players would use a tool as a place. For example, guild chat is a text chat channel exclusive to members of the same guild. Even if guild members are playing alone or with a player from outside their guild, they can still access that guild chat as a base from which to check in, exchange

information, and generally hang out. In this way, guild chat, as a technological tool to support intra-guild interaction, also becomes a potential Information Ground. This combination may influence how individuals perceive possible cues, and how they construct meanings of such cues.

3.8 Participant Observation

Participant observation leveraged my insights from exploratory fieldwork so that I could investigate further the roles of places and tools in the perceptions of possible cues (see 3.12.2 Participant Observations for additional justification).

3.8.1 *On my own*

I conducted participant observation on my own to investigate how players might be influenced by places, tools, and their interactions in their constructions of meanings and interpretations of possible cues to misinformation and disinformation. Similarly to my exploratory fieldwork (see 3.7 Exploratory Fieldwork), I conducted 1-2 hour sessions 2-3 times during the week, and 4-6 hour sessions one or twice during weekends. From late September 2014 to early August 2015 (44 weeks), I spent 616 hours in-world (mean of 14 hours per week). To obtain a broad range of experiences, I created three characters (see Table 12 and Fig. 6). Playing and managing these three characters proved sufficiently complex and labor-intensive tasks to provide me with thorough experience. These tasks included:

- finally completing Quests after multiple failed attempts
- understanding and changing gear and weaponry to meet the demands of a task
- hanging out in villages, cantinas, markets, starships, temples, etc.
- chatting with other players
- gaining Skills on my characters' Skill Trees
- gathering materials to craft objects

Cordelia was my “play” character, and I used her to play through the game to experience its content and social life, taking brief, sketch-level notes. Cordelia allowed me to immerse myself in the world of the game, and just play, similarly to my participants. Cordelialt was my research character: I used her to play the game closely, taking the time to reflect on aspects of the game (e.g., the kinds of choices offered to players, certain elements of the game environments, etc.) and to grab copious screenshots. Cordeliafour was used to play with generous, patient friends in our guild, Death Star Contractors, to learn how to play in a guild (i.e., how to divide loot, how to coordinate attacks, how to communicate needs, locations, strategies, etc.).

Table 12: Features of my SWTOR characters

Name	Cordelia	Cordelialt	Cordeliafour
Faction	Republic	Republic	Republic
Gender	Female	Female	Female
Race	Mirialan	Mirialan	Mirialan
Class	Jedi Consular – Sage	Jedi Consular	Jedi Knight – Sentinel
Level	12	2	14
Server	Dreshdae Cantina – PvE	Dreshdae Cantina – PvE	Mandalore the Indomitable - PvP
Location	U.S. – East Coast	U.S. – East Coast	U.S. – West Coast



Figure 6. Each of my SWTOR characters served a specific purpose.

3.8.2 *With my guild*

Individuals situated within distributed, networked teams may be susceptible to influence from their team members. This influence may, in turn, affect how such individuals construct meanings of and perceive possible cues. Knowing this, I felt it was important to experience guild membership to gain insight into how influence from my guild mates might influence my own perceptions and meanings of possible cues.

I recruited two of my personal friends from my undergraduate years, C and R, to help me with guild formation. C recruited his brother, J, and then J recruited one of his friends (R and I were the only women). At five people, we met the minimum required for guild formation. C and J had already been playing, so they were able to pay the fee of 5,000 credits. R, J's friend, and I had never played SWTOR before, and it was our first

MMO. We created a guild we called, Death Star Contractors (DSC), a Galactic Republic (i.e., Light Side) guild on Mandalore the Indomitable, a U.S. West Coast PvP server. Our guild was casual, just for fun and for my research. We played together only on weekends, but the sessions were long, ranging from 4 – 10 hours each. Both the complexity of the game challenges and our unevenness in skills contributed to the length of these sessions. My participation in the guild lasted from early April through late September 2014 (26 weeks). After my departure, I believe that the guild lasted for a few weeks on its own before the members decided to disband in order to join a larger guild. Ultimately, we had spent 364 hours total playing together (mean of 14 hours per weekend).

To communicate during Flashpoints and Operations, we created a Google Hangout²⁰ for audio-only communication. We used Hangout because it was free, and we didn't want to pay for access to a Mumble or Ventrilo server²¹. Because we were playing the game in its own window, the web browser window that had the Hangout open wouldn't register any cursor activity, so the Hangout connection would fail about every two hours, unless we remembered to click within the web browser window to keep the Hangout 'active'. To coordinate times and days to meet up to play, we would chat in the Hangout at the end of a session, or we would use email. Additionally, I also observed and participated with my guild members outside the gameworld, including reading official websites and forums, and as well as 3rd-party wikis, blogs, etc.

²⁰ Similar to Skype

²¹ Mumble and Ventrilo are voice-only chat services commonly used by players.

C and his brother, J, became our de facto guild co-leaders. They were largely responsible for investigating combat strategies and how to gear our characters. Other members also conducted their own investigations as well. As part of my dissertation research, I would also search for rumors or gossip about upcoming Missions that we were considering. Before each session, we usually spent about 20 – 60 minutes discussing the information that everyone brought back from their own searches. These discussions were enlightening because they illustrated how the overwhelming volume of information available could easily create possible cues to misinformation and disinformation, based on how individuals construct meaning and interpret such cues. For example, when we were talking about how to find all the datacrons on Coruscant, I thought that the guide I found²² was useful because it had numerous screenshots and step-by-step instructions, but another Guildie found a different guide²³ that everyone else preferred because it had maps and a video. Both guides provided a wealth of information, but we used the second guide because we could verify the layouts on the maps and because we thought that video was less susceptible to disinformation than still screenshots. That is, we could triangulate the maps data, and did not perceive cues to misinformation or disinformation from the video.

On occasion, we'd learn of something sufficiently interesting for us to try it out, to see how it worked or what the effects might be. For example, we tried to maximize our Exploration points on Tython because we thought it might be an easy way to get additional

²² ("Coruscant Datacrons | Datacron locations in Star Wars: The Old Republic," n.d.)

²³ ("SWTOR Coruscant Datacron Locations," n.d.)

loot in preparation for more difficult tasks later in the game. Because we were casual, we could satisfy our curiosity without much upset, if our plan went awry. Usually, we would defer to the C and J's decisions or preferences because we knew that they knew the most about the game.

Participant observation, by playing the game and joining a guild, provided experience from a participant's point of view, especially the sense of belonging that guild membership can provide (see 3.10.2 for further justification). Belonging to Death Star Contractors (DSC) provided insight on how individuals might be influenced by their guild members in their constructions of meanings and interpretations of possible cues to misinformation and disinformation. I also observed how our guild used technological tools as places, such as our guild chat, and how those could influence how individuals might perceive possible cues. Witnessing and participating in this process enabled me later to confirm participants' reports, as well as ask them about further details.

3.9 Online Artifact Collection

Online artifact collection (see 3.10.3 for justification) illustrated both how players create places by using tools (such as forums or web sites) and also how individuals' constructions of meanings may influence their perceptions and interpretations of possible cues to misinformation and disinformation (as evidenced in contentious forum exchanges among players). This method required careful consideration of collection criteria, a method of identifying potentially relevant artifacts, an appropriate tool with which to collect, and an artifact format. The SWTOR community generates a huge amount of

content: tweets, blog posts, videos, podcasts, forum comments, artwork, fan fiction, etc. However, out of all content available, only a fraction was relevant to this study, and thus, appropriate for collection. Specifically, I looked for artifacts whose authors discussed or sought others' opinions on rumors or gossip, or whose authors sought verification of information or sought to craft an argument or make a claim (or even an accusation!). Often, these artifacts begin with the phrase, "I heard that ...". I collected 72 relevant artifacts from five different sources, as shown in Table 13 below:

Table 13: 72 relevant artifacts across a variety of online sources

Artifact Source	No. of Artifacts Collected	Examples
Swtor.com/community	34	Forum posts
Reddit.com/r/swtor	11	Forum posts
Twitter.com/hashtag/SWTOR	13	Tweets
3 rd -party Websites	10	Articles
Personal blogs	4	Blog posts

Perhaps unsurprisingly, the official forums proved the richest source of mis- and disinformation-related artifacts. I expected more artifacts from Twitter, since the Community Manager and other Bioware employees working on SWTOR use Twitter to communicate with the player community. The amount of chatter on the SWTOR subreddit was surprising because I was unaware that Reddit hosted such a large gaming community. I learned, however, that players use the subreddit to discuss information that they felt they couldn't discuss on the official forums, such as dataminced information, which might cause a player to get banned from the game.

Online artifacts were collected January 2, 2012 through September 24, 2016. A few artifacts were posted prior to my start date, but I collected them nonetheless, as they were still publicly available. Online artifact collection required frequent surveillance of the SWTOR forums and of related websites, etc. Surveillance included both quick check-ins and scans (e.g., 10-45 minutes) of these online sources in addition to longer, more in-depth sessions (e.g., 2-3 hours) as I would read a lengthy blog post or follow a Twitter stream or skim through the official forums, looking for a juicy thread to delve into. Artifacts were also found by leveraging the search functions of these online sources, as well as Google. Search terms included: misinformation, misinform*, disinformation, disinform*, “I heard that”, decepti*, lying, deceive, confus*, deliberately, purposely, rumor, and gossip. For Google, I might enter a phrase such as, SWTOR rumours, for example. Figure 15 illustrates search results within the SWTOR subreddit, which reflected a common experience across online sources.

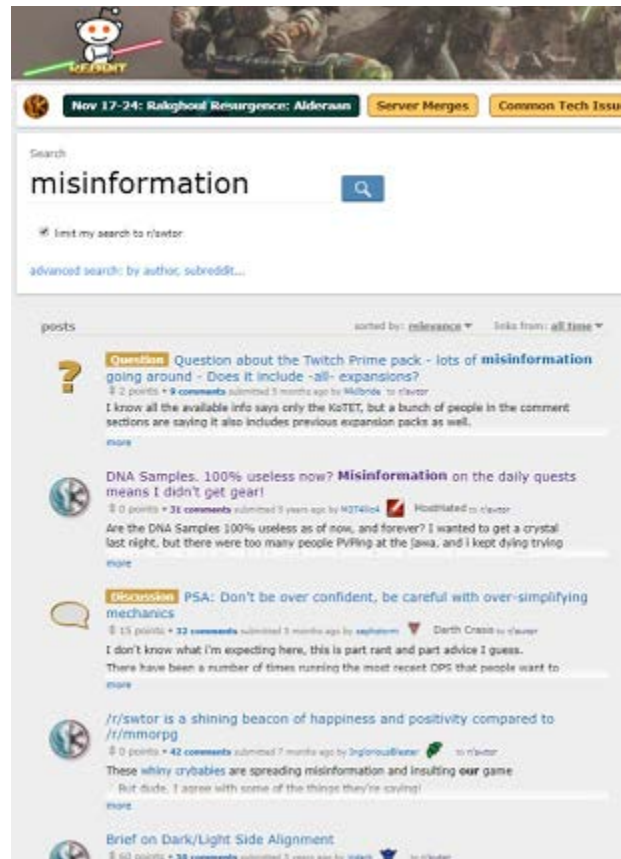


Figure 7: Online sources' search functions yielded many potential artifacts.

Online artifacts were collected using Evernote, a notetaking and organizing tool. I chose it for its ease of use, relative low cost, technical compatibility, and its robust capture, organize, and annotate features. I installed the Evernote extension for the Chrome web browser. I used this extension to capture a full page of the webpage I was viewing. To be clear, Evernote captured the entire webpage, not just what I could view in my browser window. That is, Evernote captured what I would have viewed if I had scrolled down to the bottom of the webpage. However, for multi-page artifacts, such as extended forum threads, only the first page was captured. When I clicked on the Evernote icon in my browser, a window would appear offering options for capturing (see Figs. 8 and 9).

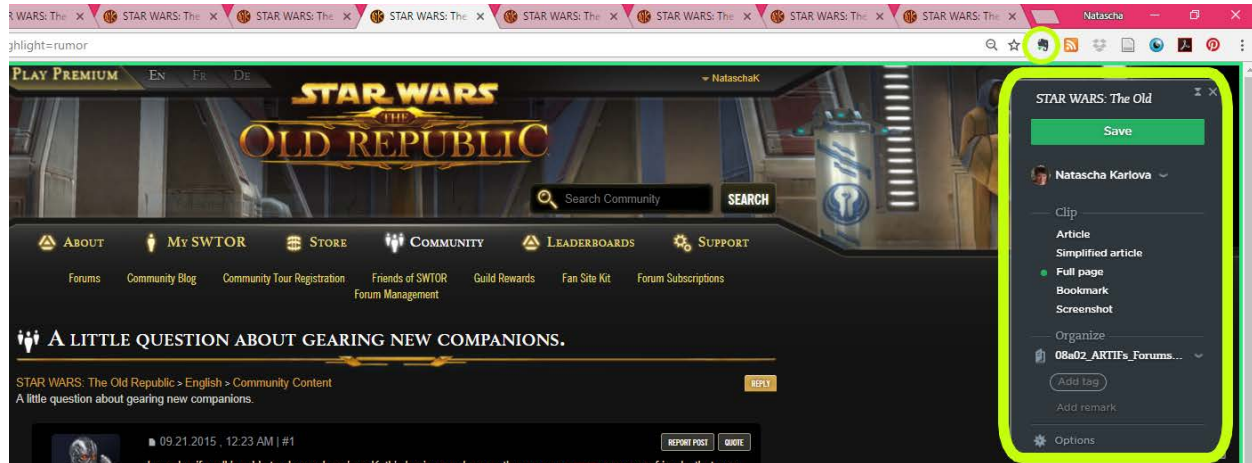


Figure 8: Evernote offered many options for capturing webpages.

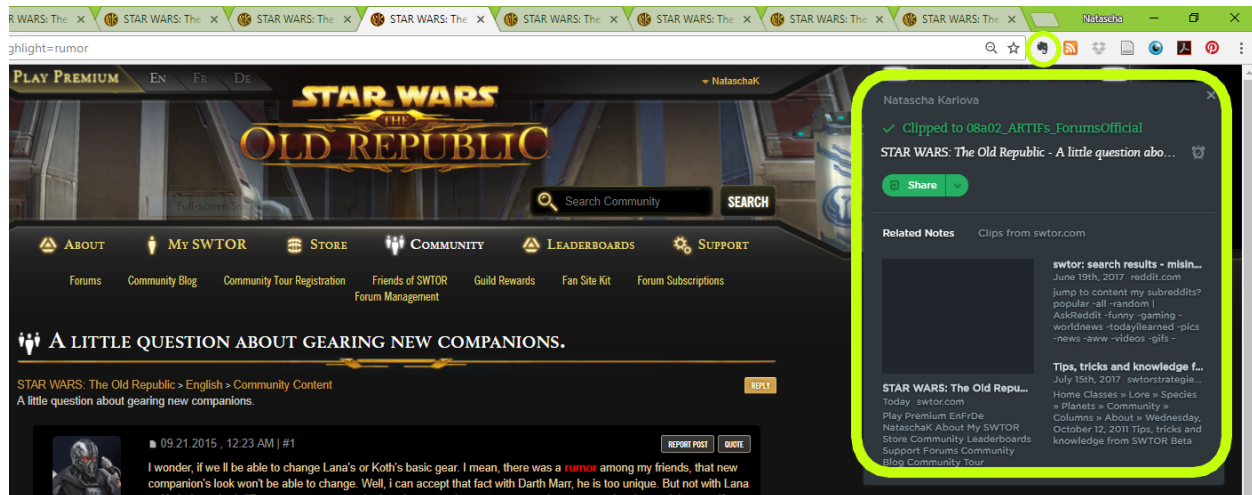


Figure 9: Evernote allowed me to organize captures into specific folders.

Then, Evernote would capture this web page as a 'Note', Evernote's proprietary format (i.e., non-transferable to a Word document or a photo-editing program). I used the full-featured desktop app²⁴ to organize and annotate these artifacts. Figure 18 is a

²⁴ Evernote is known as a cloud-based tool, but my research required additional functionality.

screenshot from within Evernote, and shows the detailed organizational structure I created to keep track of all the artifacts.

For this study, online artifacts consisted of web page captures, or 'Notes', Evernote's proprietary format. These captures came from SWTOR-related forums, blogs, guides, and tweets. Podcasts (while lively and entertaining) were excluded because I couldn't find any that were already transcribed. Harvesting and scraping of forums or tweets were rejected as ill-fitting with the exploratory nature of this research. Thus, web page captures were chosen due to their illustrative nature and ease of organization and annotation in Evernote. As part of the 'Note' format, Evernote also includes the URL.

Keeping the original URL was important for my research so that I could reference artifacts appropriately, but also so that I could easily return to that webpage again. For example, on multi-page artifacts, such as lengthy forum threads, I could review again the other pages of the thread. Essentially, each capture keeps its bookmark with it. For this dissertation document, however, I was frustrated that I couldn't transfer these captures into Word. But since each capture keeps its URL, I could easily revisit a webpage, and capture a screenshot in .png or .jpg format for use in this document.

Online artifact collection addressed both research questions. I could see how the player community at large developed places from the technological tools provided to them by SWTOR (e.g., official forums) and from those of their own creation (e.g., personal blogs). Observing this development process allowed me to understand how players'

constructions of meanings might influence both which possible cues to misinformation and disinformation are perceived and how such cues may be interpreted.

3.10 --

My experiences with the SWTOR community suggested that SWTOR players might perceive possible cues to misinformation and disinformation only after the fact, after an action has been taken by themselves or by their guild or by other individual players. Thus, observing SWTOR players in a live, synchronous setting and how they might influence each other's perceptions of possible cues to misinformation and disinformation created a unique opportunity otherwise unavailable to me (see 3.10.4 for additional justification). Through the trust and generosity of two of my interview participants, I was able to observe in-world two raid groups (each from a different guild) as they played the game. I was only observing these two raid groups; I was not participating during their live gameplay.

At the end of each interview, I asked each participant if it would be possible for me to observe their guild during a live gaming session, a possibility mentioned in the study's Recruitment Flyer and Participant Information Sheet. Of those interested participants, each said they would check with their guildies to gauge whether my presence would be acceptable. We would then discuss potential dates and times, and the technological requirements for me to observe in-world. As part of my follow-up 'Thank You' emails to interview participants, I would ask again if they remained interested and if their guild would allow me to observe them. Then, I would restate what we had discussed at the end of the interview regarding possible dates and times to confirm both interest and availability. The

interested participants would confirm with their guild and communicate to me their Guild's permission for me to observe, and verify with me the dates and times for the observation sessions. Usually, this confirmation process consisted of several emails between the participant and me, and could last a few hours to a few weeks. One participant expressed interest in being included in the observations, but his guild refused. Another participant also expressed interest and his guild agreed, but they had to cancel about 20 minutes after the scheduled start time because one of the key guild members couldn't join (we were not able to reschedule).

Eventually, two interview participants vouched for me to their individual guilds, we all agreed upon a date and time, and I was able to conduct one observation session with each participant's raid group from their guilds. In both cases, the guilds had dozens of members, and rarely, if ever, played simultaneously. The participants' raid groups that I observed represented a typical organizational structure: small enough to support camaraderie, large enough to achieve their goals. I did not explicitly request to observe a live gaming session requiring rejection or verification of possible cues to misinformation and disinformation; I'm not confident such a request could have been fulfilled. Rather, the activity I observed during observation sessions reflected the current goal my interview participants' guild group was working towards at that moment, e.g., practicing a strategy, defeating a boss, testing new gear, etc.

To facilitate the observation sessions, we connected via Mumble³⁰, a popular VOIP service specifically designed for simultaneous multi-player gaming, and simultaneously also via Twitch³¹, a live video streaming website especially designed for streaming gaming.

The Mumble service is voice-only, no video. SWTOR doesn't offer in-world voice chat, so players need to establish their own system. In both groups, designated guild members were responsible for hosting the server, and my interview participants emailed to me ahead of time the IP address, Port number, and passkey so that I could access their channel. As planned, just before the scheduled start time, I had a Skype connection open with my interview participants when I was trying to connect, so they were able to easily guide me when I got confused about how to connect or how to find the appropriate channel. Once on the correct channel, my interview participants introduced me to their group. I thanked everyone for allowing me to join them, explained what I was doing, confirmed their verbal consent, and asked if they had any questions for me. The only question both groups shared in common was around their privacy; specifically, they wanted to know if I would be recording and if I would use their screen names or their real names. So I explained that I wouldn't be recording and that I wouldn't use their screen names or their real names. I also reiterated my goal of just observing and taking notes and screenshots. I also confirmed their verbal consent to allow me to take screenshots.

³⁰ ("Mumble, the open source VoIP solution," n.d.)

³¹ ("Twitch," n.d.)

Sharing the Mumble channel with my participants emphasized to me the relational aspects of information and information use. Within both groups, players leveraged their own lingo of abbreviations, in-jokes, nicknames, references, and shared memories to demonstrate their previous shared play experiences. Their Mumble chat reinforced the possibility that cues to misinformation and disinformation may be socially-dependent. Not only might it be the case that different groups may rely on different types or sets of cues, but also that whether individuals use a cue may depend on how they perceive their role or responsibilities within a group. For example, individuals who consider themselves among a group's leaders may highlight or emphasize a cue to the group's other members, thus distinguishing themselves as information gatekeepers. Whereas individuals who wish, perhaps, to remain on the peripheral may not point out a cue because they know that someone else will do it.

Again, Mumble was only for live voice chat, so to observe the live video feed, I created a Twitch account, and 'followed' the designated guild member responsible for streaming, which sent me a notification when streaming began. Because the stream was live, I was able to see everything that the designated guild member was seeing; it was essentially the same as sitting next to him, viewing his point-of-view of the game on his computer monitor. In the case of the BAK guild, this meant that I wasn't able to view the game through the perspective of the original interview participant because he was not the member responsible for streaming in his group. In the case of the JAC guild, the original interview participant was the member responsible for streaming, and so his live webcam stream appeared in the upper left corner of his live computer monitor stream. In both

cases, I was able to view the live stream at full screen on my personal computer monitor and take multiple screenshots. Again, as I promised to my participants, I did not record the Mumble voice chat or the Twitch video stream to maintain their privacy.

