

# Online Disinhibition: Conceptualization, Measurement, and Relation to Aggressive Behaviors

*Research-in-Progress*

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## Abstract

*The Internet has changed the way we communicate and interact with other people. Individuals become loosen up and feel less restrained to say or do things in the online space that they would not ordinarily say and do in the offline environment. This online disinhibition effect has been found to be associated with online aggressive and deviant behaviors. Though the concept of online disinhibition has been introduced to the literature for almost two decades, there is still a lack of consensus regarding its conceptualization and operationalization. In this research-in-progress paper, we first revisit the concept of online disinhibition. We then propose a rigorous approach in scale development and validation. We believe that this research will contribute to the development of literature related to the societal impacts of technology use. The newly developed and validated measures of online disinhibition will be added to the repository of rigorous research instruments.*

**Keywords:** Societal implications, dark side of technology use, online disinhibition, instrument development, aggressive behaviors, deviant behaviors, cyberbullying, online harassment

## Introduction

The Internet has changed the way we communicate and interact with other people. Previous research on psychology and the Internet have recognized that people often say or do things in the online space that they would not ordinarily say and do in the offline world (Joinson 1998, 2003, 2007; Suler 2004). For example, some individuals are more likely to disclose private or secret information of themselves online; something that they may less likely to in a traditional face-to-face interaction. Some people are more likely to act aggressively online (e.g., writing online harassing messages), while they act nice and gentle in the offline environment. Suler (2004) described these phenomena as a result of the “online disinhibition effect”.

In the psychology literature, the term “disinhibition” describes an individual’s rebellious tendency to ignore social constraints and seek for stimulations (Ramirez et al. 2002). Individuals are more inclined to engage in behaviors that they would not normally do when they experience the feeling of disinhibition (Zuckerman 1979). With the increasingly ubiquitous use of information technologies, the concept of disinhibition has been frequently applied to explain why individuals engage in online aggressive and deviant behaviors, such as flaming and online harassment (e.g., Christofides, Muise and Desmarais 2012; Lapidot-Lefler and Barak 2012). Although the concept of online disinhibition (or online disinhibition effect) has existed in various disciplines, including communication (Hollenbaugh and Everett 2013), education (Chester 2006), psychiatry (Barak, Boniel-Nissim and Suler 2008), social psychology (Bryce and Fraser 2013), and information systems (Mesch 2012), for almost two decades, its conceptualization and operationalization are not yet well-defined in the literature. Joinson (2007) also argued that disinhibition in computer use is a difficult term to define.

Given the importance of understanding the emerging societal challenges of technology use, this study aims to revisit the concept of online disinhibition via a series of systematic and theoretically integrated investigations. To be specific, this study has three major research objectives: (1) to conceptualize and operationalize online disinhibition, (2) to validate instrument measuring online disinhibition, and (3) to inform system designers the formation of online disinhibition.

In response to the call for more research on the societal implications of technology use in the academic community (Majchrzak, Markus and Wareham 2012; Tarafdar, Gupta and Turel 2013), we hope that this research will contribute to the development of the existing literature. The newly developed and validated measures of online disinhibition will be added to the repository of rigorous research instruments. Furthermore, the result will provide system designers with some practical insights in formulating design tactics. For instance, by identifying the key components of online disinhibition (e.g., anonymity, invisibility, and the like), system designers can use the complete scale to determine the formation of online disinhibition, or they can focus on specific areas that are in need of attention for maintaining a healthy online platform.

## Current Status of Online Disinhibition Research

Table 1 summarizes some selected studies related to online disinhibition. Based on our review of previous literature, researchers defined and conceptualized the concept of online disinhibition in various ways. Indeed, online disinhibition can be defined as the loss of constraint in expressing thoughts, feelings, and behaviors online. In this section, we describe how researchers conceptualized and operationalized online disinhibition in the previous literature.

### ***Online Disinhibition as a Behavioral Concept***

The first line of research on online disinhibition is more concerned with all kind of disinhibited behaviors online. Building upon Zimbardo’s study (1977), Joinson (1998) described disinhibition as “*any behavior that is characterized by an apparent reduction in concerns for self-presentation and the judgement of others*” (p. 44). This line of studies argued that some online behaviors, such as self-disclosure (Hollenbaugh and Everett 2013), online aggression (Görzig and Ólafsson 2013), online flaming (Lapidot-Lefler and Barak 2012), and cyberbullying (Udris 2014), are the result of the online disinhibition effect. Suler (2004) further divided online disinhibition into two types of disinhibited online behaviors: benign disinhibition and toxic disinhibition. Benign disinhibition refers to sharing very personal things, revealing

secret emotions, fears, and wishes as well as showing unusual acts of kindness and generosity. Toxic disinhibition refers to the dark side of using the Internet, such as rude language, harsh criticism, threats, and anger. Not until recently, Udris (2014) built on Suler’s (2004) conceptualization and developed an eleven-item scale for online disinhibition with the two mirror factors (seven items for benign disinhibition and four items for toxic disinhibition).