Additionally, gathering informed consent for recording audio and video would have been almost impossible, since no one was confident about who would actually attend a session, until they appeared. Lastly, anonymizing video and multi-person voice chat would require outside assistance (because I don't have those skills), which, again, presents participant privacy problems.

3.10.1 *BAK Guild: Observation Session 1*

The first observation session occurred from 8:15pm to 9:45pm (PST) on June 7, 2014 with the guild, BAK. In this session, BAK's goal was to defeat Corruptor Zero, the fourth boss of the Dread Fortress Operation. The observation session started with me connecting via Mumble and Twitch (as described above), being introduced by the sponsoring interview participant, and confirming consent. Next, BAK began by chatting about last week's gaming session and about a few posts they had seen on the forums. During this chat, they prepared themselves for the task ahead: reviewing their (avatar's) gear, checking their (avatar's) inventory, etc. They entered an area in the game, and started playing: coordinating attacks on enemies, gathering in-game objects, etc.

As BAK progressed (i.e., continued to defeat increasingly numerous/difficult enemies and to clear areas of their objects), I noted that the game experience presented challenges to players' ability to obtain and understand information. For example, the game effects

caused players to lose visibility of teammates and enemies alike. In a strongly visual medium, this loss created a momentary pause in gameplay, and BAK players commented on the confusion caused (see Fig. 10). Because SWTOR occurs in a three-dimensional virtual space, players, enemies, and the visual effects of their actions may overlap slightly, and thus, create a partially obscured view (see Fig. 11) of visual information needed to play the game. That is, the game itself created scenarios in which players could be temporarily misinformed or disinforme.



Figure 10: A dearth of visual information caused a momentary pause in gameplay.



Figure 11: The physicality of co-location created a blocked view of the gameplay.

This naturalistic observation session with BAK also demonstrated challenges faced by players both in the gameworld and outside it (e.g., forums, blog posts, etc.). For example, a possible contributing factor to misinformation and/or disinformation may be the temporal aspect of information. Figure 12 shows a line of red text that alerts players to notice that a teammate has been targeted by an enemy (highlighted in yellow). But this text only appears for a few moments before it disappears; this ephemerality increases the complexity of the gameplay by requiring players to shift their attention and to remember that information without external aid. Another possible contributing factor to misinformation and/or disinformation may be information overload. Figure 13 shows the result of players' confusion around which buff³² to use. SWTOR presents many options

³² A 'buff' is a game action to heal or aid oneself or one's teammates.

(highlighted in yellow in Fig. 13), and, in a moment of intense focus on defeating the enemy by following the coordinated attack plan, these options created a moment of indecision players could ill afford when they needed to react quickly to an enemy's actions.



Figure 12: Ephemerality may contribute to misinformation and disinformation.



Figure 13: Option overload may contribute to misinformation and disinformation.

3.10.2 JAC Guild: Observation Session 2

The second naturalistic observation session occurred from 6:00pm to 7:30pm (PST) on June 17, 2014 with the guild, JAC. In this session, JAC's goal was to practice their gearing and attack strategies to eventually defeat Draxus, the second boss of the Dread Fortress operation. During this observation session, however, JAC only progressed as far as an Aberrant Subteroth before wiping³³. The observation session started with me connecting via Mumble and Twitch (as described above), being introduced by the sponsoring interview participant, and confirming consent with group members. Next, JAC began by confirming the availability of those who logged in for this session. They then reviewed

³³ Wiping means that all group members' avatars were killed – 'wiped out'.

their goals for the night. During this chat, they prepared themselves for the task ahead: reviewing their (avatar's) gear, checking their (avatar's) inventory (see Fig. 14), etc.



Figure 14: Group members check their avatar's inventory to prepare for gameplay.

JAC members welcomed a new member during this session, which caused the group to spend more time planning and setting up to integrate the new member. Figure 15 shows guild member administration screens used to see which members are available, what their avatar's role is, their avatar's progress in the game, their avatar's rank within the guild, and any notes, such as the name of the member's alts³⁴. After this administration, the new member sought confirmations (e.g., "Is this correct?"), and the current members

³⁴ An 'alt' is an alternate avatar players use to experience other facets of the game. Players may have multiple alts in the same guild or in many different guilds.

provided instructions (e.g., “We prefer this”). This dialogue is crucial to a good gameplay experience because the new member can learn about the specific norms of this specific raid group, which may be slightly different from other raid groups even within the same guild.



Figure 15: The administration of adding a new member causes delays to gameplay.

Because the new member felt comfortable playing in only a couple of roles, JAC members discussed how to reorganize their group's roles. They realized that a few other members would need to fulfill roles that they usually don't play, and this caused additional delays as the group waited for these other members to log out their main avatar and to log in again with their alt. Figure 16 (below) shows a screenshot from the JAC member responsible for streaming. He was reviewing his avatar's skilltree to determine whether

his character's mix of skills would be best-suited to meet the needs of the group's reorganization for that night.



Figure 16: The skilltree informs players about the status of their avatar's skills.

To facilitate their goal for the gaming session, JAC members discussed specific movements and actions, as well as named individuals to take positions in exact locations within the game area. The roles of members' avatars determined their location. For example, a Tank might stand towards the front of the group because it can absorb damage from the boss, whereas a Healer might stand towards the back so that it can continue to provide healing to other group members. They used the game area map (see Fig. 17) heavily during this discussion as a shared tool to communicate and confirm these

locations. JAC used the map to make sure everyone understood the plan and the details; they used the map to reduce the potential for misinformation and disinformation.

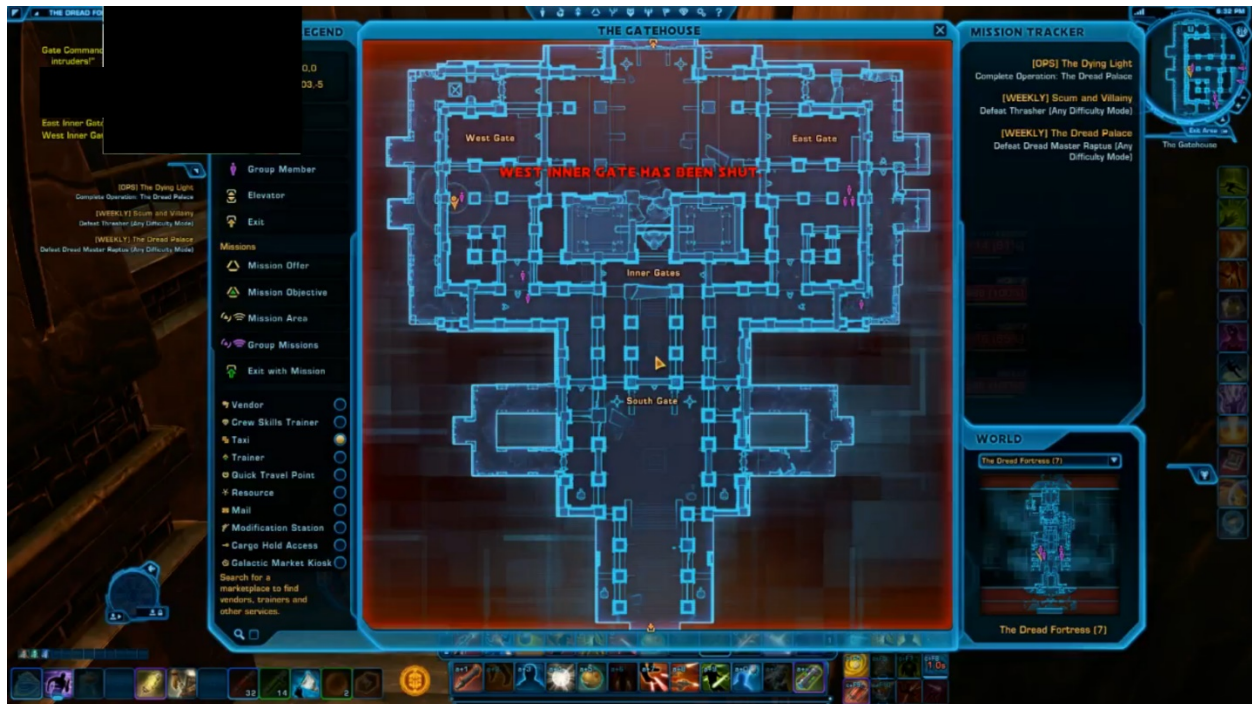


Figure 17. Game area map as shared tool to support specific positioning.

3.10.3 Summary of Naturalistic Observations

Overall, the two naturalistic observation sessions were quite different. The BAK guild (the first group I observed) experienced an action-packed gaming session, which demonstrated a handful of ways that the gameplay itself may contribute to misinformation and disinformation (e.g., ephemerality). The JAC guild experienced a gaming session which illustrated the complexity of their organizational infrastructure and its informational requirements. For both guilds, these sessions suggested that avoiding and reducing potential misinformation and disinformation may require deliberate, coordinated effort.

These naturalistic observation sessions primarily addressed the first research question of how players create places of their own using technological tools (e.g., the game environment). Because of the live gameplay setting, I was able to observe the dynamism of how guild members interact with the tools of the game to create a place of their own. For example, by using their own jargon to communicate locations, they depend on a shared agreement of how to describe the features of their place. In turn, this description may influence how or which possible cues to misinformation and disinformation may be perceived.

3.11 Interviews

While exploratory fieldwork and participant observation provided data based on my personal experiences, interviews allowed me to capture personal narratives of other individual players. These personal narratives yielded insights into how individuals perceive and construct meanings of possible cues to misinformation and disinformation, and how they interpret these possible cues. Interviews also imparted increased detail as to how specific limitations and affordances of tools can influence how places are created, and how these interactions may influence perceptions of possible cues to misinformation and disinformation. These accounts provided a broader spectrum of experiences than I could observe through participant observation (see 3.12.2 Participant Observation for additional justification).

In addition to meeting the sampling requirements as outlined in 3.11.2 Sampling, all interviewees had been playing SWTOR for at least one year. A few had extensive experience with other MMOs (such as World of Warcraft), while others had been playing console games for many years, but SWTOR was their MMO. All interviewees had experience with playing video games in some format; no one said that SWTOR was their first video game ever. Four interviewees were male, and three interviewees were female. They also came from a wide array of backgrounds: medical student, public school teacher, small business owner, ex-military. Lastly, all interviewees deeply enjoyed SWTOR and the relationships they had built within it. I conducted the interviews in the afternoons and evenings in my time zone (Pacific); a portion of participants lived in the Eastern time zone, so these were convenient times for them. Interviews were semi-structured, and ranged in duration from the shortest interview lasting 45 minutes to the longest lasting 90 minutes.

I opened the interviews by asking about basic, introductory information, such as the player's role and/or position within the guild, any associated duties or responsibilities, and how the player relates to her guild (see Appendix A for the Interview Protocol). My goal with this broad opening was to acclimate participants to talking to me while they know they're being recorded, and to thinking about their Guild's interactions with information. Additional questions asked about specific past incidents (e.g., "Tell me about a time when you heard or read some information you thought wasn't quite right," or "Tell me about a time when you heard a rumor,"), and included asking the player to describe the incident in detail as well as a description of their process of distinguishing, and the final outcome

(e.g., “How did you know it was a rumor?” or “How did you know the information wasn’t entirely accurate?”). I closed the interviews by asking participants if they had any questions about me or about the interview process. Lastly, I asked all participants if they would recommend me to their guildies to participant in my study, and if they would be comfortable with me observing their guild during a gaming session.

I interviewed guild members via Skype (audio only – no video). I had hoped to remain open to other modes (e.g., in-world voice chat, Skype, Windows Instant Messenger, etc.), depending on what the participants felt comfortable with, as suggested by prior research (e.g., Al-Saggaf & Williamson, 2004; Davis, Bolding, Hart, Sherr, & Elford, 2004). Due to concerns about variability, however, all interviews were conducted via Skype to maintain consistency. I recorded the interviews using a program called Pamela, a 3rd-party Skype add-on, and I transcribed all interviews myself into Word documents with the aid of a program called ExpressScribe from NCHSoftware.

Interviews confirmed data collected during exploratory fieldwork and participant observation. They provided detail and nuance to understanding how individuals’ constructions of meanings of possible cues to misinformation and disinformation may influence their interpretations of such cues. Interviewees’ descriptions of their interactions with their guild members also illuminated the extent to which and manner in which guild members may possibly influence individuals’ constructions of meanings. These interviews also revealed how players collaborate to use tools to create and shape their own places within the game.

3.11.1 *Recruitment*

As detailed and documented in 3.6.1 Position as Researcher and Figure 3, recruitment was challenging. Many players expressed distrust of researchers, largely due to concerns about their personal security and privacy. Online gaming communities have been, and continue to be, frequently studied (as evidenced by the substantial number of studies cited in this dissertation). Consequently, I was wary of recruiting too aggressively due to potential “survey fatigue” among online gamers (Bergstrom, 2016; Bonnie Nardi, 2012). That is, I wanted my recruitment procedures to demonstrate respect for players’ concerns.

I recruited participants through my personal Twitter account³⁶ using the hashtag, #SWTOR, through the official SWTOR Community forums³⁷, through non-official forums (e.g., reddit.com/r/swtor), through my personal website³⁸, and through my personal social networks (e.g., my friends, my personal Facebook page) (see Appendix B for Recruitment Materials and Appendix C for Participant Information Sheet). I attempted to post paper flyers locally at various game shops (Game Gurus, Ernie’s Games, Uncle’s Games, Games and Gizmos), but a few owners refused me permission and other owners simply never returned communication.

³⁶ <https://twitter.com/nataschakarlova>

³⁷ <http://www.swtor.com/community/>

³⁸ <https://nataschakarlova.com/>

3.11.2 *Sampling*

Most of this research depended heavily on the goodwill of strangers, particularly as I was unable to offer gifts or other compensation. Both the research questions and the methods determined the study inclusion criteria. As a result, a few criteria were rejected: for example, length of time playing SWTOR was not a requirement because new players might have experienced additional or increased challenges with misinformation and disinformation, whereas seasoned players would likely have a broad store of experiences to share. Ultimately, potential participants needed to meet these requirements:

- Currently active in the game
- Member of an active guild
- Playing on a North American server
- English-speaking

These criteria describe the minimal participation requirements. I needed active, current players because I wanted participants with fresh recollections of their recent experiences. Because interviews are self-reported data, I knew that participants' memories could be a difficulty. These players needed to be members of an active guild because I was interested in the possible influences of team members, and because I wanted to conduct naturalistic observation sessions with a guild. The requirement that participants play on a North American server acknowledged that cultures outside North America (i.e., cultures other than my own) may utilize radically different understandings of misinformation, disinformation, and their cues. Finally, I required participants to speak English because English is my native language, and all interviews were conducted in English.

The above criteria were verified via email discussion with potential participants. Upon learning their guild name and screenname, I searched the SWTOR forums, and searched in-game databases to determine whether both the player and the guild were active. Further, these criteria were confirmed via Skype at the start of the interview. Provided that potential participants met the above criteria, I interviewed any player willing to work with me. All participants initiated contact with me via email. Consequently, all participants were self-selecting, which may have led to specific types of players. For example, it could be that this study attracted participants particularly interested in information, or those who believed that they had superior ability to judge the accuracy or credibility of information, or perhaps they thought I could communicate their complaints about the game to Bioware. In keeping with the exploratory nature of this research, I was able to work with individuals from seven different guilds which supplied a broader range of experiences than if I had interviewed individuals all from the same guild. I had hoped for additional interviews, but recruitment proved more challenging than initially imagined.

3.12 Justification of Methods

The methods used in this research were carefully selected to investigate the research questions from multiple perspectives. Other methods were considered and rejected. Scraping massive data sets from Twitter or online forums would not have provided the contextual richness required to understand the interactions between places and tools queried by RQ1. Interviews with focus groups of players would not have provided the individual insights into the constructions of meanings central to RQ2. Online surveys would have been wholly inappropriate, as such a method would have failed to address

either research question to even a limited degree. Lastly, the methods detailed here were best suited to the demands of the exploratory nature of this research.

3.12.1 *Exploratory Fieldwork*

Exploratory fieldwork was the necessary first step to understanding both the research setting and its broader social context. This method enabled me to gauge the suitability of SWTOR for a research project of this nature. Although I had read about other researchers' investigations into MMOs (e.g., Chen, Ducheneaut, Nardi, Steinkuehler, Yee), I was able to confirm their descriptions of the informational and social complexity of this particular game genre through my own exploratory fieldwork. During this time, I began to reflect on the relationships between places and tools, as I witnessed individuals and guilds using tools to create their own places, both within the game and without. Exploratory fieldwork caused me to see that places and tools might influence how possible cues to misinformation and disinformation might be perceived. See 3.7 Exploratory Fieldwork for additional details.

3.12.2 *Participant Observation*

Participant observation allowed me to experience the research setting similarly to a participant's point of view, thus enriching my understandings both of the naturalistic observations and of the individual interviews. I was faced with many of the same problems of information overload and information management faced by participants. To advance in the game, I needed to rely on many of the same information sources as participants,

and thus, was forced to contend with misinformation, disinformation, and their possible cues. As a member of the SWTOR community, I also experienced how players interact with each other, including how they share information. Experiencing guild membership and how guild members may influence each other proved to be significant, as all of my participants were also current, active members in their guilds. The participant observation experience textured my understandings from exploratory fieldwork as to the connections between places and tools, and the relationships among guild members. Thus, I began to appreciate how all these could influence perceptions of possible cues to misinformation and disinformation. See 3.8 Participant Observation for further details.

3.12.3 *Online Artifact Collection*

Online artifact collection is not a common method in game studies, and is only rarely used in the deception literature. The sheer volume and variety of content produced by the SWTOR player community, however, could not be ignored. Online forums – as one example – serve as major sites of community interaction, as evidenced by the number and length of conversation threads. These forums allow players opportunities to gather, share, and debate information, but also a way to create a particular place in which they know what to expect and understand how to navigate the social elements of this information source. Online artifacts provided additional examples of ways that places, tools, and individuals' constructions of meanings interact and may influence perceptions of possible cues to misinformation and disinformation. See 3.9 Online Artifact Collection for more.

3.12.4 *Naturalistic Observation*

Naturalistic observation afforded me, primarily, an opportunity to gain insight into how guild members might potentially influence each other's constructions of meanings of possible cues. By leveraging the richness of live gameplay, I garnered additional confirmation of potential ways that guild members may influence each other, such as exchanging information, joking and teasing, and giving or accepting directions. Secondly, I was able to surmise how individuals within a guild might navigate relationships among places and tools, as additional sources of potential influence. Witnessing these intense gameplay situations allowed to me understand how guild members interact, coordinate attacks, and construct meanings, both cooperatively and independently. See 3.10 Naturalistic Observation for elaboration.

3.12.5 *Individual Interviews*

The individual interviews addressed the potential influence of relationships between places and tools on perceptions of possible cues as well as how individuals' constructions of meanings may influence their perceptions of possible cues . Asking individuals about their past experiences with information they suspected or believed to be misinformation or disinformation created a chance to discuss their perceptions of possible cues. Because of the subjective variability both in perception of and in interpretation of possible cues to misinformation and disinformation (see 2.7.1 Cues for fuller discussion), individual interviews provided the context and detail necessary to understand how one individual might perceive or interpret a possible cue significantly differently from another individual.

In the course of relating these past experiences, interviewees also described or commented upon their usage of tools to create places, and of how the relationships among places and tools influenced their perceptions of possible cues to misinformation and disinformation. See 3.11 Interviews for additional details.

3.13 Data Analysis

This study's theoretical frameworks (see 1.5 Theoretical Frameworks) and research questions (see 3.1 Review of Research Questions) guided the data analysis. At its core, this study is about possible cues to misinformation and disinformation (deception), and Interpersonal Deception Theory (IDT) illuminates definitions both of cues and of deception. The online game setting of this study contextualizes IDT in ways that foment questions about the mutually shaping influences of place creation, articulated by Information Grounds (IG), and of tool usage, elucidated by Activity Theory (AT), on possible cue perception.

This intersection of tools, places, and cues demands consideration of how individuals make meaning, as described by Symbolic Interactionism (SI), of such elements and their interactions. This study's research questions bind these theoretical frameworks into a novel investigation. The first research question examines how places, tools, and interactions therein may influence how and which possible cues to misinformation and disinformation may be perceived. The second research question expands this examination to include how perceptions of possible cues may be influenced

by individuals' constructions of meanings, by their interpretations of such cues, and by individuals' team members.

3.13.1 Code Creation Process

Guided by the above frameworks and research questions, I created the codes listed in Table 14. Please see Appendix D: Codebook for complete definitions of these codes as well as example quotes.

Table 14. First round of coding: 5 codes total

Code	Short Definition	No. of Applications
201_CueStrongPerception	Strongly perceived cues	56
202_CueWeakPerception	Weakly perceived cues	16
301_AT_Tools	Tools	124
302_IG_Places	Places	41
303_SI_Meanings	Meanings, interpretations	133

I coded the interview transcripts by applying these codes to features of critical incidents (see 3.5.3 Unit of Analysis: Features of Critical Incidents) described by individuals. This approach was risky because I might not have found data to which I could apply the codes. However, given the semi-structured nature of the interviews (see 3.11 Interviews and Appendix A: Interview Protocol) and the targeted (i.e., non-random) searching and scanning for online artifacts (see 3.9 Online Artifact Collection), it was an acceptable risk since I suspected the requisite data existed, based on my exploratory fieldwork and participant observation experiences.

After the first round of applying the codes (described in Table 14 and Appendix D: Codebook) to the interview transcripts, I realized that my understandings of the definitions and meanings had changed throughout the coding process. I grew concerned about code application consistency. To mitigate my concerns, upon completion of the first round of coding, I started at the beginning, and reviewed the codes and their applications across all transcripts, starting with the first interview. During this review, I noticed inconsistent applications, as well as codes that I hadn't used and other codes that seemed redundant. I restructured the codes by deleting some and collapsing others into top-level codes. I also tried to ensure consistent code application by comparing single instances of code applications.

Table 15. Second round of coding: 12 codes total

Code	Short Definition	No. of Applications
201_CueStrongPerception	Strongly perceived cues	56
201a_MISCueSP	... cues to misinformation	26
201b_DISCueSP	... cues to disinformation	30
202_CueWeakPerception	Weakly perceived cues	16
202a_MISCueWP	... cues to misinformation	6
202b_DISCueWP	... cues to disinformation	10
301_AT_Tools	Tools	124
301a_{ATxIG}	Excerpts coded both AT and IG	38
302_IG_Places	Places	41
302a_{IGxSI}	Excerpts coded both IG and SI	22
303_SI_Meanings	Meanings, interpretations	133
303a_{SIxAT}	Excerpts coded both SI and AT	76

I began the second round of coding by examining the excerpts coded as 201_CueStrongPerception and as 202_CueWeakPerception to ascertain which excerpts included participants' discussions or mentions of their perceptions of possible cues to misinformation and disinformation. These excerpts were coded as shown in Table 15. During this second round of coding, I also coded excerpts that I had previously coded with the theoretical frameworks codes to understand how these frameworks might interact (see Table 15).

Table 16. Third round of coding: 24 codes total

Code	Short Definition	No. of Applications
201_CueStrongPerception	Strongly perceived cues	56
201a_MISCueSP	... cues to misinformation	26
201a1_{301ax201a}	Coded AT, IG, and MISCueSP	8
201a2_{302ax201a}	Coded IG, SI, and MISCueSP	4
201a3_{303ax201a}	Coded SI, AT, and MISCueSP	9
201b_DISCueSP	... cues to disinformation	30
201b1_{301ax201b}	Coded AT, IG, and DISCueSP	4
201b2_{302ax201b}	Coded IG, SI, and DISCueSP	4
201b3_{303ax201b}	Coded SI, AT, and DISCueSP	15
202_CueWeakPerception	Weakly perceived cues	16
202a_MISCueWP	... cues to misinformation	6
202a1_{301ax202a}	Coded AT, IG, and MISCueWP	2
202a2_{302ax202a}	Coded IG, SI, and MISCueWP	2
202a3_{303ax202a}	Coded SI, AT, and MISCueWP	4
202b_DISCueWP	... cues to disinformation	10
202b1_{301ax202b}	Coded AT, IG, and DISCueWP	1
202b2_{302ax202b}	Coded IG, SI, and DISCueWP	1
202b3_{303ax202b}	Coded SI, AT, and DISCueWP	3
301_AT_Tools	Tools	124
301a_{ATxIG}	Excerpts coded both AT and IG	38
302_IG_Places	Places	41
302a_{IGxSI}	Excerpts coded both IG and SI	22
303_SI_Meanings	Meanings, interpretations	133
303a_{SIxAT}	Excerpts coded both SI and AT	76

The third round of coding surfaced connections among the foci of the research questions: deception, places, tools, meanings, and possible cues. Table 16 shows codes for excerpts in which participants discussed or mentioned interactions among, and potential influences from, the objects of the theoretical frameworks and possible cues to misinformation and disinformation, both weakly and strongly perceived. Not all of the code applications numbers add perfectly. 202a, for example, has 6 applications, but its sub-codes add to 8, likely because there are 2 excerpts that have been coded with 2 or 3 of the theory codes. 202b, for example, has 10 applications, but its sub-codes add to 5, likely because there are 5 other excerpts without the theory codes applied. See 4.5 Possible Cues to Misinformation and 4.6 Possible Cues to Disinformation for findings resulting from this coding process.

3.13.2 —

Interviews were coded using Dedoose, a qualitative data analysis tool. I chose Dedoose for its ease of use and low cost; I find other coding software difficult to use (e.g., Atlas.Ti). Additionally, its cloud-based platform meant that I needn't worry about my individual computer crashing. I downloaded an archive from Dedoose about once per week, and stored this in my personal Dropbox as an additional backup measure. After transcribing the interview recording (saved as a .mp3 file) into a Word document and anonymizing the transcript, I would then upload the document into my Project in Dedoose.

3.13.3 *Online Artifact Coding*

The online artifacts were coded after the interviews, using the same codebook. I used the Tags feature in Evernote to code the artifacts. That is, I created Tags with the same code scheme as the participant interviews, and then tagged the artifacts with the appropriate codes. Within Evernote, I used tags to recreate the same code scheme from the interviews, and applied these tags to artifacts.

Coding the multi-author artifacts (i.e., the forum and subreddit threads) was difficult. They presented significantly different challenges from coding the interview transcripts. The interviews featured only one voice, one set of experiences and opinions, similar to the single-author artifacts: the tweets, the 3rd-party websites, and the personal blogs. The threads in the official forums and in the subreddit, however, presented myriad views – often contradictory, combative, and/or comedic – spanning a broad range of experiences and opinions; some authors had quit playing the game entirely, yet still enjoyed commenting and other orthogonal participation in the community. Consequently, all codes, except those related to team activity⁴⁰, were applied with greater frequency than in the interview transcripts to reflect accurately the diversity of individual comments. To be clear, the conditions of application were the same across both interview transcripts and multi-author online artifacts. The meanings and definitions of the codes as applied to the artifacts were the same as when applied to the interview transcripts. Despite the difficulty, however, the multi-author artifacts presented a rich source of data. Figure 18,

⁴⁰ It was not possible to discern whether multiple members of the same guild were participating simultaneously within the same thread.

for example, highlights 17 pages of comments – in only one thread! This cacophony of voices augmented the richness of the interviews.

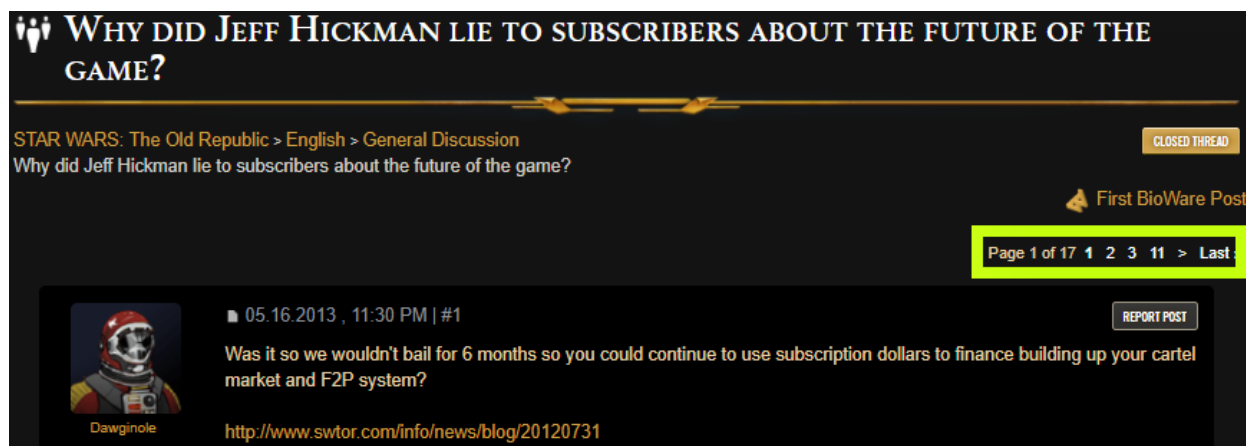


Figure 18: The yellow box on the right highlights the 17 pages of comments.

3.13.4 Code Verification

The robustness of the codes' applicability was tested using a consensus model with two main coders, E and L, and Coder A served as third judge. All coders worked independently, and were not informed of or given access to each other's work. I explained the codes by providing definitions and examples of sample excerpts. I then gave the coders printouts of excerpts I had previously coded. I selected those specific excerpts due to the difficulty I experienced when deciding how they should be coded. I explained that they should mark each excerpt with 'A' to indicate agreement with code application or with 'D' to indicate disagreement. I next asked the coders to indicate their confidence in their agreement or disagreement for each excerpt. I provided the following confidence scale:

-2 Very Uncertain	-1 Somewhat Uncertain	0 Neutral	1 Somewhat Certain	2 Very Certain
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Upon completion, the coders and I discussed the excerpts with which they had indicated disagreement with code application. I asked the coders why they disagreed, and they explained their reasoning. A common reason for disagreement with the code was that the excerpt did not include sufficient context for someone unfamiliar with the interview. Another common reason for disagreement was that the coders were unaware that possible cues could come from the game itself; they thought that possible cues could only come from the interviewee or other players. When Coder E and Coder L disagreed with each other about the applicability of a code to a specific interview transcript excerpt, Coder A's agreement or disagreement with the code application resolved the question of code applicability.

Both Coder E and Coder L had extensive experience in online gaming, and were familiar with the milieu of MMOs, although neither had played SWTOR. Coder A had limited experience with online gaming specifically, but has sufficient experience with other types of gaming (e.g., console, board) that may use similar mechanics and themes. None of the coders had academic or professional familiarity with misinformation, disinformation, or cues; that is, they had no subject matter expertise. The coders were from outside academia, and so none was familiar with interviews as research method or with coding interview transcripts as data analysis method; none had experience coding interview transcripts or code testing.

3.13.5 *Anonymization*

Interview participants and the places and people they mentioned were anonymized with pseudonyms. Such anonymization enabled participants to feel they could speak freely, as evidenced by the fact that a number of them explicitly requested anonymization as a prerequisite to participation. My pseudonym scheme was inspired by local geography: mountains, lakes, rivers, beaches. In this document and any future publication, these pseudonyms are referred to in their shortened form of two to four letters. I have tried to separate, as much as I can, my participants' real-life identities from the interview data.

Other data sources presented more complex anonymization scenarios. Screenshots from the naturalistic observation sessions were anonymized with black boxes over the names and titles of the avatars in the image. Because the point of observations was to gather data about potential influence of other guild members, individual identities were not relevant. Nonetheless, while I did obtain oral consent from my participants' teammates to capture their image, I also promised to anonymize their identities as well because they clearly felt that hanging out with their friends created an expectation of privacy, which was why my presence was such a privilege.

The online artifacts, however, required personal reflection in consultation with the ethics recommendations from the Association of Internet Researchers (AoIR) (Markham & Buchanan, 2012). Ultimately, I do not believe that the authors of the online artifacts had expectations of privacy. First, all artifacts are publicly available online. I did not have to sign in to access these artifacts; anyone can access them. Second, many of the authors

included referral links⁴¹ in their forum comment signatures or ads on their websites. Indeed, these links and ads lead me to believe that the authors may have hoped to benefit from being seen online. Thus, I did not anonymize or pseudonymize any of the authors of the online artifacts.

3.14 Recognizing Evidence

As described in 3.5 Scope of Analysis, evidence consisted of features of critical incidents as described by individuals. As outlined in 3.13 Data Analysis, evidence was recognized by the strength of its relevance to this study's theoretical frameworks and research questions. When interviewees or artifact authors described or mentioned something that they perceived to be a possible cue, I understood that as communicating that something was meaningful to them in a way that suggested possible misinformation or disinformation. That is, they perceived something, made meaning(s) of it, and then interpreted it as a possible cue to misinformation or disinformation. When interviewees or artifact authors described or mentioned places, place creation, tools, or tool usage, I interpreted these statements as communicating something about how their experiences of places and tools may influence their perceptions and interpretations of possible cues. That is, within the contexts created by places and tools, interviewees or artifact authors may vary in their perceptions and interpretations of possible cues.

⁴¹ A link which benefits the referrer through the receipt of a company-sponsored incentive.

3.14.1 *Study Limitations*

This study faced limitations consistent with qualitative studies. The work assumed that misinformation and disinformation existed within the research setting. My exploratory fieldwork and participant observation strongly suggested, however, that this assumption was accurate. The interviews depended significantly on self-report. The problems with self-reported data are well-understood (e.g., participants can lie, misremember, tell partial truths, etc.), but unavoidable. The interviewees were self-selected, so it is possible that their responses may have been biased towards their (unknown) motivation to volunteer. As an outsider to the groups I observed, they may have performed or interacted with each other differently than if I had not been there.

This study's small sample size reflects its exploratory nature. Seven interviews provided richly textured insights. Although I hoped for additional interviews, recruiting difficulties (see 3.6.1 Position as Researcher, Fig. 3, and 3.11.1 Recruitment) posed a challenge. To mitigate this limitation, I triangulated the interview data with observation sessions, online artifacts, and participant observation. Given the severity of this limitation, however, it may be inappropriate to generalize the findings beyond this study.

3.14.2 *Bias*

Although procedures were followed to ensure trustworthiness (see 3.16 Trustworthiness), the conception, execution, and analysis of this study were influenced by my epistemological stance and subjective experiences. Thus, this study cannot be free of

bias. For example, my choice to avoid voice chat with unknown players (see 3.7 Exploratory Fieldwork) may have reduced potential opportunities for recruitment. My interview questions reflected my view of deception as normative (i.e., non-deviant), in concurrence with other deception scholars, e.g., Burgoon, DePaulo, Rubin, Walczyk, Zhou. The naturalistic observation sessions were not video recorded because avatars, as expressions of my participants' identities, deserve privacy. There may be other biases of which I am unaware. These reflections on bias are included as part of the exploratory nature of this study.

3.15 Trustworthiness

Research from a quantitative approach concerns itself with rigor, a strict adherence to objectivity; rigor is the standard by which data quality is assessed. For this exploratory study, however, this notion of rigor was ill-suited. As discussed in 3.15 Limitations and 3.15.1 Bias, objectivity was both not possible and not desirable. This study derived its strengths from its investigation into and presentation of multiple, richly textured subjectivities, including my own. Thus, trustworthiness presented an appropriate standard by which to assess data quality from a qualitative perspective. Trustworthiness can be demonstrated by the authenticity of the work.

Such authenticity required reflexivity about my position and stance, inclusion of multiple perspectives, and fairness in depicting these perspectives and their context. My reflections on my role in this study can be found in 3.6.1 Position as Researcher and 3.15.1 Bias. The inclusion of multiple perspectives was evidenced by the breadth of

theoretical frameworks (see 1.5 Theoretical Frameworks), the literatures reviewed in Chapter 2, and the multiple types of data gathered and methods employed (see 3.7 Exploratory Fieldwork, 3.8 Participant Observation, 3.9 Online Artifact Collection, 3.10 Naturalistic Observation, and 3.11 Interviews). The fairness in depiction was informed by my exploratory fieldwork and participant observation; this time spent in the research setting illuminated its complex contexts. In addition to authenticity, Lincoln and Guba (1985) and Erlandson, et al. (1993a, 1993b) suggest four aspects of trustworthiness:

- Credibility
- Transferability
- Dependability
- Confirmability

3.15.1 *Credibility*

In qualitative, exploratory work such as this, credibility replaces internal validity as a means for measuring the work's 'truth value'. Credibility comes from the extent to which participants' understandings are adequately represented in my interpretations. Lincoln & Guba suggest multiple techniques to achieve credibility (e.g., prolonged engagement, triangulation, peer debriefing, member checking). In addition to prolonged engagement with the research setting over time (e.g., participant observation for just over one year), I also engaged deeply, approximately 14 hours per week with the research setting (see Table 11 for additional details). Multiple types of data sources and the use of multiple research methods created triangulation of the data, such that I could gather similar data (e.g., possible cues) from dissimilar sources (e.g., interviews and forum discussions). I engaged fellow doctoral students from within my program, from other programs on campus, and from other universities, both domestically and internationally (i.e., at

conferences). In these peer debriefings, I sought their opinions and ideas on data gathering and analysis. Such debriefings were particularly helpful in revising this document and in making sense of the online artifacts. During interviews and observation sessions, I checked my interpretations of the data with participants by restating their statements, asking them for clarification or confirmation, and allowing them to clarify or provide additional detail.

3.15.2 *Transferability*

External validity is the term used to discuss generalizability of quantitative studies. A more appropriate term for this research is transferability, the extent to which the findings may apply in another context. Towards this end, I have tried to supply sufficient detail in descriptions of methods used. The transferability of this study's findings, however, may be somewhat limited due to the small sample size and because the findings represent a moment in time within the research setting. These limitations, however, present rich opportunities for deeper research, whether in the same setting as this research, another online game, or even a different type of online environment (e.g., Facebook, Twitter, etc.).

3.15.3 *Dependability*

Reliability is the standard of consistency used by quantitative research. This study, however, is best-suited to the idea of dependability, the extent to which this study's findings could be similarly repeated. Lincoln & Guba's comments on dependability highlight using a data gathering method more than once, and using more than one method

of data gathering. In order to repeat the same method, I conducted seven individual interviews and two naturalistic observation sessions. I employed multiple additional methods (exploratory fieldwork, participant observation, online artifact collection) in order to triangulate the data. Replicability of this study depends on "...variabilities that can be ascribed to particular sources (error, reality shifts, better insights, etc.)," (Erlandson, et al., 1993a, p.34). That is, replicability requires assuming and accounting for changes in the research setting or among potential participants.

3.15.4 *Confirmability*

Because this research spotlights multiple subjectivities, objectivity cannot fit as a measure of quality. Rather, confirmability is a better measure, as a means to connect data with their sources. All data files have been carefully labeled and organized. For example, web captures have kept their original URL, so their source can be confirmed. The interview audio files, however, have been kept separately from the transcripts; both types of files have been anonymized with the respective pseudonyms. The pseudonym key file is password-protected. All data stored in Dedoose has been regularly downloaded as a backup.

3.16 Backup Plan

If the SWTOR game setting had failed to provide sufficient evidence, I would have changed my research setting to another MMO game, World of Warcraft, developed by Blizzard, Inc. It is strikingly similar to SWTOR in its mechanics, structure of teams,

complexity of social life, and active community. Other online environments, such as Twitter, Tumblr, or Facebook, were insufficient due to reasons explained in 1.4.5 Games, 1.4.6 Massively Multiplayer Online Games (MMOs), and 3.4.2 Justification of Setting.

3.17 Summary of Methods

Multiple methods were used to conduct this exploratory study of how places, tools, and individuals' constructions of meanings may influence their perceptions of possible cues to misinformation and disinformation. Exploratory fieldwork was an initial first step to gauge appropriateness of the SWTOR setting by witnessing how players used tools to create places and how players created meanings. Participant observation, both on my own and with my guild, confirmed suitability for study, and provided experiences similar to those of participants: creating avatars, playing the game, belonging to my guild, etc. Collecting 72 relevant online artifacts, such as forum posts, blog posts, tweets, etc., was a way to gather evidence from the wider player community of how players create places by using tools and how their constructions of meanings may influence their perceptions of possible cues. Both naturalistic observation sessions demonstrated how individuals' constructions of meanings may be influenced by their guild members, and how players create their own specific place within the game environment. The seven individual interviews illuminated the processes by which players transform tools into places, how individuals construct meanings and interpretations of possible cues, and how those constructions may influence their perceptions of possible cues to misinformation and disinformation.

Interviews and online artifacts were coded according to the same codebook. Codes were tested via a consensus method with two coders and one tie-breaker. The prominent limitation of this study is its small sample size of seven interviews and two observation sessions. This limitation, however, creates a rich platform from which to conduct additional research; although the transferability of the findings is likely restricted to the research setting of this study. All data have been thoroughly organized for ease of confirmability.

Chapter 4. Findings

This chapter presents the results of the data gathering and analysis methods detailed in Chapter 3: possible cues to misinformation and disinformation. The specific pieces of evidence (e.g., forum posts, interview excerpts, observation session notes) presented in this chapter were identified via the coding analysis described earlier (see 3.13 Data Analysis), and chosen for their illustrative or demonstrative nature. For example, the interview excerpts presented here were selected from other, similarly coded excerpts because these excerpts in this chapter provided the richest insights into how concepts such as places, tools, and meanings might influence perceptions of possible cues.

This work is titled, “Possible Cues to Misinformation and Disinformation in Online Games”, because misinformation, disinformation, and their possible cues are the primary focus. Thus, this chapter is organized accordingly. After brief reviews of the research questions, the theoretical frameworks, and the concept of cues, and the methods, possible cues to misinformation are presented first, followed by possible cues to disinformation. Each section on possible cues is further divided into subsections on strongly perceived possible cues and weakly perceived possible cues. Lastly, findings are summarized.

4.1 Review of Research Questions

- 1) How might places and tools, as informed by Information Grounds and Activity Theory, influence the perception of possible cues, as informed by Interpersonal Deception Theory, to misinformation and disinformation in an online gaming environment?

- 2) How might the constructions of meanings, as informed by Symbolic Interactionism, for individuals situated within a distributed, networked team influence their perceptions of possible cues, as informed by Interpersonal Deception Theory, to misinformation and disinformation in an online gaming environment?

The first question seeks to understand how places and tools, based on Information Grounds and Activity Theory, might influence how and which possible cues to misinformation and disinformation might be perceived, based on Interpersonal Deception Theory. Players create places by gathering there and using these places for their own purposes. In an online game setting, however, players' creation and usage may be affected by the infrastructural and design limitations and affordances of the technological tools that undergird players' places. As players may push limitations and leverage affordances to create places, they may also shape both the types of cues that may be perceived as well as the extent to which or the manner in which such cues may be perceived.

The second research question continues and expands the query posed by the first research question to include the potential influences of individuals' constructions of meanings, based on Symbolic Interactionism, and of their team members on their perceptions of possible cues, based on Interpersonal Deception Theory. As individuals

navigate the interactions between places and tools, they simultaneously construct meanings and interpretations of possible cues they perceive. Importantly, not all individuals will perceive the same cues or interpret them similarly. Further, individuals may attach different interpretations to the same perceived cue. In this study, the research participants belonged to teams; thus, they may be subject to potential influence from their team members, particularly in terms of cue perception and interpretation.