**Table 1. Selected Studies of Online Disinhibition**

Author (Year)	Definition	Context	Research Method	Conceptualization	Operationalization
Barak, Boniel-Nissim, and Suler (2008)	“People say and do things in cyberspace that they ordinarily would not say or do in the face-to-face world. They loosen up, feel more uninhibited, and express themselves more openly.”	Online support group	Conceptual paper	Internet attributes (i.e., anonymity, invisibility, delayed reactions, solipsistic introjection, and neutralizing of status)	No
Bryce and Fraser (2013)	NIL	Cyberbullying	Focus group	Internet attribute (i.e., anonymity)	No
Casale, Lecchi, and Fioravanti (2015)	“A psychological condition that a person experiences when he or she is less inhibited to exhibit certain behaviors or to express certain feelings or thoughts online compared in FtF interactions.”	Problematic Internet use	Survey	Psychological state (i.e., feeling of disinhibition)	Three items
Görzig and Ólafsson (2013)	NIL	Cyberbullying	Survey	Internet attributes (i.e., anonymity and lack of social control)	Anonymity – three items Lack of social control – two items
Hollenbaugh and Everett (2013)	“When people have the opportunity to separate their actions online from their in-person lifestyle and identity, they feel less vulnerable about self-disclosing and acting out.”	Self-disclosure	Content analysis	Internet attribute (i.e., anonymity)	No
Lapidot-Lefler and Barak (2012)	“A lowering of behavioral inhibitions in the online environment.”	Online flaming	Experiment	Behavior (toxic disinhibition – online flaming)	No
Posey et al. (2010)	“An individual feels free to perform public behaviors and is predicted by the degree to which he or she experiences public and private self-awareness.”	Self-disclosure	Survey	Internet attributes (i.e., anonymity)	Anonymity – four items
Schouten, Valkenburg, and Peter (2007)	“A psychological state in which a person feels less inhibited to exhibit certain behavior.”	Self-disclosure	Survey	Psychological state	Three items
Suler (2004)	NIL	Online environment	Conceptual paper	Internet attributes (i.e., dissociative anonymity, invisibility, asynchronicity, solipsistic introjections, dissociative imagination, and minimization of status and authority)	No
Udris (2014)	“Lack of inhibition or a type of behavior that is not constrained or restrained.”	Cyberbullying	Survey	Behavior (i.e., benign disinhibition and toxic disinhibition)	Benign disinhibition - Seven items Toxic disinhibition – Four items

**Online Disinhibition as a Psychological State**

The second line of studies defined online disinhibition as the psychological state in which individuals feel less inhibited in the online environment (Schouten, Valkenburg and Peter 2007). This conceptualization explains that online disinhibition is a domain-specific psychological state rather than a personality trait. Furthermore, it emphasizes the way in which individuals online may become less inhibited to exhibit certain behaviors that they would not normally do in an offline interaction. Several scholars have

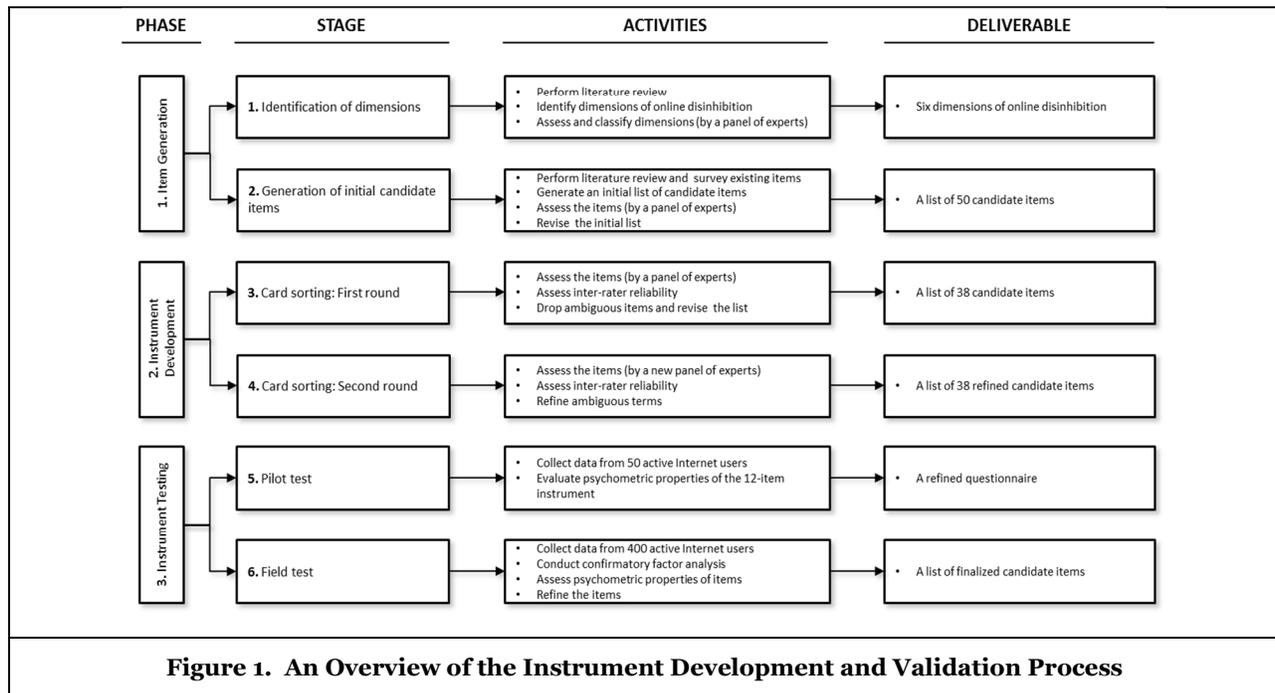
attempted to operationalize this concept. Schouten, Valkenburg, and Peter (2007) developed a three-item scale that captures the experience of feeling less restrained and examined its relationship with online self-disclosure. Casale, Lecchi, and Fioravanti (2015) adopted Schouten et al.'s (2007) scale and tested its relationship with problematic Internet use.