4.2 Review of Theoretical Frameworks

The theoretical frameworks reviewed in 1.5 Theoretical Frameworks include: Interpersonal Deception Theory (IDT), Information Grounds (IG), Activity Theory (AT), and Symbolic Interactionism (SI). Each framework guided the analysis of the data (see 3.13 Data Analysis); consequently, the findings are viewed through these lenses. IDT posits that deception (i.e., disinformation) is a dynamic, strategic communication strategy to mislead others, and this understanding is reflected in the coding and definition of possible cues to disinformation (see 4.5 Possible Cues to Disinformation). IG describes how people create places, and AT describes how members of a community use tools towards community goals. In this study, these concepts revealed themselves in players' accounts of how they leveraged technological tools to create and use places. SI asserts that individuals construct meanings of events, objects, and experiences to help them navigate the world. Players' descriptions of their meanings and interpretations of possible cues and their perceptions richly illustrated this assertion.

4.3 Review of Methods

I triangulated this study's data using multiple methods from multiple data sources. Exploratory fieldwork and participant observation provided immersion in the culture and community of SWTOR, and allowed me to experience many similar struggles with possible cues to misinformation and disinformation as the study participants. My experiences included observing how players create places through pushing the limitations and expanding the affordances of tools they created, such as personal blogs, and of tools provided them by Bioware, such as servers.

Online artifacts presented numerous voices from the player community as I collected forum posts, tweets, online articles, and blog posts (see Table 13 for details). Two naturalistic observation sessions in live gameplay settings with two different guilds, BAK and JAC, illustrated how players create places using tools in order to play the game. Individual interviews with seven participants provided the richest source of data. These semi-structured interviews asked participants about their prior experiences with misinformation and disinformation in the research setting. Interviewees also described how they constructed meanings around possible cues.

Interview data and online artifacts were analyzed with codes. Three rounds of coding uncovered 24 strongly and weakly perceived possible cues to misinformation and disinformation (see Table 16 for complete list). The interview transcript excerpts and online artifacts in 4.5 Possible Cues to Misinformation and 4.6 Possible Cues to Disinformation were identified through the applications of codes. The robustness of code

applicability was tested using a consensus method with two independent coders, both with extensive experience in online gaming. Trustworthiness was established with prolonged engagement, triangulation, peer debriefings, and member checks (see 3.16 Trustworthiness for details).

4.4 Review of Cues

Possible cues to misinformation and disinformation constituted the findings. Cues are perceptible, unintentional hints that deceivers accidentally “leak” (Ekman & Friesen, 1969). Interpersonal Deception Theory described cues as “nonstrategic” interruptions in normal communication patterns (see 1.5.1 Interpersonal Deception Theory). Both deceivers and misinformers might not be aware they are providing cues. Receivers might not perceive cues, might disregard cues they do perceive, or might interpret cues incorrectly or inaccurately. Such variation in receivers’ perceptions of possible cues is evidenced in the findings of this study. Signals, indicators, or other terms are poor choices because these terms imply deliberate communicative intent. Please see 2.7.1 Cues for additional elaboration.

4.4.1 *Cue Perception*

Cues depend on perception because they are unintentional. If one individual perceives a cue, then that cue exists for her. If another individual does not perceive a cue, it does not exist for him. Cues cannot exist independently; they must be perceived to exist. Not all perception is the same, however. Cue perception could be conceptualized as a spectrum

(see Fig. 19). Towards one end, cues may be weakly perceived. Towards the other end, cues may be strongly perceived. Again, if a cue is not perceived, then it cannot appear on the spectrum. The limitations of language complicate one's description and communication of one's perceptions to another person. Thus, the strength or weakness of perceptions was indicated by participants with phrases such as, "I knew" or "I wasn't sure", for example. That is, the strength or weakness of perception was communicated with expressive language in degrees of certainty (e.g., "I knew" indicating certainty) or uncertainty (e.g., "I wasn't sure" indicating uncertainty). The strength or weakness of cue perceptions may vary greatly among individuals due to differences in constructions of meanings.



Figure 19. Spectrum of Cue Perception

As reviewed earlier (see 2.4 Misinformation and 2.5 Disinformation), misinformation is mistaken information and disinformation is deceptive information. Therefore, a cue to misinformation is a perceived cue interpreted by individuals to mean that they believe they have experienced mistaken information. A cue to disinformation is a perceived cue interpreted by individuals to mean that they believe that have experienced deceptive information. Thus, in the findings below, a strongly perceived cue to misinformation, for example, means that participants have indicated a high degree of certainty in perceiving that cue to mean misinformation. A weakly perceived cue to

disinformation, for example, means that participants have indicated a low degree of certainty in perceiving that cue to mean disinformation.

4.5 _____

Possible cues to misinformation are those cues that participants perceived and then interpreted to mean that they believe they experienced mistaken information. As elaborated elsewhere (see 4.4.1 Cue Perception), possible cues to misinformation were considered strongly or weakly perceived when participants expressed high or low degrees of certainty, respectively, about the existence of the cues and about their interpretation of the cues to mean misinformation. Because this study ties together Activity Theory, Information Grounds, and Symbolic Interactionism (see 4.2 Review of Theoretical Frameworks), the findings are reported through the lenses of tools, places, and constructions of meanings. Example sources of misinformation may include other guild members, in-game elements, and third-party websites. Table 17 lists these four possible cues to misinformation, strongly perceived and weakly perceived by participants.

In this section, Other Players' Lack of Knowledge, Timing, and Technological Artifacts were strongly perceived by participants, and Personal Disagreement was weakly perceived. Other Players' Lack of Knowledge meant when participants viewed other players as being less knowledgeable than themselves. Timing described when participants thought that the temporal element of something suggested mistaken information. Technological Artifacts implicated the residue of our interactions with digital

technology. Personal Disagreement meant that participants held or advocated alternate opinions than other players, including their own guildmates.

Table 17: Possible Cues to Misinformation in an Online Gaming Environment

Strongly Perceived Cues	Weakly Perceived Cues
Other Players' Lack of Knowledge Timing Technological Artifacts (N)	Personal Disagreement

(N) indicates novel finding; see Table 19 for summary of findings.

4.5.1 *Strongly Perceived Cues to Misinformation*

Three possible cues were strongly perceived by participants and interpreted to mean misinformation: Other Players' Lack of Knowledge, Timing, and Technological Artifacts. Again, possible cues to misinformation were considered strongly perceived because participants indicated high degrees of certainty both about the cues meaning mistaken information and about the existence of these cues. See 4.4.1 Cue Perception for elaboration.

4.5.1.1 Other Players' Lack of Knowledge

Personal knowledge is the knowledge gained from personal experience; those intermeshed assemblages of facts and experiences that cement understandings and interpretations of reality. Every participant prioritized their own 'first-hand' or eyewitness experiences over other players' accounts of events. Thus, participants' personal understandings of their experiences provided them with both broad and deep personal factual knowledge, based not only on their familiarity with basic game facts and SWTOR

community culture, but also of the outcomes and consequences of the actions and choices of their guilds and of their own.

As a result, participants described strongly perceiving a lack of knowledge in other players as a possible cue to misinformation. Participants used their personal factual knowledge as a remedy to identify and correct misinformation. For example, LEW, a former military scientist and a current guild leader, recalled an incident in which a novice player, unknown to her, asked her, via in-game chat messaging, to clarify information provided by a third unknown player:

I can look at what they're suggesting and see, 'well, I think they meant this particular skill to be more a PvP situation and not a PvE, so you probably don't want to take that, even though this guy says to take that. (10451-10720)⁴³

Here, LEW's personal knowledge both of skill trees and of gameplay situations (i.e., PvP means Player versus Player and PvE means Player versus Environment) enabled her to perceive that the third player's inappropriate recommendation meant misinformation because it lacked the requisite complexity to demonstrate sufficient truthfulness, as suggested by Zhou (2004). Skill trees help players advance their characters' skills and abilities (see Fig. 20) by displaying potential paths to gain a particular skill and to progress towards the achievement of that skill. The problem of choice, however, requires players to understand their choices and the consequences of those choices (e.g., choosing to pursue one skill may prevent the pursuit of another skill). Further, certain skills may be best suited for success in certain gameplay environments (e.g., PvP, PvE), but the

⁴³ These numbers indicate the character range (not line numbers) for the excerpt from which this quote was taken.

difficulty of discernment motivated the novice player to ask LEW for advice. The complexities and interconnections of choices and their consequences require players to review their previous choices frequently, to avoid misinforming themselves, as I observed with the JAC guild (see 3.10.2 JAC guild: Session 2 and Fig. 16). LEW's account illustrates how even novice players use tools (e.g., skill trees) to support the creation of places (e.g., PvP or PvE); that is, by using tools to prepare for creating a place. LEW's knowledge of tools and places influenced how she perceived the third player's lack of knowledge as a possible cue to mistaken information.



Figure 20. Skill trees' complexities may influence perception of cues to misinformation.

Most participants referred to or mentioned a website called Noxxic.com; all of whom brutally derided this website for providing unwise, inappropriate advice. Noxxic.com is a game strategy guide website created by SWTOR players. The suggestion from Noxxic.com to add Alacrity to a Tank's gear sparked CHE, a public school administrator and guild leader, to perceive misinformation:

You're setting your team up for failure if you're a tank and you're putting alacrity in your gear. That's just like a fundamental mistake. It's just misinformation. So from my personal experience from others' personal experiences, there's just no practical reason to do that. (29032-31222)

In this excerpt, CHE perceived the suggestion to add Alacrity as a possible cue to misinformation. CHE's own experiences and his knowledge of other players' experiences reinforced his perception. The lack of knowledge demonstrated by this Alacrity suggestion was meaningful to CHE because, as a guild leader, he could foresee potential consequences, not just for an individual player, but for an entire team. In this way, CHE's leadership experiences shaped both his ability to perceive this Alacrity suggestion as a possible cue and his interpretation of this cue to mean misinformation.

SKY, a medical student and a healer in her guild, told me about how her guild used their collective knowledge of Noxxic.com to perceive possible cues to misinformation in statements from other players outside their guild; that is, they recognized when other players were parroting Noxxic.com's bad advice. SKY's guild also used Noxxic.com as a source of shared humor: "...we particularly as a guild like to joke about that website ... we'll make fun of that website ..." (5901-6531) . This quote illustrates how SKY's guild's joint perception of Noxxic.com's lack of knowledgeable advice as a possible cue to misinformation has created a meaningful connection among guild members. Both CHE's

and SKY's experiences illustrate how individuals' constructions of meanings of possible cues may be influenced by team members.

Rather than adopting noxxic.com's external influence, CHE and SKY responded by rejecting it. That is, rather than accepting the inferior content and advice on noxxic.com, CHE and SKY perceived that website and references to it as possible cues to misinformation. Their perception stems, in part, from their own determination of themselves as knowledgeable players, and their rejection of noxxic.com reinforces their self-determination. Thus, noxxic.com and their disregard for it have become meaningful symbols of their knowledge of the game and of their status as players and as community members.

Across LEW, CHE, and SKY, their dense, textured knowledge enabled them to perceive other players' lack of knowledge as a possible cue, but the participants' individual experiences led them to interpret this cue to mean misinformation. Less knowledgeable players might not have perceived this cue (as in LEW's example of the novice player), or perceived it only weakly (i.e., lower degrees of certainty in perception).

4.5.1.2 Timing

The temporal context of information – its timing – may inform users about its accuracy, relevancy, or other facets. If the timing of information fails to meet users' expectations, then they may perceive cues to misinformation. CHE reflected on the speed of information: "...the trade-off for getting that information out so fast is that sometimes it's

not accurate.” (12094-13891). CHE strongly perceived quickly released information as a possible cue because only “sometimes” is such information accurate, which suggests CHE may have had prior experiences with quickly released inaccurate information. CHE interpreted quickly released information to mean misinformation because he was aware that such information may not have been verified or corrected.

SNO, a small business owner and guild leader, recollected an incident in which he was researching the order in which to upgrade his character’s gear. He found that only a few websites published this information, and that the limited information he could find was a mix of certainly or possibly outdated information with certainly or possibly current information. He described his process:

...when they were publishing it, I was nervous that you were so outdated two years ago they said do it this way, and I'm like, ‘well that was two years ago, is it still the best answer?’ And I really had to compare what was being stated to my understanding of it now
...(26572-27191)

The contrasting, conflicting information presented to SNO caused him to engage in careful juxtaposition with his own extant knowledge to develop a sufficiently comprehensive answer to his query. SNO told me that he wasn’t sure if the gear upgrade process had changed much; consequently, because a portion of the information SNO found was outdated, he doubted whether some, all, or none of the information was correct. SNO perceived these conflicting temporalities as a possible cue, and he interpreted his doubts about the information’s accuracy to mean misinformation. For SNO, the meaning of this possible cue caused him to be cautious in his consideration of the information. SNO’s efforts at deliberate comparison enabled him to perceive timing as a possible cue to misinformation from the websites he visited.

The BAK guild, during their action-packed gameplay (see 3.10.1 BAK guild: Observation Session 1), faced similar struggles with the timing of possible cues to misinformation. When a teammate had been targeted by an enemy, a small warning message was displayed onscreen for only a few seconds (see Fig. 9). This abbreviated time span caused misinformation among some team members. The team members who perceived the warning message during its short time span had two immediate tasks to complete. They first had to inform those team members who were unaware that their teammate had been targeted because they had not perceived the warning message as to the current status of the targeted teammate. Then, these perceptive team members had to scramble to rescue the targeted teammate. In this incident, some members of the BAK guild perceived the short timing of the warning message as a possible cue, and they interpreted their realization that not all members of the team had perceived the cue to mean misinformation among those non-perceptive members. This example illustrates how team members may influence the perceptions and meanings of possible cues to misinformation.

4.5.1.3 Technological Artifacts (Novel Finding)

Technological artifacts exist on the fringes of users' interactions with technology and may be disregarded or ignored. This liminal existence of technological artifacts may explain their previously unreported status as possible cues to misinformation and their novelty in deception detection research. Such artifacts may include error messages, notifications, and icons; in this study, technological artifacts consisted of technical errors and patch notes. As consequences of the extraordinary technological complexities of MMOs,

players may experience technical errors during gameplay. SNO strongly perceived one such error: “The one where the boss rages but still doesn't kill you was just recently fixed, and people were doing 16-man content with like three people, and that should totally not be possible...” (30221-31391). SNO perceived the boss’s failure to kill players’ avatars, a technical error, as a possible cue to misinformation from Bioware. SNO interpreted this failure to mean that the game character was not functioning as it should; there was a mistake in its execution. It is important to note, however, the distinction between the tool (i.e., the boss) and the possible cue (i.e., the technical error). In this incident, the tool shaped the type of cue available for perception, but SNO’s experience enabled him to perceive the technical error as a possible cue and to interpret it to mean misinformation from Bioware.

The technical error described above by SNO may be typical: something doesn’t work correctly; a mistake was made. LEW’s account offered another type of technical error when she explained the concept of “cheese” to me: “...it means exploit something that makes a mechanic trivial. Like, where you’d almost have to -- can pretty much ignore it.” (27460-28196). LEW described “cheese” as a technical error in which everything was working correctly (i.e., according to plan), but players were able to circumvent consequences of their actions. LEW’s personal experience illustrated the concept well: “Finding a different location to tank a boss, for example, where one of his damaging moves doesn’t touch you.” (27460-28196). Because LEW could evade the boss’s damage, she perceived this technical error as a possible cue to misinformation from Bioware. She interpreted this error to mean that Bioware had a flaw somewhere in their

design or execution of this boss character. This example also demonstrates how players leverage the affordances of tools to create their own understandings of places. Knowing where to position their avatars so that they cannot be damaged by the boss required players to develop a sense of place, both for themselves individually and for their guildies with whom they were playing.

**Question** Lag or Bug? Blood Hunt Solo First Boss One Shot self.svtor

Submitted 3 years ago by itsmymillertime

I attempted to solo the Blood Hunt tactical with the GSI droid. Anyways the first boss has a red aoe / cone that I run away from but at the last second the boss either jumps to me or turns towards me and kills me for my full health.

I understand this game has lag issues no matter where you are in the game due to the server being populated, but I wanted to make sure I am doing the boss fight right so I can avoid wiping.

Also, I was not clicking on the things around the area.

edit: made this post spoiler free. hope its not too vague.

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7 comments

id by: best?

[\[-\]](#) [skyeagle55](#)  Founder **2 points** 3 years ago


I cant even get in there solo mode, so it wont give me the GSI droid =(.

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[\[-\]](#) [dicey7](#)  MustardPlug | Mercenary | Shadowlands | US-PvE **1 point** 3 years ago

I've run into the same issue. Is there a way to get the GSI droid back? I don't have the option to summon him once I enter the FP.

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[\[-\]](#) [vali1005](#)  Harbinger **1 point** 3 years ago

If your GSI droid dies/disappears, then, yes, next to the quest title you should a "lighted" probe icon that, upon being clicked on, would re-summon your GSO droid (this probe icon is "shadowed" while your GSI droid is alive)

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[\[-\]](#) [dualplains](#)  **1 point** 3 years ago

I'm in the same boat on this, and while I'd noticed the icon in previous solo flashpoints, it isn't there in this one.

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[\[-\]](#) [vali1005](#)  Harbinger **1 point** 3 years ago

I may be wrong, but I think you can do Blood Hunt in Solo Mode only when it's part of your planetary quest chain (so, only once).

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[\[-\]](#) [WordsInDm](#) **1 point** 3 years ago

Right click on your portrait and reset the phases.

[permalink](#) [embed](#) [save](#) [parent](#) [give gold](#)

[\[-\]](#) [xSighx](#) **2 points** 3 years ago

I know the boss you're talking about but I've never had an issue with it (solo or group) so it may actually be lag.

Figure 21. Technological artifacts may be perceived as possible cues to misinfo.

Figure 21 shows a screenshot from the SWTOR sub-Reddit in which itsmymillertime⁴⁴ described his gameplay experience, and expressed his suspicions that there may be a technical error, but is uncertain about whether the error may be due to a software bug or due to server lag. His lack of success causes him to perceive a technical error as a possible cue, and interpret this cue to mean misinformation from Bioware. This artifact demonstrated how players share information to help each other gauge whether a technical error qualifies as a bug. Based on the responses, these players seem to conclude that, yes, this error is a bug because many of them have experienced it and because it continues to reoccur. These players created a space in which they built consensus around the type of possible cue, and then co-constructed meanings of this cue.

Bioware responds to technical errors through software patches. These patches are annotated in a document called 'patch notes' (see Fig. 22), which is a list of fixes, updates, and changes. Many players read patch notes thoroughly because these patches can have significant effects on their character(s) or on gameplay. WEN, a client coordinator and a damage dealer in her guild, discussed her position on patch notes with me:

So when you look at patch notes and things like that there's a lot of speculation on how that will change this thing or that thing. And I see some discussion of it in chat. I just ... I don't really pay attention to it. I don't engage in speculation like that. To me, it's not entertaining. (13199-13487)

For WEN, when players mentioned or referred to patch notes in discussions, she perceived that reference as a possible cue to misinformation from those players. That is,

⁴⁴ This is the player's screen name, as shown in Fig. 21. See 3.13.5 for anonymization protocol.

she believed those players to be misinformed and to be disseminating misinformation in their discussions. Although the content of the patch notes may be accurate because patch notes come from developers at Bioware, WEN's experience in the community suggests to her that players speculate too much about the consequences and implications of patch notes, and, in this way, patch notes have lost their value as a source of truthful information.

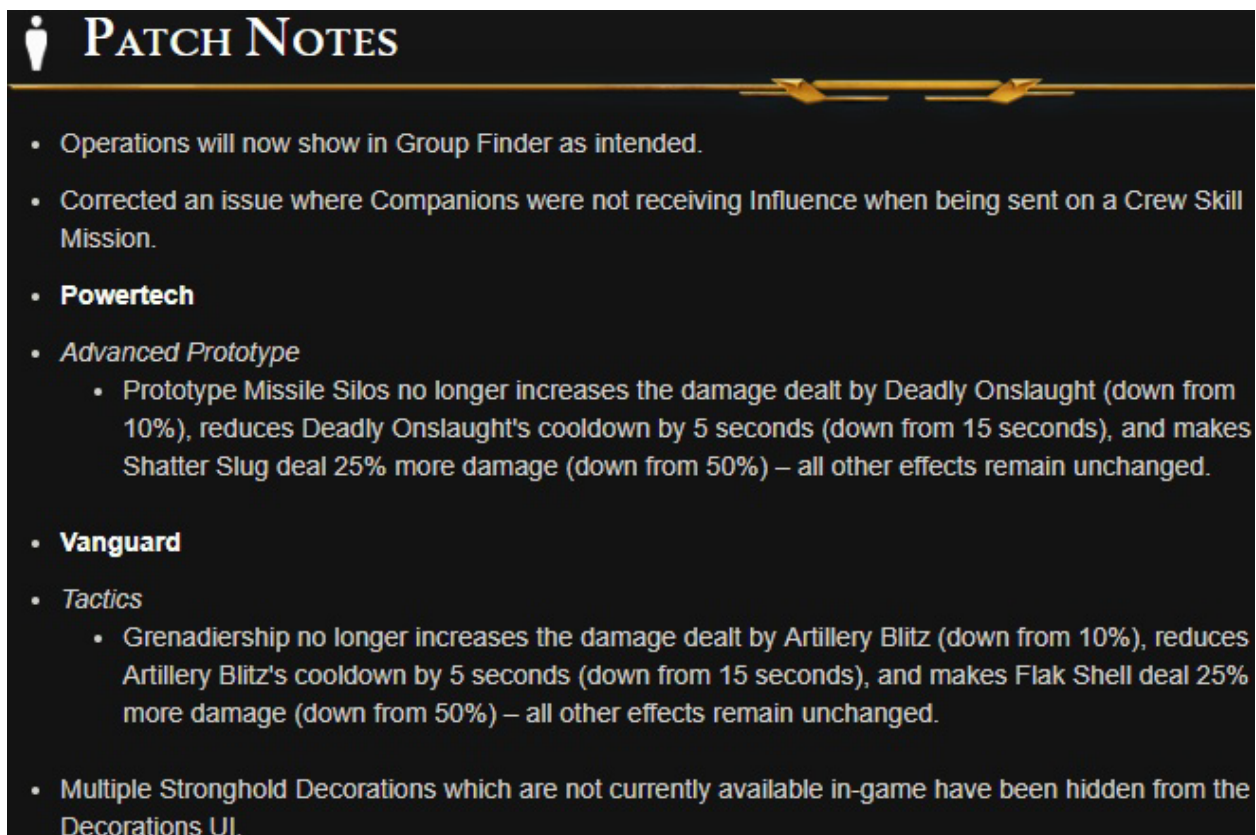


Figure 22. Patch notes may be perceived as a possible cue to misinformation.

In terms of deception detection, both technical errors and patch notes present a novel category of possible cues: Technological Artifacts. The other strongly perceived cues to misinformation presented by this research study (Others Players' Lack of Knowledge and Timing) might appear in conversation (either face-to-face or

technologically mediated) and in written text. Technical errors, patch notes, and other technological artifacts (e.g., error messages, notifications, icons, etc.) may also be perceived as possible cues to misinformation or disinformation. Given their ubiquity in much of modern life, Technological Artifacts demand consideration as sites of potential misinformation and disinformation.

4.5.2 *Weakly Perceived Cues to Misinformation*

One possible cue to misinformation was weakly perceived by participants to mean misinformation: Personal Disagreement. This possible cue to misinformation was considered weakly perceived because participants indicated low degrees of certainty both about the cue's meaning mistaken information and about the existence of the cue. See 4.4.1 Cue Perception for elaboration.

4.5.2.1 Personal Disagreement

Participants' disagreement with others' opinions was a weakly perceived possible cue to misinformation. Participants interpreted their personal disagreement to mean that another player or information source might not be entirely wrong, so they expressed lower degrees of certainty in their perceptions. SKY resisted a specific team composition suggested by a fellow Guildie after that Guildie watched another team's success with this specific team composition:

...he'll want to run [that team composition] and a lot of the times – I'm really picky about our team composition, like, 'I don't want to run this'. ...I'll have to, most of the time, just be like, 'Send me that stream. Send me that stream. I have to see if this is true!' I don't wanna heal squishy classes. I hate healing squishy classes. (25348-27099)

SKY weakly perceived her personal disagreement with her Guildie's suggestion as a possible cue to misinformation. She interpreted her personal disagreement to mean that her Guildie might be misinforming her about their Guild's potential for success with that specific team composition. In this example, SKY's Guildie influenced the extent to which she perceived a possible cue because of their relationship as fellow guild members. SKY's honesty with her teammate demonstrated her comfort in potentially testing their relationship to express her disagreement and her trust in her teammate that her honesty would be understood. Prioritizing honest communication with her teammates enabled SKY to perceive her personal disagreement as a possible cue to misinformation from her teammate.

Personal disagreement can be a weakly perceived cue, even when true information is possible. CHE commented on SWTOR-related information on social media, such as Reddit.com and podcasts: "...there might be a few grains of truth in there and there might be some interesting things that pop up every now and then, but I disagree with a lot of it." (27439-28977). While the information might be true, CHE interprets his personal disagreement, as a possible cue, to mean that other players may be misinformed. Because other players might express opinions that differ from his own, CHE suspects they might be misinformed and attempting to misinform him. While surveilling other players' posts and interactions among each other, CHE regulated his interaction with other players as a result of his social curation goals. That is, he was not wholly disengaged with other players, but, rather, selective about from whom he received information and with whom he engaged beyond a superficial level. CHE's selectivity enabled him to perceive his personal disagreement as a possible cue to misinformation from other players.

Perhaps unsurprisingly, both SKY's and CHE's experiences were reflected in the SWTOR forums. jstankaroslo in Figure 23 claims to have been scammed into paying too many credits for a low-value item. He believes he was misinformed. Most of the players who replied, however, disagreed with him: they think he wasn't scammed. Their disagreement cues them to suspect either that jstankaroslo is misinformed about being scammed or that he is trying to misinform the players on the forums. The eleven pages of comments suggest that the topic of the original post touches on many aspects of the


game, and that, for players other than my participants, personal disagreement may be a strongly perceived cue, depending on context.

SCAMMER GOT ME

STAR WARS: The Old Republic > English > General Discussion
scammer got me

Page 1 of 39 1 2 3 11 >


11.29.2015 , 11:16 AM | #1 QUOTE


jstankaroslo

I just bought 1 permacrrete for over 8mil credits.
My bad.
I knew there are scammers who pray on people's mistakes. I even fought them placing 1 item for 999999999 to have it on top of the list -so that it's red color states clearly this is the highest price. Didn't pay attention today!


No one will convince me that these people don't do this counting on honest mistakes.
Well, 8 mil isn't that much to me. I'll get it back selling uni prefabs next week.
Still hurts.
The thought that scumbags share the same entertainment as me: SWTOR

11.29.2015 , 11:20 AM | #2 QUOTE


branmakmuffin

Still waiting for you to tell us how a *scammer* got you, e.g., how someone made you pay more credits without your knowledge until *after* the sale went through (assuming you're not making the whole thing up for some bizarre reason).


11.29.2015 , 11:20 AM | #3 QUOTE


Beltane

Be prepared for vultures to descend and start mocking you and claiming it isn't a scam 😬 But I feel your pain, because this happened to me too. All it takes is being on auto pilot buying mats and misreading a comma for a period and you're screwed.


I was out 20 mill after buying a few stacks of archaeology mats for 3mill each that I thought were 300k each... that was over a year ago and I've been super paranoid ever since.

I tend to report people I see trying to scam on the GTN but have no clue if it does any good.

--[Omar Syndicate  --- Click here to get a free character transfer, XP boosts and more!

Ebon Hawk | Heavy Sith RP
IG: Beltane

11.29.2015 , 11:24 AM | #4 QUOTE


Beltane

Quote: Originally Posted by **branmakmuffin** →
Still waiting for you to tell us how a *scammer* got you, e.g., how someone made you pay more credits without your knowledge until *after* the sale went through (assuming you're not making the whole thing up for some bizarre reason).

Figure 23: Players believe the Original Poster is misinformed or is misinforming.

4.6 Possible Cues to Disinformation in an Online Gaming Environment

Possible cues to disinformation are those cues that participants perceived and interpreted to mean that they believe they experienced deceptive information. As elaborated elsewhere (see 4.4.1 Cue Perception), possible cues to disinformation were considered strongly or weakly perceived when participants expressed high or low degrees, respectively, of certainty about the existence of the cues and about their interpretations of the cues to mean disinformation. Because this study ties together Activity Theory, Information Grounds, and Symbolic Interactionism (see 4.2 Review of Theoretical Frameworks), the findings are reported through the lenses of tools, places, and constructions of meanings. Example sources of disinformation may include other players in conversation, gameplay experiences, or third-party websites. Table 18 lists possible cues to disinformation, strongly perceived and weakly perceived by participants.

In this section, Other Players' Lack of Evidence, Participants' Negative Experiences, Other Players' Success, Avatar Metadata, and Information Omission were strongly perceived by participants. Vagueness, Improbability, and Indirect Information were weakly perceived by participants. Other Players' Lack of Evidence described when other players failed to meet the player community's expectations of evidence. Participants' Negative Experiences demonstrated how negative experiences could cause players to distrust the game environment. Other Players' Success showed how carefully players surveilled each other, often in order to perceive possible cues. Avatar Metadata demonstrated how players leveraged tools. Information Omission described the negative case of information deliberately withheld. Vagueness referred to the dearth of details in

an information situation. Improbability described the content of other players' claims. Indirect Information demonstrated how information travelling through networks may change.

Table 18: Possible Cues to Disinformation in an Online Gaming Environment

Strongly Perceived Cues	Weakly Perceived Cues
Other Players' Lack of Evidence Participants' Negative Experiences (N) Other Players' Success Avatar Metadata (N) Information Omission	Vagueness Improbability Indirect Information

(N) indicates novel finding; see Table 19 for summary of findings.

4.6.1 *Strongly Perceived Cues to Disinformation*

Five possible cues were strongly perceived by participants to mean disinformation: Other Players' Lack of Evidence, Participants' Negative Experiences, Other Players' Success, Avatar Metadata, and Information Omission. Again, possible cues to disinformation were considered strongly perceived because participants indicated high degrees of certainty both about the cues meaning deceptive information and about the existence of these cues. See 4.4.1 Cue Perception for elaboration.

4.6.1.1 Other Players' Lack of Evidence

All participants emphasized the importance of evidence to corroborate one's claims. Only a few types of evidence, however, were repeatedly, throughout all interviews, mentioned as acceptable: videos and statistics. This limited range of acceptable evidence suggests that the player community held specific expectations as to what constituted evidence and as to how such evidence may be used. In discussing her information strategies, LEW

described her experiences with other, unknown players posting in online forums: "...the ones that are very hyperbolic in the way that they explain and they put up no numbers to .. verify their standing." (48555-48766). These other, unknown players misused the forums, a place created through the SWTOR community's interaction, by failing to meet the SWTOR community expectation of either video or statistics to constitute evidence of information. On the forums, as a place to meet her informational needs, LEW expected accurate and complete information from other, unknown players because the SWTOR community norms demand acceptable evidence. For LEW, the norms make the place; that is, the SWTOR community's norms and expectations of forum usage transformed the forums into a place. When LEW's expectations and informational needs were not met, she realized that these other players who broke SWTOR community norms may be disinforming themselves or may be attempting to disinform her. LEW's realization enabled her to perceive the other, unknown players' insouciance towards SWTOR community norms as a possible cue to disinformation from these other, unknown players because their use of the forum, as an informational place, failed to meet LEW's informational needs.

This hyperbole and lack of statistics ("numbers") in other players' forum posts cued LEW to perceive that either they might be either disinforming themselves, or that they might be trying to disinform her. The deception detection literature supports LEW's strong perception: often, a dearth of details cues deception (e.g., Buller et al., 1996; DePaulo et al., 2003; Zuckerman et al., 1981). LEW recognized that other players' lack of evidence in the forums broke SWTOR player community expectations of providing evidence,

particularly in the forums, which the SWTOR community uses for discussion and information exchange. Thus, other players' lack of evidence deviated from SWTOR community norms, and this deviation was perceived by LEW as a possible cue to disinformation.

As a linguistic and rhetorical tool to divert receivers' attention away from a lack of evidence, hyperbole can be tricky: it's not always readily identified as such, and can be used for humor, sarcasm, or other communicative goals. Nonetheless, most participants expressed high degrees of certainty they could strongly perceive hyperbole as a possible cue to disinformation, as SKY described: "...any really outrageous information that you read, it's pretty glaringly obvious to discern that this probably isn't true." (15426-15546). The unintended irony ("glaringly obvious") of this statement, however, suggests that perhaps the opposite case is equally true: disinformation or possible cues to disinformation are not obvious and are difficult to ascertain or perceive. SKY's comment reflected her view of her experience in the game and her confidence both in the game and in her ability to perceive possible cues. That is, whatever "glaringly obvious" means to her, SKY has developed this meaning through her experiences both inside and outside the game.

It might be that game expertise allows players to strongly perceive other players' lack of evidence as a possible cue to disinformation since they have constructed meanings of what might or might not be possible within the game. COL, a college sophomore and a tank in his guild, retold an incident he witnessed on the SWTOR online

forums in which another player (unknown to COL) made claims about finding a secret boss:

...he just made something up. I mean, he was quite – it was quite an article. I mean, he explained his reasons ... And people were like, ummm... People have tried these ideas...they're like, 'This guy is making stuff up completely. Like not even – it's not even close related or can happen in the game. ... People were kinda pissed off because the top end people want to find this secret boss ... (17867-18999)

Based on how other SWTOR players responded to this other player's claims, COL used the forums as a tool to gather and gauge other players' views about this topic. From this use, COL developed his own meaning and interpretation of this other player's claims about a secret boss, and perceived this other player's lack of evidence as a possible cue to disinformation.

COL's account demonstrated the Principle of Symbolization within Symbolic Interactionism. The cultural embeddedness of objects, routines, etc. imbues them with specific meanings. Similarly, the culture of SWTOR created a persistent rumor about a secret boss, a final enemy whose defeat will surely bring copious amounts of rare and valuable loot as well as significant status, fame, and attention from other players. The continued absence of this secret boss seemed, conversely, to prove its existence. The community enacted strict rules around discussion of the secret boss, as evidenced by their eschewing of that player's hyperbolic post. The community perceived that unknown player's hyperbole as a possible cue to disinformation, deception about the secret boss. The community interpreted the player's hyperbole as a violation of their meaning of the secret boss. That is, because the secret boss carries specific meanings as a community

symbol, tacit knowledge of the community's expectations must be demonstrated; any deviation was perceived as a possible cue to disinformation.

As mentioned earlier (1.5.1 Interpersonal Deception Theory), Buller & Burgoon's Interpersonal Deception Theory (IDT) guided this study's approach to deception and its detection. Other players' lack of evidence as a possible cue to disinformation fits nicely with IDT's focus on deception as strategic communication. The experiences described by LEW, SKY, and COL illustrate a lack of evidence as cued by possible deceivers. It's less clear, however, whether the deceivers have strategic goals or whether the participants could identify or suspect such goals. It may be that this unknown character of the deceiver's (or sender's) goals helps receivers identify a lack of evidence; that is, receivers' lack of awareness or certainty about deceivers' intents may contribute to receivers perceiving a lack of evidence as a possible cue to disinformation.

4.6.1.2 Participants' Negative Experiences (Novel Finding)

Games are supposed to be fun and are (ostensibly) designed to be fun to play. Further, most SWTOR players pay a monthly subscription fee to access this fun: players expect to have fun because they're paying money for it. Thus, when their game or play experience becomes, for example, frustrating or boring or irritating or confusing, they perceive this negative experience as a possible cue to disinformation. That is, in a context in which players expect fun, and are told to expect fun by outside sources (e.g., their friends, other players, Bioware, etc.), non-fun suddenly becomes suspicious (i.e., something must be wrong) because it breaks that expectation of fun. COL's guild used

strategy advice from a trusted information source, the popular website of a high-status, elite SWTOR player, and yet they couldn't defeat the boss using that advice:

...we couldn't make it past 35%. We were like, 'what is going on here? this cannot be possible' because we're some of the best players on our server and so the fact that we couldn't get to that point. We were just in shock. We were like, 'this is some BS'. that this other player in other guild provided with us. So we were just like – and we went back and we wiped at the boss for hours on end, trying to get 30% and we were like, 'this is just not possible'. (6102-7056)

Because COL's high-status guild was "shocked", they perceived their failure, their negative experience, as a possible cue to disinformation. They believed that the website, and the player who runs it, had deceived them, had disinformed them about this strategy. The response of COL's guild to their negative experience – 'shock' – shows that this possible cue, this negative experience, was meaningful to them as individuals and that the shared experience of non-fun, of failure, added to the meaning of this possible cue. Their collective sense of 'shock' suggests that perceptions, and interpretations, of possible cues may be influenced by team members. The collective vulnerability among COL's guild members allowed them to expose themselves to the risk of failure. That is, their mutual trust permitted failure as an acceptable, if undesirable, option. By allowing himself to be vulnerable to risk within the boundaries of his guild, COL was enabled to perceive his negative experience as a possible cue to disinformation from the website of the elite player.

SKY recounted an incident in which she and some of her guild had been led to believe that the RU⁴⁵ server hosted more players (i.e., had a higher population of players) than their current server, which would enable them to increase their engagement in Player-versus-Player (PvP) gameplay. Based on this information, SKY and a few of her guildies moved to the RU server, but their move to RU failed to meet expectations. SKY learned that players on the RU server had been deceiving other players about the strength of the population on RU:

...it was like pulling teeth to actually get ranked games and stuff like that. And we actually ended up moving back to our old server, just because, like, we were, I guess, falsely put under the assumption that this server was, like, the place to be. And it turned out, that there were just a lot of people on RU that kinda wanted that server to have a better population, as far as ranked PvP goes. So they just organized themselves...to go to every other servers' forums and just say, 'Hey, everything's great here. Everything's great', and we believed them. ... We didn't have a better time there than we did playing on this server. (8867-10644)

When SKY experienced difficulty engaging in PvP gameplay, she realized that she had been disinformed by those players from the RU server. In retrospect, SKY perceived her negative experience as a possible cue to disinformation. That is, her negative experience cued her to perceive that she had been disinformed because it broke her expectation of fun. SKY's story demonstrated the complexities of the relationships among places and tools. The RU server is a technological tool provided by Bioware, but players made it a place of their own through their usage of it. In fact, as a place, RU became so meaningful to some players that they were willing to deceive others about its popularity. The possible cue to disinformation, negative experience, was influenced by SKY's expectations about

⁴⁵ RU is my pseudonym for the name of the server.

the RU server as a place, not as a tool. SKY mentioned that she and her guildies returned to their previous server, suggesting that SKY's old server also carried meaning for her as a place. Thus, SKY's experience of the RU server as a place failed to correspond with what she had been told by the players from the RU server. SKY realized that she had been deceived when her social need for PvP gameplay engagement was not met and could not be met on the RU server. SKY's realization enabled her to perceive her negative experience as a possible cue to disinformation from the RU server players because the potential and capacity for PvP gameplay on that server, in that place, failed to meet her social need.

SNO told me about, "...this sort of mudslinging rumor thing...", which involved mutinous guildies who claimed, "that it was the healers' fault that things were bad.". However, SNO realized that, "they were blaming healers, but they were actually themselves sandbagging it during the time when we were playing..." (38132-39570). Here, SNO perceived his Guild's lack of success in gameplay, his negative experience, as a possible cue to disinformation. He came to perceive that the mutineers were disinforming the guild by deliberately playing badly, below their actual skill level ("sandbagging it"). This possible cue to disinformation was meaningful to SNO because he thought "things were bad" in his guild. This example illustrates part of the challenge of MMOs: the fulfillment of the expectation of fun depends, to a degree, upon other players and their sociality. SNO's account demonstrates how guildies can influence the types of possible cues perceived, as well as how other players may interpret them. Thus, in MMO

environments, negative experiences that break the expectations of fun may be important possible cues to disinformation.

Negative experiences as a cue to disinformation do not appear in the deception detection literature. This absence is due to numerous factors. First, negative experiences are neither verbal nor nonverbal communication, the focus of much deception detection research. Second, negative experiences require time periods of varying lengths so that individuals can see the outcome of their own and others' decisions and actions. Lastly, negative experiences may be a cue to disinformation only when there is an expectation of positive experiences. Under this condition, negative experiences may be perceived as an attempt by an external influence to ruin the expectation, a cue to disinformation.

4.6.1.3 Other Players' Success

All participants reported monitoring or observing other players and guilds to compare themselves against in terms of skill and to learn strategies for successful gameplay. These surveillance tasks were supported through the use and management of multiple tools: leaderboards, streams, forums, chats, etc. Because the study participants had accumulated expertise, they felt confident in their knowledge of the game. By combining surveillance and expertise, participants were well-positioned to make judgements of likelihood regarding the ease or rapidity of others' successes, and strongly perceived the success of others as a possible cue to disinformation.

SNO recalled the following incident in which LOG, a highly-ranked, competitive guild, deceived others about which strategy they were using:

...early in progression content where there's actually subterfuge going on where someone will say they're doing it this way, but they're not, and they're saying, "oh, we just do this," and they -- it's like their little joke they're playing on the Internet trying to mislead people on strategy so that they can earn the server-first title ... (24930-26549)

LOG, not SNO's own guild, wanted to be the first one on their server to defeat a particular boss, so they deceived other players into believing that they were using a different strategy than what they were using in fact. SNO perceived LOG's success as a possible cue to disinformation from that guild. Based on his own expertise and surveillance, SNO realized that LOG had been deceiving others about their choice of strategy. SNO judged the ease with which LOG won their server-first title as unlikely.

CHE described another guild, STU (not CHE's own guild) who leveraged the Public Test Server (PTS) to deceive other players. The PTS hosts early-stage, potential game content that Bioware needs to test for technical errors or for feedback from the player community before the final version is released. Consequently, the game content on the PTS may differ slightly or significantly from that released on the live servers. CHE described this guild, STU, who developed – in secret – a successful strategy by playing the available game content on the Public Test Server (PTS): "...then when the live sever came up and when world race started, they've already had that strategy practiced. Yes, they did get world first." (22401-23508). When this guild quickly defeated the newest content, just released on the live server, to win the world-first title, CHE perceived this Guild's success as a possible cue to disinformation from that guild. Informed by his

expertise and his surveillance, CHE recognized that this guild had deceived others about their winning strategy.

These incidents illustrated how places, tools, and meanings can overlap in the perceptions and interpretations of possible cues. The server-first title was meaningful both to LOG and to SNO because this title could demonstrate LOG's status within the community and their connection to a specific place. SNO's familiarity with the server as a place, via his expertise and surveillance, influenced his ability to perceive LOG's success as a possible cue to disinformation from that guild. SNO's familiarity also enabled him to interpret this possible cue, another guild's quick success, to mean that he and other players had been disinformed by the successful guild, LOG. In a similar vein, the successful guild in CHE's account, STU, created a place for themselves within the Public Test Server, and used their co-constructed meaning of that place to win the world-first title. CHE's exclusion from STU's construction of place may have influenced his interpretation of STU's success to mean that he had been disinformed.

4.6.1.4 Avatar Metadata (Novel Finding)

Players investigate other players by reviewing their avatar's statistics and gear (see Fig. 24) to see evidence of their gameplay experience, to learn about their gear options, and to gauge their skills for a Player-versus-Player (PvP) battle. SKA, a software developer and the Guildmaster for his guild, told me about an incident in which he examined an unknown player's avatar metadata to verify his claims of gaming prowess: "...I was like, 'No, dude', like, the math just doesn't work out. You're a 20% damage mitigation and

healing deficit. It's like, you're not gonna beat anybody." (17181-17453). SKA perceived the unknown player's avatar metadata as a possible cue to disinformation because SKA's experience with game statistics enabled him to understand that the unknown player's statistics failed to support his claims. Again, cues are unintentional and must be perceived. This unknown player's avatar metadata exists and is viewable by SKA, whether the unknown player lies or not. Therefore, this unknown player was perhaps unaware of his avatar metadata's potential as a possible cue to his deception of others, illustrating the accidental nature of cues. The meaning, then, that SKA constructed from this exchange was that the other player was lying about his success.

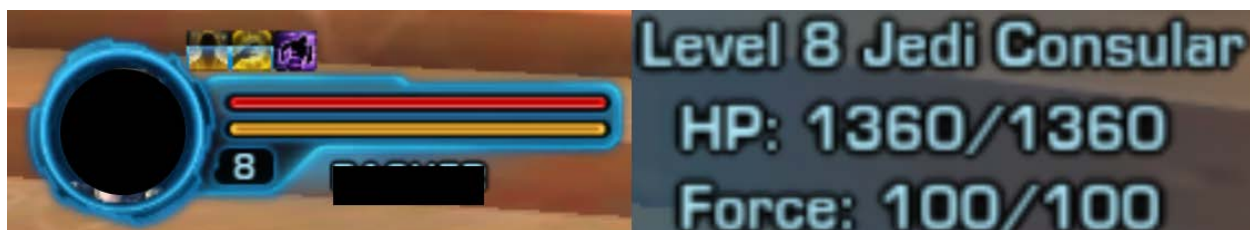


Figure 24. A small example of the avatar metadata available to players.

SNO lamented the difficulty of tracking loot distribution among guild members, one of his jobs in the guild, and a potentially contentious topic. To remedy this problem, SNO maintained a series of Excel sheets to help him remember who had previously received which items; he did, however, admit that he, "...could inspect people and go, 'I can see you have that, stop lying to me.'" (19829-22080). In this quote, SNO explained that, rather than keeping Excel sheets, he could have examined his guildies' avatar metadata to determine which items they currently possessed. In this way, SNO perceived his guildies' current loot items, their avatar metadata, as a possible cue to disinformation from his guildies. SNO realized that his guild members might try to deceive him about their loot

items (“stop lying to me”), and this realization enabled him to perceive the avatar metadata of his guild members as a possible cue to disinformation from his guild members because SNO could use their avatar metadata to verify their claims of loot item ownership. SNO realized that his guildies may attempt to deceive him to obtain additional loot items, but their avatar metadata betrayed their deception.

SNO’s role as the loot distributor in his guild required him to maintain a record of which guild members had which loot items, but the SWTOR software obscured the data SNO needed – a limitation of the SWTOR software. To mitigate this limitation, SNO admitted that he could have either examined the avatar metadata of each guild member, an option demanding significant labor on SNO’s part, or asked each guild member about which loot they had, an option ripe for disinformation from SNO’s guild members. Thus, both examining each avatar’s metadata and asking each guild member about their loot items failed to meet SNO’s needs for accessible and accurate data. Ultimately, SNO solved his dilemma by using Excel sheets to track loot item distribution among his guild members. SNO’s use of Excel sheets demonstrated his efforts to circumvent the limitations of the avatar metadata available in the game. But in this translation process between the game software and the Excel sheets, it may be that SNO used these Excel sheets because they may have provided additional insights, unavailable in the game, into loot distribution among his guild, thereby enabling him to perceive possible cues he may have been otherwise unable to perceive.

SKA's and SNO's accounts are driven by types of disinformation supported by the deception detection literature: other-oriented and self-oriented (Bella M. DePaulo, Kashy, Kirkendol, Wyer, & Epstein, 1996; Hancock et al., 2008). In SKA's incident, the unknown player was likely trying to impress someone else or raise his social status within the player community by trying to deceive others about his gameplay skills. In SNO's incident, his guildies are trying to maximize their loot while minimizing their effort, like any game player, but they're also willing to risk, albeit slightly, their personal relationship with SNO. In both cases, the attempts at deception by that unknown player and by SNO's guildies were exposed by the available metadata of their avatars. Neither avatars nor their metadata have been studied in the deception detection literature, making this a novel finding.

4.6.1.5 Information Omission

As a possible cue to disinformation, omission cues the negative: What's missing? What's not there? In terms of disinformation, omission is not lying (because nothing is fabricated), but omission is also not ambiguous (because the omission might be obvious). Omission, however, can be deceptive, and, thus, disinformation. Contrary to Van Swol, et al. (2015), who found that subjects used deceptive omission less frequently in the Computer-Mediated Communication condition, my participants found other players using omission often enough to be perceptible as a possible cue to disinformation.

CHE described an incident in which another guild, STU (not his own), used omission as part of their broader strategic communication and community involvement strategies. The STU guild practiced a secret – and successful – strategy on the Public

Test Server (PTS), which hosts game content BioWare needs to test before releasing it on live servers (see 4.6.1.3 Other Players' Success for additional description of the PTS). They defeated this new content upon its release, and won the title of world-first. CHE told me that,

We didn't know until after the fact that STU actually killed the very last boss on the PTS, on the test server. They didn't tell anybody that. ...then when the live sever came up and when world race started, they've already had that strategy practiced. Yes, they did get world first. ...And they actually had video evidence to show it, so it wasn't this, you know, crazy claim. So was that deceptive or misleading? Kind of sort of, but, rather, it was omission, which is an interesting kind of take on things. (22401-23508)

In retrospect, CHE perceived the STU Guild's omission as a possible cue to disinformation. CHE realized that the STU Guild's omission had deceived him in two ways: they had already practiced their winning strategy and they had not shared this strategy with others. That is, the omission only became meaningful to CHE as disinformation later, when the STU guild posted a video of themselves executing their successful strategy. The STU guild leveraged the affordances of video to demonstrate their strategy and to evidence their "World First" claim to the player community. The STU guild recorded their video – but waited to release it – because they understood the power of video as an acceptable form of evidence in the SWTOR community. STU's video influenced CHE's perception and interpretation of their omission because CHE was able to make his own determination as to the accuracy of STU's claims. CHE's skepticism of the STU guild's success enabled him to perceive their leveraging of video as a possible cue to disinformation because CHE realized, after the STU guild had achieved their success, that the STU guild had been omitting information from their public engagement with the SWTOR community as a means of deception.

By waiting until after the SWTOR community demanded evidence of their claims of success, the STU guild harnessed the social value of video within the SWTOR community to bolster their reputation. For CHE, however, the STU guild's exploitation of the affordances of video cued disinformation. This incident also demonstrates how possible cues to disinformation may not be perceptible until after the fact. That is, it may be the case that participants required reflection and the benefit of hindsight in order to perceive a possible cue to disinformation. Possible cues to disinformation may not become such until after a period of time or after the consequences have been understood. It is important to note here that, again, the temporal element of possible cues may influence both their perception and their interpretation.

On the SWTOR forums, I found a post from TYBERzan (Fig. 25), who sought to call attention to Bioware's sudden removal of vendors that sold a specific type of gear. He suggested that this removal would enable Bioware to profit again when players purchased this same gear again, but in a different format. He specifically emphasized Bioware's lack of communication or comment on this removal. TYBERzan perceived Bioware's omission of an explanation as a possible cue to disinformation. He believed that Bioware was deceiving the player community into paying twice for the same item. TYBERzan interpreted Bioware's omission to mean disinformation. Other players may have perceived Bioware's omission as a possible cue, but interpreted it differently; other players' responses to TYBERzan's post suggest this difference in interpretation is the case. This example demonstrates how an individual's constructions of meanings may influence their perceptions and interpretations of possible cues to disinformation.

TYBERzan's anger at Bioware's omission may have enabled him to perceive possible cues to disinformation that others did not. An early topic in deception detection research (e.g., Easterbrook, 1959), the complexities of the relationship between emotion and cue perception remain poorly understood. This artifact illustrates current understandings of this relationship as supported in the deception detection literature. Malhotra and Kuo (2009) published a study suggesting that strong emotions, such as the anger expressed by TYBERzan, encourage the brain to rely on cognitive shortcuts to gauge deception. That is, the brain will perceive those possible cues that support the emotion it is processing.



BIOWARE IS LYING

STAR WARS: The Old Republic > English > General Discussion
Bioware is lying



TYBERzan

10.26.2015 , 07:12 PM | #1

QUOTE

Hello, a recently returned player (will leave again as soon as I finish with KOTFE). I just wanted to point out that Bioware is almost certainly **lying** about why they removed the gear vendors.

In case you haven't noticed, Bioware has recently removed most of the planetary vendors. Unnoticed (or at least unremarked on) is that they have also removed the vendors selling common gear (the white gear) which has only armor stats. This gear has just about no effect on players as players don't really go out of their way to buy it. BUT, given the changes to comps and the fact that gear is just a vanity item for comps; this may mean that the common gear was removed so that they can resell the armor skins to us for cartel coins.

This may also mean that the real reason they removed much of the orange gear from the planetary vendors was to deprive us of those options as well.

/remove tinfoil

I just wanted to share my suspicions. It may be that these vendors will be re-added later . . . but will they again charge credits/data crystals or will this gear be for CC?

Spoiler



The_Anf

10.26.2015 , 07:14 PM | #2

QUOTE

how are they **lying**...I don't recall them saying they weren't going to do this

Solo 1
Greedo 0



Cynistra

10.26.2015 , 07:16 PM | #3

QUOTE

Quote: Originally Posted by **The_Anf** ↗

how are they **lying**...I don't recall them saying they weren't going to do this

They said they removed comm gear vendors to make leveling process more "challenging"



10.26.2015 , 07:22 PM | #4

QUOTE

but they did remove them...so that isn't a lie...it does make it more challenging (maybe) its not **lying** to then reuse them for another purpose. Unless you are suggesting they removed them solely to remake as cartel items...which they don't need to lie about they reuse shells all the time

Figure 25: Bioware's omission was perceived as a possible cue to disinformation.

As argued earlier (see 2.3.2 Informativeness), disinformation can be informative. As illustrated with CHE's account and TYBERzan's forum post and as documented in the literature (Chisholm & Feehan, 1977; Don Fallis, 2015), omission, when deceptive (and thus, intentional), can be disinformation. Thus, omission can be informative, either on its own or if it cues disinformation.

The following example demonstrates how omission can be informative: many guilds, for example, exclusively post videos of their gaming successes; they never post videos of their failures. Based on my exploratory fieldwork and participant observation in this community, the goals of posting success videos are to evidence a guild's claims, their gaming mastery, and their acknowledgement and understanding of the player community's expectations of what constitutes evidence. LEW commented on this phenomenon of success videos: "[O]f course, taking in a grain of salt that every video posted looks like it's going smooth. they wouldn't have posted that video." (26787-26915). LEW perceived this omission – the dearth of failure videos – as a possible cue to disinformation; another example of how tools may influence the perception of possible cues. She interpreted guilds' omission of failure videos to mean deception about their success rate, that they may not be as successful in their gaming endeavors as they wish to appear to the player community. However, LEW understood and accepted the desire for deceptive omission as a technique to manage reputation and engage the community. As a guild member herself, she also understood how guilds navigate their strategy decision process while also embedded in community expectations.

4.6.2 *Weakly Perceived Cues to Disinformation*

Three possible cues were weakly perceived by participants to mean disinformation: Vagueness, Improbability, Indirect Information. Possible cues to disinformation were considered weakly perceived because participants indicated low degrees of certainty both about the cues meaning mistaken information and about the existence of these cues. See 4.4.1 Cue Perception for elaboration.

4.6.2.1 Vagueness

Vagueness may be a weakly perceived possible cue to disinformation because a lack of specificity lends itself to suspicion (i.e., low degrees of certainty). Indeed, a dearth of details as a cue to disinformation consistently occurs in the deception detection literature (e.g., Buller et al., 1996; J. K. Burgoon, Chen, & Twitchell, 2010; B.M. DePaulo et al., 2003; Hancock et al., 2008; Rubin, 2017; Toma, Hancock, & Ellison, 2008; L Zhou, 2005; Zuckerman et al., 1981).

LEW described a situation in which players unknown to her posted vague comments on the SWTOR forums suggesting that they saw a secret boss⁴⁷ on the Public Test Server (PTS). From my participant observation, I learned that the legend of a secret boss has persisted over time in the SWTOR community, due to the pervasiveness of this legend's entrenchment across the sociotechnical networks of both servers and in-game

⁴⁷ A boss is a monster at the end of a level in a game.

locations (e.g., WarZones, Flashpoints, cantinas, temples, etc.), and also due to its (potential) status as a trophy signifying gaming prowess. LEW said that,

..they sort of posted kind of nebulous kinda phrases on the forums, saying, 'I was on the PTS and I saw the boss and I'm just gonna say this' and then they'll say something really, I don't know, Yoda-sounding, you know... maybe they saw it on the PTS..., but they're probably just trying to get their name out there ... (59553-60963)

LEW perceived these unknown players' vagueness as a possible cue to disinformation. She believed that they were attempting to deceive other players about a high-status object to increase their own status by association with this object, and that the unknown players' desire for status might have motivated their disinformation. Here, LEW interpreted the unknown players' vagueness to mean disinformation due to her suspicions about the unknown players' motivations. LEW may also have been able to perceive this possible cue, vagueness, due to the unknown players' claims about the location of the secret boss: the Public Test Server. Ostensibly for Bioware to test content, players have shaped character of the PTS as a place due to their usage of it. Because the content on the PTS is in a testing phase, it is conceivable (i.e., not impossible) that a secret boss could appear there, but not on the live servers. These players used this condition of indeterminate, fluctuating content to make vague claims, but LEW may have interpreted this same condition as a contributing factor to her perception of disinformation.

The consistent appearance of vagueness in the deception detection literature may suggest that vagueness could be easier to perceive or more frequently perceived for many people than other possible cues to disinformation. One of many posts I found discussing vagueness, in the post below (Fig. 26) from the SWTOR forums, darknagashadow perceived Bioware's vagueness in their communications to players

about upcoming changes to the game as a possible cue to disinformation. He interpreted Bioware's vagueness to mean that Bioware may be attempting to deceive players about the potential for new players to enter the game and progress through its content faster by purchasing items, gear, etc., rather than by working through the content. darknagashadow used the forums as a place to gather additional information from his fellow players, to seek their opinion, and to shape his perception of a possible cue to disinformation.

BIOWARE BEING PURPOSELY VAGUE

STAR WARS: The Old Republic > English > General Discussion
 Bioware being purposely vague



darknagashadow

08.13.2012 , 08:58 AM | #1

QUOTE

Bioware seems to be letting out very little information about this new free to play system, I think the reason for this is that the free to play account might be a better deal than the subscription account, which I think they ultimately plan to phase out entirely, this is speculation but after the Q&A I think its a logical conclusion although hardly certain conclusion

1. the story-lines which are the games main attraction will not require any form of subscription
- 2.

Quote:

all the way up to level 50, with certain restrictions*. Unlimited game access, including new higher-level game content and new features will be made available through individual purchases or through a subscription option.

-from website

very interesting, so a subscription is *not* the only way to experience all of the content, individual purchases of content will be possible, this is variously referred to as unlocks.

Nothing I have read from bioware say's anything about these unlocks being *temporary*, if they are not, then simply paying for the items you want will become a much more cost effective way to experience content. We know for sure now(Q&A) that gear is kept

for example a PVE free to play player in rakata or campaign gear could unlock only denova, since the other operations and flashpoints are obsolete and have likely been run many times by said players.

likewise a PVP free to play player in full war hero gear will be able to unlock only the warzone's/outlaws den and not pay for the rest.

what I think will happen,

I believe that BW will give existing subscribers enough cartel coins to pretty much unlock the things they want.

I believe the reason they are stopping the flow of information is so that existing subscribers do not unsubscribe to take advantage of the new model

tell me what you think



pockethesaurus

08.13.2012 , 10:28 AM | #2

QUOTE

Quote: Originally Posted by [darknagashadow](#) →

Bioware seems to be letting out very little information about this new free to play system, I think the reason for this is that the free to play account might be a better deal than the subscription account, which I think they ultimately plan to phase out entirely, this is speculation but after the Q&A I think its a logical conclusion although hardly certain conclusion

1. the story-lines which are the games main attraction will not require any form of subscription

Figure 26: Bioware's vagueness was perceived as a possible cue to disinformation.

The manner in which vagueness may prevent or reduce certainty may contribute to its perception as a possible cue to disinformation. Since vagueness can come from a variety of sources, players benefit from caution. WEN related to me a story about when BioWare began combining and changing the servers hosting both game content and players. In response to players' confusion around the costs and benefits of these mergers, Electronic Arts (SWTOR's publisher) tried to address concerns, and WEN told me: "If you really read what they said, they were legit. **They didn't say anything wrong**, but you did have to read carefully." (18444-19184); emphasis added). WEN perceived EA's vagueness about the server mergers as a possible cue to disinformation. She interpreted the language used by EA as suspiciously vague, i.e., not "wrong" per se but intending to deceive players as to the potential effects of the mergers. WEN and other players were concerned about these mergers because the external reconfiguration of a tool may inflict changes upon the social life, the places, that it hosts. Her personal understanding of how players use these tools to create places may have influenced WEN's perception of vagueness as a possible cue and her interpretation of it to mean deception.

4.6.2.2 Improbability

Improbability is reflected in the content of a communication, not its language. Improbability means that, while something might be possible, it might not be likely. For example, perhaps too many other conditions might be required for something to occur. SKA described an incident in which another player from a rival guild tried to convince him that they use a particular strategy, and SKA reflected that, “hey, maybe so-and-so works for them, you know? So I can’t discount it as being **wrong**.” (13762-14087; emphasis added). SKA perceived the improbability of their strategy, its low likelihood, as a possible cue to disinformation. SKA interpreted his understanding of their strategy to mean that while it might not be “wrong”, it likely may not be right, either, and, thus, this other player may be attempting to deceive him. In this incident, SKA’s perception of improbability as a possible cue and his interpretation of it to mean deception were informed by his expertise in the game, as well as his personal playing style.

4.6.2.3 Indirect Information


Indirect information means information of indeterminate veracity or falsity originating from a source unknown to and/or multiple degrees removed from the receiver, likely having traversed through a social network. Many participants mentioned indirect information, albeit with varying degrees of regard for its value or utility. LEW, however, described it best: “If it’s second- and third-order, you know, like, ‘Hey, I heard that there’s this group that does it this way. I’ve never actually seen it, though.’ You know, it’s pretty clear. I mean, **it could be people lying to us**.” (65188-65403; emphasis added). LEW perceived indirect information as a possible cue to disinformation. She recognized that an

information source, even a source that may be two or three degrees removed from her, could be “lying”, deceiving her. LEW’s informational and social savvy, developed through her experiences in the game, may have influenced her perception of indirect information as a possible cue to disinformation and her interpretation of it to mean deception.

During my exploratory fieldwork and participant observation experiences, I noticed that the SWTOR forums served as social hubs for disseminating and contributing to indirect information. In the Shadow/Assassin sub-forum, Kurugi (Fig. 27) started a conversation thread he titled, “The vibe I get”, to discuss how upcoming new content may affect his character class. In this post, he used phrases that demonstrate he’s referencing indirect information: “From what I’ve been hearing ...” and “...a lot of what I hear is that...”. Based on my experiences with the SWTOR forums and familiarity with the community, I interpreted Kurugi’s post to suggest that he may have perceived the indirectness of the information he has experienced as a possible cue to disinformation, and now he is trying to verify his information and compare it against what other players may have learned. Kurugi may have interpreted the indirectness of the information he has experienced to mean deception from another player somewhere along the path this information has taken to reach him. Within the context of all the other disinformation flowing through the forums, the player community’s usage of the forums as distribution centers for indirect information may have influenced Kurugi to perceive indirect information as a possible cue to disinformation. Alternatively, Kurugi may have distributed disinformation by being vague about his information sources.

STAR WARS: The Old Republic > English > Classes > Shadow / Assassin

The vibe I get




Kurugi

11.14.2013 , 02:32 AM | #1

REPORT POST QUOTE

From what I've been hearing I feel like anything I want to do endgame PvE wise I'm gonna suck at, DPS or tank wise. I know shadows are getting a tank buff in 2.5 but I'm more interested in DPS.

Maybe it's only in the high end of content that it really matters or is noticeable and since I primarily focus on PvP maybe it won't affect me, but a lot of what I hear is that shadows are not a PvE class, especially in regards to DPS.



mmerry

11.14.2013 , 03:00 AM | #2


REPORT POST QUOTE

I titled NiM TFB and got 6/7 in NiM SnV on my shadow dps before 2.4 hit. The top progression guild on my server (Jedi Covenant) uses a shadow dps in their main group. You may need to work a little harder than some other classes, but I was able to stay with or out dps the other dps in my raid depending on the fight.

Ps: Idk much about shadow tanking, but from what KeyboardNinja has said shadows will be the best tanks in 2.5.

Jedi Covenant

Wildberry Poptart - Shadow DPS
my new shadow




Kurugi

11.14.2013 , 04:27 AM | #3

REPORT POST QUOTE

Are you infiltration or balance? I've heard infiltration isn't good for PvE but balance is one of the most boring specs in the game.



KeyboardNinja

11.14.2013 , 05:29 PM | #4

REPORT POST QUOTE

Wildberry is balance, though he ran Infiltration on some bosses where ramp up and energy management were problematic in balance (e.g. TFB). I run with an Infiltration shadow in 16 man HM, and he does quite respectably. We don't have any problems with him on bosses with DPS checks (Bestia comes to mind, and also Caphayus first Future), and if anything we adjust our strats to take advantage of some of his spec's unique strengths, rather than compensating for its unique weaknesses.

I still think Infiltration needs more lovin', and Balance is in a terrible place for PvP, but things aren't completely non-viable even today.

And yes, shadow tanks will completely faceroll anything with the word "tank" in it come 2.5. Part of me is looking forward to being OP, but frankly I'd prefer that the tanks would just be balanced rather than the seesaw of problems we've had since 2.0.

Figure 27. Indirect information may be perceived as a possible cue to disinformation.

4.7 Summary of Findings

Table 19: Summary of Findings: Cues by Perceptions

Possible Cues to:	Strongly Perceived	Weakly Perceived
Misinformation	Other Players' Lack of Knowledge Timing Technological Artifacts (N)	Personal Disagreement
Disinformation	Other Players' Lack of Evidence Participants' Negative Experiences (N) Other Players' Success Avatar Metadata (N) Information Omission	Vagueness Improbability Indirect Information

(N) indicates a novel finding within deception detection.

This chapter presented findings from an exploratory study into how places, tools, and meanings might influence perceptions and interpretations of possible cues to misinformation and disinformation. Table 19 distills the findings into strongly and weakly perceived possible cues to misinformation and disinformation. Findings consisted of possible cues to misinformation and disinformation. Each set of possible cues was further organized into strongly perceived and weakly perceived. As a result of this investigation, novel possible cues to misinformation and disinformation were found (see Table 19): Technological Artifacts, Participants' Negative Experiences, and Avatar Metadata. A data source novel to deception detection research, online artifacts, was successfully utilized for additional insights.

Chapter 5. Discussion

This chapter addresses the research questions, reviews the theoretical frameworks, offers commentary on the findings, and concludes with contributions and implications. Please see Table 20 for a complete list of the findings, as well as their connections to the theoretical frameworks and research questions.

5.1 Research Questions Revisited

- 1) How might places and tools, as informed by Information Grounds and Activity Theory, influence the perception of possible cues, as informed by Interpersonal Deception Theory, to misinformation and disinformation in an online gaming environment?

- 2) How might the constructions of meanings, as informed by Symbolic Interactionism, for individuals situated within a distributed, networked team influence their perceptions of possible cues, as informed by Interpersonal Deception Theory, to misinformation and disinformation in an online gaming environment?

The first research question investigated the interconnectedness of places, tools, and possible cues, as viewed through the lenses of Information Grounds, Activity Theory, and Interpersonal Deception Theory, respectively. When users interact within persistent online environments, such as *Star Wars: The Old Republic* (SWTOR), they transform technological tools (e.g., servers, chat channels, forums) into gathering places. The limitations and affordances of such tools may have unintended or unforeseen repercussions that may affect how these tools transform into places, despite users' attempts to mitigate limitations and expand affordances. The mutually shaping influences of places, tools, users, and the interactions therein may affect the types of possible cues

provided by misinformers and disinformers, as well as the manner in which or the extent to which possible cues may be perceptible.

The second research question extended the investigation of the first research question into places, tools, and possible cues through including additional sources of potential influences on the perceptibility of possible cues. The second research question incorporated individuals' constructions of meanings of possible cues, as viewed through Symbolic Interactionism and Interpersonal Deception Theory, respectively, as well as the potential influences of team members on these constructions. Both the perceptions of possible cues and their interpretations may be influenced by the textures of context and relationships. Meanings and interpretations may shift during an information experience (e.g., conversation, text chat, etc.) because deception (i.e., disinformation) is dynamic, strategic communication. Thus, two individuals may construct separate, even oppositional, meanings of the same cue, or may perceive different cues, or may not perceive the same cue at all. Combining the concepts of places, tools, perceptions, possible cues, deception, constructions of meanings, team members, and a number of the interactions therein comprised the novelty and intricacy of this research.

Table 20 charts the relationships among the findings, the theoretical frameworks, and the research questions. This table specifies the following:

- Which theoretical frameworks influenced which findings
- Which findings answer which research questions
- Which research questions leverage which theoretical frameworks

Table 20 embeds the findings within the contexts of the theoretical frameworks and the research questions, as well as displays how the theoretical frameworks and research questions are related. Surfacing the interconnectedness of the findings, the theoretical frameworks, and the research questions highlights the complexity of their mutually shaping interactions. For a visual of the connections between methods and theoretical frameworks, please see Table 9 in Chapter 3. Methods.

Table 20. Summary of Findings, Theoretical Frameworks, and Research Questions

Possible Cues (Findings)		Theoretical Frameworks				Research Questions	
		Interpersonal Deception Theory (Cues)	Information Grounds (Places)	Activity Theory (Tools)	Symbolic Interactionism (Meanings)	RQ1: Places, Tools, Cues	RQ2: Meanings, Cues
Misinformation Strongly Perceived	Other Players' Lack of Knowledge	✓	✓	✓	✓	✓	✓
	Timing	✓			✓		✓
	Technological Artifacts (N)	✓	✓	✓		✓	
Misinformation Weakly Perceived	Personal Disagreement	✓			✓		✓
Disinformation Strongly Perceived	Other Players' Lack of Evidence	✓	✓	✓	✓	✓	✓
	Participants' Negative Experiences (N)	✓	✓	✓	✓	✓	✓
	Other Players' Success	✓	✓	✓	✓	✓	✓
	Avatar Metadata (N)	✓		✓	✓	✓	✓
	Information Omission	✓		✓	✓	✓	✓
Disinformation Weakly Perceived	Vagueness	✓	✓	✓		✓	
	Improbability	✓			✓		✓
	Indirect Information	✓	✓	✓	✓	✓	✓
Research Questions	RQ1: Places, Tools, Cues	✓	✓	✓			
	RQ2: Meanings, Cues	✓			✓		

(N) indicates novel finding in detection deception.

5.2 Research Question 1 Addressed

The first research question served to investigate how places and tools might influence perceptions of possible cues to misinformation and disinformation. Places influenced perceptions of possible cues when participants held social and informational expectations when using those places. Tools influenced perceptions of possible cues through the tools' limitations and affordances.

5.2.1 *Influence of Places*

Places in SWTOR refers to the locations both inside and outside of the game where participants gathered with other players. In accordance with Information Grounds (see 1.5.2 Information Grounds), It is through this usage that places were created from specific locations. For the purposes of this study, such places existed in online environments, such as servers, forums, websites, chat channels, and in-game locations (e.g., dungeons, cantinas, etc.). Players created places from these locations by using them to attempt to meet their needs for sociality and for information. The insufficiency of these places to meet participants' social and informational needs influenced participants' perceptions of possible cues to misinformation and disinformation.

Social needs refers to participants' needs for engagement with other players. These social needs may have been simply social, such as sociality for its own sake, or may have been instrumentally social, such as sociality for a game-related goal or need. If participants' social needs were unmet, then participants perceived possible cues to

misinformation and disinformation. As an example of instrumental sociality, Player-versus-Player (PvP) gameplay involved players battling each other one-on-one so as to be ranked on the public leaderboard. That is, players could not get ranked without other players to battle.

Participants created places from various game-related locations in order to fulfill their social needs – as well as their informational needs. The creation of places expressly to meet participants' informational needs reflected the informational complexity of the game. When participants' informational needs were unmet, participants perceived possible cues to misinformation and disinformation. For example, SWTOR's official forums were a location provided by Bioware, but transformed into a place by the player community using the forums to meet both social and informational needs. Most of this study's participants, however, mentioned using the forums to fulfill their informational needs.

5.2.2 *Influence of Tools*

In the context of an online game like SWTOR, tools refers to the technological tools used by participants to socialize, to exchange opinions, to keep track of their progress, and other tasks related to managing game information. All these tasks demonstrate ways that participants used tools as access points into the SWTOR community, as per Activity Theory (see Table 1 in 1.5.3 Activity Theory). Participants used tools such as online forums (both official and 3rd-party), websites, game guides, Excel sheets, video streaming, and voice chat servers, in addition to in-game tools such as text chat channels,

servers, trade networks, avatars, skill trees, and more. The limitations and affordances of these tools influenced participants' perceptions of possible cues to misinformation and disinformation.

Limitations refers to the constraints in usage or features faced by participants when using their game information management tools (Norman, 1990). Participants may have discovered limitations only through using their tools, and, thus, only after their needs have arisen. That is, participants were expecting additional functionality from their tools, which the tools failed to offer. This gap between the needs and expectations of participants and the limitations and constraints of their tools influenced how participants perceived possible cues to misinformation and disinformation.

Affordances refers to the possible functions and uses allowed by participants' game information management tools (Victor Kaptelinin & Nardi, 2012; Norman, 1990). Participants used the affordances of their tools to accomplish their goals related to their game information management tasks. Participants leveraged the features of their tools to create strategic or social advantages for themselves or for their guilds. Participants' use of their tools, or their criticism of other players' use of tools, influenced how participants perceived possible cues to misinformation and disinformation. As artifacts of their design, the participants' game information management tools presented limitations and affordances, which mutually shaped each other and influenced participants' perceptions of possible cues.

5.3 Research Question 2 Addressed

The second research question probed how individuals' constructions of meanings might influence their perceptions of possible cues to misinformation and disinformation, in addition to the potential influence of teammates. Participants' constructions of meanings influenced their perceptions of possible cues through social and information curation. Table 22 lists those findings and theoretical frameworks relevant to the second research question.

5.3.1 *Influence of Constructions of Meanings*

In the context of this research, the constructions of meanings refers to how participants made sense of information so that it became valuable or significant to them. That is, participants constructed meanings through integrating their life experiences, personal preferences, personalities, etc. with the social and informational aspects of the SWTOR community and environment, thereby demonstrating the principles of interactive determination and of symbolization from Symbolic Interactionism (see Table 2 in 1.5.4 Symbolic Interactionism). This integration manifests itself as social and information curation, which may have influenced and enabled participants' perceptions of possible cues to misinformation and disinformation.

Social curation refers to participants' deliberate selection and organization of their social interactions and relationships with other players, both known and unknown,

according to participants' goals or values. Social curation tasks may have included choosing with whom to interact, the manner in which participants interacted with other players, whether as a group or as individuals, and the extent to which participants regulated their responses to other players.

Information curation refers to participants' efforts to assemble coherent and relevant interpretations of facts from heterogeneous ephemera such as previous personal experiences, misremembered blog posts, rambling forum posts from other players, misinterpreted statements during text chats with other players, in addition to the rumors, gossip, game lore, and tall tales from other players. Information curation tasks may have included evaluating multiple sources' interpretations of information, comparing other players' opinions and experiences, maintaining personal research notes outside the game software, and creating disposable characters for the sake of testing and experimenting different strategies.

5.3.2 *Influence of Teammates*

Although not a major part of research question 2, participants' relationships with their teammates (i.e., fellow guild members) or their teammates' opinions or personalities may have influenced participants' perceptions of possible cues to misinformation and disinformation. As discussed previously (see 1.4.4 Teams and 2.10 Management and Teamwork in MMOs), teams foster meaningful connections among their members. Consequently, participants' may have relied upon their trust in their teammates to be able to expose their own vulnerability and honesty. That is, viewing their trust relationships as

safe and secure may have enabled participants to perceive possible cues to misinformation and disinformation.

Vulnerability refers to participants' willingness to be wrong or to fail among their teammates. Participants' trust in their teammates mitigated their concerns about self-presentation that otherwise might have prevented participants from voicing their ideas or opinions. Participants' vulnerability was undergirded by knowing that their teammates reciprocated with their own vulnerability. The safety of being able to be wrong or to fail created by team membership allowed participants to perceive possible cues to misinformation and disinformation.

Honesty refers to participants' communicative integrity and relational goals or expectations with their teammates. Honesty, however, is not without risk or cost; but among the trust relationships of guild members, potential risks or costs may be reduced or minimized. More than merely truth-telling, honesty requires candidness. Because this direct approach may strain or test relationships, honesty also requires trust among teammates to value each other's viewpoint, even during disagreement. The security of trusted relationships enabled participants to perceive possible cues.

5.4 Theoretical Frameworks Revisited

To understand cues, places, tools, and meanings, this study leveraged Interpersonal Deception Theory (IDT), Information Grounds (IG), Activity Theory (AT), and Symbolic Interactionism (SI) as theoretical frameworks; see 1.5 Theoretical Frameworks for

elaboration. The analysis of the interview transcripts (see 3.11 Interviews and Appendix A: Interview Protocol) and of the online artifacts (see 3.9 Online Artifact Collection) was guided by these frameworks (see 3.13 Data Analysis). Therefore, the findings of this study (see 4.5 Possible Cues to Misinformation and 4.6 Possible Cues to Disinformation) were mutually shaped both by the data and by these frameworks. Buller & Burgoon's IDT positions deception (i.e., disinformation) as a dynamic, strategic communication strategy to mislead receivers. IDT's view of deception influenced both the coding analysis (see 3.13.1 Code Creation Process) and the definition of possible cues to disinformation (see 4.4.1 Cue Perception and 4.6 Possible Cues to Disinformation). Fisher's IG illustrates how places are created by people gathering together, and Activity Theory, via Kaptelinin & Nardi, models how tools offer entry points to communities. In the research described here, participants' accounts of using technological tools to create places spotlighted the importance of places and tools in influencing perceptions of possible cues. Symbolic Interactionism, via Snow, contends that individuals construct meanings of experiences, events, or objects to aid in making sense of reality. This contention was well-supported in this study by participants' explanations of their interpretations and meanings of possible cues to misinformation and disinformation.

5.4.1 *Information Grounds*

Because places are created by those who use them, viewing the research from an Information Grounds perspective highlighted players' determination and commitment to forging their own places. Using Information Grounds enabled me to see beyond just players' social networks or specific locations in the game. IG's notion of place as in flux,

depending on who is present or how players are interacting, illuminated my understanding of how places may influence possible cues and their perceptions.

My observation sessions occurred in dungeons, as the guilds wanted to defeat their bosses. While the guilds I observed had assembled for an instrumental purpose (to play the game), their gathering also allowed them to share gossip and other information irrelevant to the immediate task. In a sociotechnical sense, the Information Grounds of those sessions included the dungeon, but also my home office (where I was observing), the Twitch stream through which I was able to observe, the Mumble server we used for voice chat, and the various and varied physical locations of the guild members. It's unclear whether these pieces constitute individual IGs or a single, inclusive IG, depending on how the relationships among these pieces are conceived. Further, after I logged off and the Twitch stream stopped, the other pieces remained for a duration of time unknown to me, thus suggesting flexibility both in assemblage and in temporality of IGs previously unreported.

5.4.2 *Activity Theory*

An Activity Theoretical view of SWTOR surfaced the numerous, dynamic, and multi-layered sociotechnical networks in which the participants and their game information management tools were embedded. Although Activity Theory offers many elements potentially relevant to this work within its activity system concept (e.g., rules, community), I saw its notion of tools as entry points to a community as a means to understand how tools might influence possible cues and their perceptions. Using Activity Theory in this

way allowed for the emergence of two possible cues novel to deception detection research: Technological Artifacts and Avatar Metadata.

The emergence of these possible cues caused me to consider the potential effects of misinformation and disinformation within an activity system. When tools create or disseminate possible cues to misinformation or disinformation, the activity system in which they're embedded may temporarily shift focus to create a secondary object – to correct the mistaken information, for example – within, or in addition to, the first object. Although the outcome of the activity system may not change, the creation and management of secondary objects or sub-objects is not discussed within Activity Theory, but may be an interesting consideration when applying AT to the challenge of possible cues to misinformation and disinformation in online environments.

5.4.3 *Symbolic Interactionism*

Symbolic Interactionism provided potential explanations of the variability among individuals in their perceptions and interpretations of possible cues to misinformation and disinformation. The principles of interactive determination and of symbolization were especially helpful in highlighting how possible cues may be perceived differently among individual participants.

The principle of interactive determination seeks to account for the manner in which and the extent to which relationships among people, ideas, objects, events, etc. contribute to their mutually shaping interactions. The principle of symbolization emphasizes the

processes through which people, ideas, objects, events, etc. become sufficiently meaningful to individuals so as to evoke feelings or actions. Approaching the data with these principles in mind positioned me to understand why two participants might perceive the same possible cue with different meanings, or might perceive a similar meaning between two different cues. Understanding the data through the lenses of these two SI principles fomented the emergence of Negative Experiences as a possible cue novel to deception detection research.

No other study to date in game studies or in deception detection has used the sociological lens provided by Symbolic Interactionism. Game studies has strong humanities and anthropology influences, and it's surprising that other studies of online games have not leveraged SI to investigate or explain online game players' connections to or motivations for playing their chosen games, for example.

Most deception detection research, however, occurs in the controlled environments of laboratories, and such research sites, or the types of research questions investigated there, may be unsuitable for using SI. This research study may illustrate ways to use SI to expand and deepen current deception detection research, particularly regarding why or how people may either publicly state their belief and/or actually believe in misinformation and disinformation.

5.5 Contributions

This study fostered fresh insights and multiple contributions to theory and methodology. The exploratory nature of this research offered exciting opportunities to investigate ill-defined concepts, use established theories in domains previously neglected, and uncover novel applications of methods.

5.5.1 *Theoretical*

This work is the first in information science to articulate conceptual definitions of the terms, 'misinformation' and 'disinformation' (Karlova & Lee, 2011), thereby furthering the notion of information. This work is also the first in information science to situate 'misinforming' and 'disinforming' as types of information behavior; see (Karlova & Fisher, 2012) for a preliminary model of how information, misinformation, and disinformation are created and flow through social networks. These efforts bring information science closer to a robust understanding of misinformation and disinformation, and provide necessary rhetorical grounding for future work.

In terms of theoretical frameworks, this work is the first to apply Interpersonal Deception Theory and Information Grounds to online gaming. These novel applications demonstrated the resilience of these frameworks, and illuminated potential future applications, such as online video streaming. Additionally, this work is the first to apply Activity Theory and Symbolic Interactionism in deception detection research. This innovative application facilitated the emergence of three novel cues within deception

detection research: Technological Artifacts, Participants' Negative Experiences, and Avatar Metadata. Applying and combining these theoretical frameworks in new ways illustrated the significant potential of the online gaming domain to yield insights into both information behavior and deception detection research.

5.5.2 *Methodological*

Although not a novel method of investigation, online artifact collection is rarely employed for qualitative, exploratory work such as this. Yet, this method supplemented and complemented the other investigation methods of this study by providing additional evidence from sources created and/or supported by the player community, outside the official forums. The volume and variety of online artifacts suggests that deception detection research could expand by examining how these artifacts may be leveraged as tools of deception or of deception detection.

Online forums proved a particularly rich source of data for this study, and deception detection research could benefit by including online forums as sites of potential deception. For example, the incident of an unexpected occurrence demonstrated how players built a shared understanding of the occurrence by contributing the details of their firsthand experiences. Even in lab settings, where most deception detection research occurs, subjects are rarely given the opportunity to solicit others for information. They are typically assigned a role (deceiver or receiver) and then expected to deceive or to determine whether they are being deceived. Indeed, Frank's (2004) study (lab setting, assigned roles) showed that co-located small groups achieve greater success in detecting

deception because they can confer with each other, similarly to the players discussing an unexpected occurrence in an online forum. No deception detection research to date has examined how individuals in different geographies and time zones collaborate, either synchronously or asynchronously, to determine whether they are being deceived or misinformed; (Burgoon, Chen, & Twitchell, 2010) also explicitly call for such research, and highlight its need as employees increasingly work globally.

5.6 Implications

This exploratory research suggests interesting implications for game design and for the impacts of misinformation and disinformation. Game design could include misinformation and disinformation as design features to increase the collaboration and sociality among players. Offering users opportunities to correct misinformation could provide rich opportunities for meaningful engagement with corporate brands, governments, or other entities seeking user interaction. Disinformation may be used by deceivers across all facets of life, and understanding cues to disinformation may prove profitable.

5.6.1 *Game Design*

Game designers could create ‘information puzzles’ inside games using disinformation. Information puzzles might require players to assemble pieces of information to unlock some reward or achievement, such as loot or magical items. Part of the assembly process might require players to make determinations, collaboratively, about whether some information might be misinformation or disinformation, and which information is actionable

or needs verification. For example, perhaps one piece of information is only available to Healers and another piece of information is only available to Thieves, but both players need both pieces to solve the puzzle. The verification process can easily be a mini-quest unto itself through the use of confederates (e.g., NPCs) planting cues, either in-world or in game-related forums/wikis. These kinds of puzzles can: a) make games more engaging by requiring multiple types of understandings of the world; b) require both intra-team and inter-team work; c) offer more than one way to advance and to achieve 'success'; and d) appeal to a wider variety of potential players. Puzzles like these rely on piecing together disparate cues to assemble a complete picture.

5.6.2 *Misinformation as User Engagement Opportunity*

Misinformation offers opportunities for users to leverage their experiences to improve available information. For example, when e-government initiatives use crowd-sourcing, misinformation can be corrected in datasets, bus schedules, city council meeting notes, voters' guides, and other information produced and disseminated by governments at all levels. When the public is invited to improve or correct misinformation about a product, company, or service, such as errors in books or users' manuals, the correcting of misinformation can offer opportunities for engagement and create lasting and meaningful experiences for users and consumers. Because misinformation might result from accidental errors, experts, such as medical doctors, scientists, and other professionals, can seize an opportunity to educate information users. Because misinformation can be difficult to detect, governments, companies, and professionals can harness

misinformation as opportunities for crowd-sourcing corrections, for meaningful engagement, and for education.

5.6.3 *Disinformation as Information Management Tool*

Disinformation also provides business opportunities. Online Reputation Management (ORM) firms, such as Metal Rabbit Media (Metal Rabbit Media, n.d.) and Reputation.com (Reputation.com, n.d.), rely on disinformation to serve their clients. ORM is when people try to control the information about them available online, particularly via search engines such as Google (“ORM,” 2006). Some people find the task of ORM sufficiently daunting to hire professional ORM firms to manage their online reputation (Bilton, 2011a, 2011b). In the service of their clients, these companies can provide websites, portfolios, Twitter streams, blogs, Flickr accounts, Facebook pages, etc. The extent of the content depends on the level of service for which the client pays. ORM firms can also leverage Search Engine Optimization (SEO) techniques to ensure that their content appears towards the top of a search result list. These firms’ services exemplify disinformation because the information they provide is often true, accurate, and current – yet deceptive. It is intended to show the client in a different way. By studying highly nuanced cues to disinformation, these firms can improve their services and leave smaller, less perceivable cues.

Online reputation management firms are but one instance of a larger industry focused on misinformation and disinformation and their related cues. Competitive intelligence firms, such as Outward Insights, and strategic communication firms specialize in information manipulation. Competitive intelligence firms discover and analyze data

about their clients' competitors (e.g., market share, sales, etc.) ("CI," 2005) in a manner similar to future-trend-spotting. Because these firms often rely on data that might be highly speculative, it is important for them to discern cues to misinformation, which might be false, from cues to disinformation, which might have been deliberately generated by a rival firm or by their clients' competitors. Strategic communication describes a style of communication specific to public relations and marketing, whether for a large corporation or a celebrity ("StratCom," 2006). This type of communication is also used frequently by the military (Department of Defense, 2008). Strategic communication seeks to dispel misinformation – often by communicating true but misleading disinformation. The field of marketing offers numerous opportunities to harness misinformation and disinformation. Guerilla, undercover, and viral marketing ("Guerilla," 2003; "Undercover," 2003; "Viral," 2003) might use deceptive techniques (e.g., evasion, exclusion, vagueness) to market products and services to often unsuspecting consumers. Coolhunting is a type of marketing ("Coolhunting," 2005) dependent on rumor tracking, and is strongly subject to misinformation and disinformation because the aesthetic of cool often requires secrecy and because rumors are often unreliable information sources.

Disinformation can cause negative effects for businesses as well. A company's reputation might be damaged, perhaps due to a competitor, market speculators, or industry-wide struggles. For example, a rumor about a possible bank failure might cause a run on the bank, as happened in December 2011 in Latvia ("Queues in Latvia," 2011). In a state of information uncertainty, people queued for hours to withdraw their funds because they did not trust the bank.

5.7 Future Work

The findings of this work (see Table 20) suggest areas for fruitful investigation. Both deception detection and information security research could benefit from exploring how users may perceive technological artifacts as possible cues to misinformation or disinformation. For example, users may disregard notification icons that appear to be security or antivirus updates, but could actually be malware. Both game designers and user experience designers may benefit from deeper understandings of how or under which circumstances gamers' and users' negative experiences with a product may influence their perceptions that they are being deceived either by other players or by the product itself. Avatar metadata, richer and more complex than most social media profiles, could provide insight into how people use cues to deceive and to uncover deception because metadata manipulation requires a high level of knowledge, experience, and skill. Additionally, the strength or weakness of cue perception could be studied by creating dyads of deceivers-receivers, asking deceivers how adept they feel in wielding cues to deception, and then comparing deceivers' answers with how strongly or weakly receivers felt they could perceive cues. This comparison might yield insights into how or why cues are perceived or not and whether cues are interpreted as deceptive or not.

Given the prevalence of online collaboration tools and an increasingly global workforce, deception detection research must focus on distributed groups and teams. Unlike dyads paired in a research lab, today's employees are geographically dispersed, asynchronous, and collaborate within small and large teams across multiple projects. The distributed nature of modern work does not guard against misinformation and

disinformation; indeed, this distribution may contribute to the dissemination of misinformation and disinformation. Therefore, I advocate that deception detection research should examine:

- how distributed teams collaborate to determine the veracity or falsity of information
- the processes by which teams decide that a cue is or is not a cue
- the processes by which teams decide that a cue means misinformation or disinformation
- how teams account for or grapple with intercultural misunderstandings in these decisions
- the costs of deception detection labor to the team:
 - how this labor is initiated and divided
 - to what extent this labor detracts the team from its primary purpose
 - how this labor is rewarded or punished both within the team and externally
 - how such labor may affect the reputation or standing of the team or its individual members

In this dissertation research, technological tools were influential in the perception of possible cues. Deception detection research, however, has yet to embrace the potential of understanding technological tools as instruments of deception or of deception detection. While social media may be notorious for the dissemination of misinformation and disinformation, deceivers use a wide variety of technological tools, including malware, the dark/deep web/net, bots, email, and even phone calls. While these tools may also fall into the domain of information security, they are often used on private individuals, and so can be studied from the viewpoint of a user or victim.

Additionally, researching how distributed individuals collaborate within online forums or chat channels, for example, to determine misinformation or disinformation – a unique type of information problem-solving – could provide additional cues and more nuanced understandings of cues and their usages. Further, online forums and other social

media can provide additional sources of data for deception detection research, particularly since much of it focuses on linguistic cues. In fact, the popularity of meme images on social media could provide a way to understand how people read visual cues to misinformation and disinformation.

In terms of theory, this work suggests that Interpersonal Deception Theory could enrich both Information Grounds and Activity Theory. For example, Information Grounds posits that people benefit from IGs, but misinformation and disinformation may counteract any benefit and may actually create detriment. Further research, however, may uncover other aspects of IGs that might aid in deception detection. Activity Theory highlights the role of community in an activity system, but misinformation and disinformation, mediated by tools, may disrupt an activity system. Additional research may determine how activity systems account for misinformation and disinformation, if at all.

Symbolic Interactionism could help information behavior researchers understand how or why information becomes meaningful to users and how this meaning might influence their information behavior. For example, further research could elucidate the differences, if any, between information curation and information assemblage, and how these might differ from Dervin's Sense-Making and Bates's Berrypicking. Information literacy is another area that could benefit from incorporating misinformation and disinformation into its research. This research suggests that perhaps a focus on the perceptions of cues to misinformation and disinformation, rather than on cues to authority,

may be more effective in the effort to increase critical thinking and information problem-solving.

Finally, I wish to acknowledge the cultural limitations of this dissertation work, and, frankly, of most deception detection research, which is largely published by North American researchers. The possible cues to misinformation and disinformation presented here and elsewhere need to be tested in non-English speaking cultures, as well as those outside the U.S. Further, the implications of technological tools on the perceptions of cues needs to be investigated. For example, during a court trial, if the monitor on which an expert is giving testimony via Skype is calibrated too dimly or too brightly, the expert's skin color may appear darker or lighter. This variability of skin color appearance may prove to be a perceptible cue to misinformation or disinformation, which may influence both the expert's credibility with the jury and judge and their judgement and sentencing. Misinformation and disinformation and their cues can provide rich opportunities for research and social impact.

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APPENDIX A: INTERVIEW PROTOCOL

Script for Oral Explanation of the Research:

Is it ok for me to record this interview?

~~Open Pamela, Click Record button~~

“Is it ok for me to record this interview?”

Thank you for agreeing to take part in this study. As a reminder, participating in the study is voluntary, and you can stop at any time.

This research is about how teams of online game players make judgments about information in the online game, Star Wars: The Old Republic.

The interview should last about 60 minutes. If you do not want to answer a question, just say, ‘Pass’ or ‘Skip’.

Did you read the Participant Information Sheet?

Do you have any questions, comments, or concerns about it?”

1. What is your role or job in your guild?

Tell me about your role or your job in the guild.

What do you do to help out your guild?

[probe]

2. What do you need to know to do this job?

What kinds of information or what kinds of skills do you need to know to do this job?

[probe]

2A. How did you find out this information?

How did you get this information?

[probe]

2B. Do you have ways of sorting or organizing or keeping track of this information?

[probe]

3. Have you or your guild ever come across information that seemed mistaken or inaccurate in some way?

[probe]

3A. What about this information made you or your guild think it was mistaken?

What aspects of this info... ?

How did you decide that this info or source was mistaken or inaccurate?

When did you realized that the info or source was mistaken or inaccurate?

[probe]

3B. Did you or your guild use this information in some way?

Did you or your guild take action or make a decision based on this info?

[probe]

4. Have you or your guild ever come across information that seemed misleading in some way?

[probe]

4A. What about this information made you or your guild think it was mistaken?

[probe]

4B. Did you or your guild use this information in some way?

[probe]

APPENDIX B: RECRUITMENT MATERIALS

Recruitment Email for Team judgments of information

(Sample recruitment email)

Hello,

I am conducting a study with the University of Washington Information School. I am looking for study participants to learn more about how teams of online game players make judgments about information.

Are you currently a member of a guild in Star Wars: The Old Republic?

If so, you are eligible to participate in a study to learn more about how teams of online game players make judgments about information.

Participation is voluntary. If you would like to volunteer, I will observe you playing the game in the game world with your guild and may ask to interview you. The interview will last about 60 minutes or so.

If you would like to participate or learn more about this study, please contact:

Natascha Karlova

nkarlova@uw.edu

Please note: The confidentiality of information sent by email cannot be guaranteed.

This study is being conducted with the University of Washington Information School.

Recruitment Flyer for Team Judgments of Information

(Sample recruitment flyer)

Seeking volunteers for a study with
the University of Washington Information School
to learn about how teams make judgments about information in games

Are you a member of a guild in Star Wars: The Old Republic?

If so, you are eligible to participate in a study to learn more about how teams of online game players make judgments about information.

Participation is voluntary. If you would like to volunteer, I will observe you playing the game in the game world with your guild and may ask to interview you. The interview will last about 60 minutes or so.

If you would like to participate or learn more about this study, please contact:

Natascha Karlova
nkarlova@uw.edu

Please note: The confidentiality of information sent by email cannot be guaranteed.

This study is being conducted with the University of Washington Information School.

Feel free to take one

SW:TOR team study
nkarlova@uw.edu
SW:TOR team study
nkarlova@uw.edu
SW:TOR team study
nkarlova@uw.edu
SW:TOR team study
nkarlova@uw.edu
SW:TOR team study
nkarlova@uw.edu
SW:TOR team study
nkarlova@uw.edu
SW:TOR team study
nkarlova@uw.edu
SW:TOR team study
nkarlova@uw.edu

Recruitment Tweet for Team Judgments of Information

(Sample Tweet)

You can help be a part of a study of how #SWTOR guilds judge info: [URL]

Recruitment Forum Post for Team Judgments of Information

(Sample Post)

I am conducting a study with the University of Washington Information School. I am looking for study participants to learn more about how teams of online game players make judgments about information.

Are you currently a member of a guild in Star Wars: The Old Republic?

If so, you are eligible to participate in a study to learn more about how teams of online game players make judgments about information.

Participation is voluntary. If you would like to volunteer, I will observe you playing the game in the game world with your guild and may ask to interview you. The interview will last about 60 minutes or so.

If you would like to participate or learn more about this study, please contact:

Natascha Karlova

nkarlova@uw.edu

Please note: The confidentiality of information sent by email cannot be guaranteed.

This study is being conducted with the University of Washington Information School.

APPENDIX C: PARTICIPANT INFORMATION SHEET

University of Washington Information Sheet

Team judgments of information

Investigator:

Natascha Karlova

PhD Candidate

The Information School

University of Washington

517-798-6713

nkarlova@uw.edu

*Please note: The confidentiality of information sent via email cannot be guaranteed.

Advisor:

Karen Fisher, Ph.D.

Professor

The Information School

University of Washington

206-543-6238

fisher@uw.edu

Researcher's statement:

I am asking you to be in a research study. The purpose of this information sheet is to give you the information you will need to help you decide whether or not to be in the study. Please read this form carefully. You might want to ask for more information about why I am doing this study and what you will be asked to do if you decide to be a part of it. You may ask questions about the possible risks and benefits and what your rights are as a volunteer. You may ask any questions about the research and ask for help understanding any part of it that is not clear to you. When all your questions have been answered, you can decide if you want to be in the study or not. If I get any new information about the study or there are changes to the study in any way, I will let you know right away. This process is called, 'informed consent'. You can save or print a copy of this form for your records.

Purpose of the Study

The purpose of this study is to understand how teams of online game players make judgments about information. I hope this study will provide insights into how people make sense of information in online settings. You can take part in this study if you are a member of a guild in Star Wars: The Old Republic (SW:TOR).

Study Procedures

Observations

If you decide to be in this study, I will observe you playing the game in the game world, such as during raids or Missions. This means that you and I will need to coordinate together to meet at the same times and places. This means that I will see your avatar on

my screen, and any guild or group chat (if I am allowed to join the guild or group), in addition to the public chat. I might capture video recordings or screenshots of you playing the game. This means that I will record your avatar playing the game and communicating with me or with your fellow guild members or with other players. I will observe how you use information, and make notes on how information is used by you or your guild members in the game.

Interviews

I might ask you to participate in an interview via Skype, which will be audio-recorded. The interview will probably last about 60 minutes or so. You will be asked about your experiences playing online games and your information habits when playing online games. You do not have to answer every question. If you do not want to answer a question, just say, 'Pass' or 'Skip'.

Follow-up

After the interview has been completed, I might contact you again if I need to clarify any of your answers. You can change your mind about being in the study at any time. If you do change your mind, just tell me via email. You also do not have to clarify your answers if I contact you about that. Just tell me you would rather not provide any more information.

Risks, Stress, or Discomfort

There are no physical risks to participating in this study. The interview may include some questions that may be sensitive to you. You may find these upsetting. The interview may be long, and you may become tired. Please take a break any time you need to.

Benefits of this study

There is no benefit to you in being part of this study. The study results may provide me with important information on how teams of online game players make judgments about information.

Other Information

Confidentiality of your information

Taking part in this study is voluntary. You can stop at any time. Your responses are confidential. If I publish the results of this study, I will not use your name. Although I will follow all required procedures, I cannot guarantee the confidentiality of the study information. However, I will take steps to protect your confidentiality. For example, I will assign pseudonyms to the study information you provide me. The link between the pseudonym I've assigned and your real identity will be stored securely on my computer and destroyed by December 31, 2016. If you decide you want me to delete all of your study data, I will do so as soon as you request.

Audio recording and transcript

The audio recording of your interview will be analyzed by me to understand how teams of online game players make judgements about information. The recording will be listened to by study staff and by a professional transcriptionist, who will type up a written transcript of the interview. Both the audio recording and its written transcript document will be stored securely on my computer and destroyed by December 31, 2016. You have the right to review your recording and its written document, and to delete any portion you may wish.

Security of your information

Information that might identify you to others (like your name) will be kept in a different place from my observation notes and your answers to interview questions. The only way your name can be matched up with my observation notes and your interview responses will be through your pseudonym. I will keep all of your information in safe places like locked cabinets and password-protected computers. Since the interviews will be conducted via the internet, you should be extra careful to protect your confidentiality. Do not share your user login or your password with others.

Review of your information

Sometimes government or university staff will review studies such as this one to make sure they are being done safely and legally. If a review of this study takes place, your records may be examined. The reviewers will protect your privacy. The study records will not be used to put you at legal risk of harm.

There are no costs for you to be in this study. You may decide not to be in this study. You may start the study and decide not to finish. If you do, there will be no penalty.

If you have questions later on or about the study, you can ask me via my email address: nkarlova@uw.edu . If you have questions about your rights as a research subject, you can call the University of Washington Human Subjects Division at (206)-543-0098.

APPENDIX D: CODEBOOK

Code	Definition	Example
201_CueStrongPerception	When participants strongly perceived a possible cue	<p>Time is a big one, like say they killed the boss in such and such time, and you just think about how many health points the boss has and how much damage per second it means to kill the boss that fast, and the numbers don't add up, you know. You can't do it in 3 minutes with this many health points with that team, it's not possible. So you didn't do them right. You did something else, what did you do (laughs)? You know, and the opposite. If it took a really, really, really, really long time, you know, you pound on the boss for 20 minutes and then you finally got the kill, well again most of these bosses have a mechanic called a rage where if it takes you too long the boss just starts killing people, so that's another indication of an obvious exploit that's going on. Both of those have happened recently. Yeah, yeah.</p>
201a_MISCueSP	When participants interpreted a possible cue to mean misinformation	<p>we were testing someone else's idea on how to do this. We applied several times for – for a week, about 4 hours each night. Each one of those were inconsistent. Like, sometimes you could get closer. Sometimes we'd be like, 40%. Sometimes we'd be nowhere close at all. It's like, 'something's wrong here. it's not working. we need to just not use it anymore cause it's not helping us, it's just holding us back.'</p>
201b_DISCueSP	When participants interpreted a possible cue to mean disinformation	<p>a lot of people say, say they'll jump into PvP with just crap gear and annihilate people in full ... in full PvP gear. I was like, 'No, dude', like, the math just doesn't work out. You're a 20% damage mitigation and healing deficit. It's like, you're not gonna beat anybody.</p>
202_CueWeakPerception	When participants weakly perceived a possible cue	<p>Developers haven't said anything. um, is – there are signs that there might be, but there's no clear indication from the community that they found something.</p>

202a_MISCueWP	When participants interpreted a possible cue to mean misinformation	In Story mode, it worked decently. In Hard mode, it was just causing – it was causing the kind of – it was, like, odd. It was a very large amount of inconsistency in how the boss behaved, and we couldn't quite figure it out.
202b_DISCueWP	When participants interpreted a possible cue to mean disinformation	If it's second- and third-order, you know, like, 'Hey, I heard that there's this group that does it this way. I've never actually seen it, though.' You know, it's pretty clear. I mean, it could be people lying to us
301_AT_ToolsObjects	When participants discussed, mentioned, or commented upon the technological tools they used for gameplay or for game information management	Also, if I find something and it says, like, here's the answer to X Y or Z question, and there's zero comments and no one's done anything with it, I don't trust it.
302_IG_PlaceSpace	When participants discussed, mentioned, or commented upon the places and spaces they used for gameplay, for information, and for sociality	It's been a really big thing in the game lately that a lot of servers are trying to get other people to, as guilds, transfer over those servers and better populate their servers, when their servers are in really kinda poor – it seems like mostly in this game PvP servers are kinda dying out and mostly the PvE servers are the ones that has still really heavy populations. And I think some of the PvP servers kinda resent that idea, so they're trying to kinda – even to the point of almost bullying people sometimes on the forums to kinda like come to their servers and stuff like that, even though the populations are kinda waning. And that's kind of a big discussion for us, we like to just kinda chat and stuff like that about nonsense and stuff on my guild's Mumble. And a lot of times, like, 'Hey, you guys see on this on this forums about LONG and all this stuff?' And we're like, 'No, it's not true. We went and there wasn't that great.'
303_SI_MakingMeaning	When participants discussed, mentioned, or commented upon how or why something became meaningful or significant or important or interesting to them	In the server-first races, you sort of -- usually you kind of know who the competition is, right? I mean you know the guilds that have been competing at these things in the past and who have the gear, who have been killing the bosses in the past, have the teamwork and the experience, and then if all of a sudden

		<p>someone new pops up on the radar, you're like, well how'd you do that, you know? Where did you come from? Who are your team members that we have never heard of? How is that possible? So that's usually the biggest cue, is that suddenly there is sort of an out of the left field group of names; doesn't make sense. It's possible. I mean there are server transfers. It's possible for these kinds of things to happen, but it's just -- that's where the skepticism comes from, usually is like last time around you didn't kill anything, and now all of a sudden you're killing everything? Like I don't -- you know, what are you doing (laughs)? That's our biggest one, and it's just -- those guys, because they're so competitive are keeping tabs on everybody else. I mean literally there are times when they are like what night are they raiding, are they going to raid -- you know, what time? And just it's to really follow what's going on. Especially, you know like, for example like this week because they just dropped new content yesterday, you know, it's a really big thing to figure out who's doing what and when.</p>
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VITA

Summary

Detail-oriented user experience researcher. Expertise includes understanding how users identify misinformation and disinformation in online environments. Demonstrated success in team-oriented environments.

Education

- Defense: Aug 1 2017:, Ph.D., Information Science, University of Washington

Dissertation topic: How do teams of online game players identify cues to misinformation (mistaken information) and to disinformation (deceptive information)?

- M.S., Information Science, University of Washington

- B.A., English, Washington State University

Work Experience

Contractor: Technical Writer II (2012-2017)

Philips Ultrasound, Global Training and Education

Designed and analyzed user experience online surveys for global sales force; created clinical education training materials for global sales force; coordinated online delivery of training materials; coordinated and organized training events for global sales force (e.g., communicated tasks and deadlines with team, managed online registration, organized files to send to off-site printer, etc.).

Strengthened knowledge of DICOM standard, networking, ultrasound workflow, and connectivity.

Co-Instructor, Online LIS 570: Research Methods (2012)

Created and delivered lectures on qualitative methods, interviewing, ethnography, and focus groups; selected appropriate readings for these topics; guided discussions on online discussion board; coordinated with 3 other co-instructors and 2 TAs; graded assignments; created rubrics.

Teaching Assistant (2007 – 2013)

University of Washington Information School – Seattle

Instructed and assisted students in comprehension of subject material; independently lead student lab sessions; created grading rubric; graded student work; assisted instructor with lecture preparation; communicated with students independently and in small groups; lead small group and large group discussions; provided and conducted lectures; prepared teaching materials, such as lecture slides or case studies; found and evaluated reading materials; created handouts; maintained grades database in Excel; calculated final grades.

I have TA'd for nearly 20 classes, ranging from early undergraduates (e.g., freshman and sophomores) to mid-career Master's students, class sizes ranged from over 100 students to 20 students.

Administrative Assistant (2006 – 2007)

Indiana University School of Medicine

Triaged visitors; managed calendar; arranged travel; obtained reimbursements; answered multi-line phone; edited text and images for timely and successful submission of 6 federal research grants, 13 research publications and 8 national presentations; ordered lab supplies; obtained animal testing protocol approval; performed various other duties as needed (e.g., dropped off patient files at Data Management Office, picked up lab supplies from pharmacy, etc.).

Administrative Grant Coordinator (2003 – 2006)

Indiana University School of Medicine

Assisted faculty with grant submissions -- on time & per regulations. Created and revised 35 multi-million dollar budgets and multi-year projections; edited text and images; kept up-to-date with and explained various rules and regulations for multiple international, federal, state, and private grant funding institutions; performed various duties as assigned (e.g., answered multi-line phone, worked with graphic designer to create logo, etc.).

References:

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Karen E. Fisher, Ph.D.

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206-543-6238

Relevant Publications:

Karlova, N., & Lee, J. H. (2012). Playing with Information: Information Work in Online Gaming Environments. In Proceedings of the 2012 iConference (pp. 441–443). Toronto, Ontario, Canada: ACM. <https://doi.org/10.1145/2132176.2132241>

Karlova, N.A., & Fisher, K. E. (2012). “Plz RT”: A social diffusion model of misinformation and disinformation for understanding human information behaviour. Presented at the Information Seeking in Context, Tokyo, Japan.

Karlova, Natascha A., & Lee, J. H. (2011). Notes from the underground city of disinformation: A conceptual investigation. In Proceedings of the American Society for Information Science and Technology (Vol. 48, pp. 1–9). New Orleans, LA. <https://doi.org/10.1002/meet.2011.14504801133>

Karlova, Natascha A., Marino, J. L., Lin, P., & Eisenberg, M. B. (2014). Challenges and Opportunities in Virtual Worlds: Informed Consent and Data Collection. Presented at the iConference 2014, Berlin, Germany. <https://doi.org/10.9776/14385>