### Online Disinhibition as a Composition of Internet Attributes

The third line of studies assumed that some Internet attributes exhibit the online disinhibition effect. Based on our review of prior literature (See Table 1), anonymity is the most frequently studied Internet attribute in the online disinhibition research (e.g., Barak, Boniel-Nissim and Suler 2008; Görzig and Ólafsson 2013; Hollenbaugh and Everett 2013). Suler (2004) proposed six key Internet attributes that exhibit online disinhibition effect. The six attributes are dissociative anonymity, invisibility, asynchronicity, solipsistic introjections, dissociative imagination, and minimization of status and authority. These six factors are expected to interact and supplement one another and result in a more complex and amplified effect (Barak, Boniel-Nissim and Suler 2008). In other words, online disinhibition can be presented as a multidimensional construct comprising of six key dimensions. The relevance of one of the six factors leading to online disinhibition has been discussed in various contexts, such as MSN social networks (Miller 2015), online support groups (Barak, Boniel-Nissim and Suler 2008), and online game (Gray 2012). However, these studies are mostly qualitative and exploratory in nature. There is a lack of validated measures of the key dimensions of the online disinhibition construct.

### Developing the Online Disinhibition Scale

To date, there is sparse empirical research about how online disinhibition should be measured. Among the three types of conceptualization, we believe that viewing online disinhibition as a composition of Internet attributes is a more relevant perspective to both IS researchers and system designers. We argue that by adopting this particular conceptualization, we will be able to address the underlying mechanisms in which technology attributes (i.e., Internet attributes) form usage experience that may subsequently lead to aggressive responses. In this study, we followed Churchill's (1979) robust paradigm to develop and validate the online disinhibition scale. The instrument development paradigm consists of three major phases: (1) item generation; (2) instrument development; and (3) instrument testing. Figure 1 presents an overview of the instrument development and validation process.



## Item Generation

### Identification of Dimensions

Based on our review of prior literature, Suler (2004) identified six key Internet attributes that contribute to the formation of online disinhibition. They are dissociative anonymity, invisibility, asynchronicity, solipsistic introjection, dissociative imagination, and minimization of authority. Table 2 describes the six key dimensions of online disinhibition.

### Generation of Initial Candidate Items

We followed a two-step procedure to create an initial pool of items (Belk 2014). In the first stage, we collected relevant items from existing literature. In the second stage, we generated new items based on the definition of the dimensions. A total of 50 items were generated to capture the six dimensions of online disinhibition. We generated multiple items for each dimension (see Table 2).

Dimension	Definition	Initial set of items
Dissociative Anonymity (DA)	The degree to which an individual perceives that he/she can hide or change their true identity in the online environment.	9
Invisibility (IV)	The degree to which an individual perceives that he/she is not physically seen by others in the online environment.	9
Asynchronicity (AS)	The degree to which an individual perceives that the mode of communication enables delayed responses in the online environment.	8
Solipsistic Introjection (SI)	The degree to which an individual perceives a voice or an image of the other persons in his/her mind in the online communication.	8
Dissociative Imagination (DI)	The degree to which an individual perceives the online environment as an imaginary world that has no connection to reality.	8
Minimization of Authority (MA)	The degree to which an individual perceives the absent or diminishing influence of real life authorities in the online environment.	8

## Instrument Development

### Card Sorting

To ensure content validity of the initial set of items, two rounds of card sorting exercises were conducted. The items were evaluated by a panel of experts who were either Ph.D. degree holders or were currently pursuing a Ph.D. degree. The procedures of the card sorting exercises were as follows: Before the card sorting exercise, the panel members were requested to read the instruction. They were encouraged to ask questions for clarification. During the card sorting exercise, the panel members were asked to carefully read each item and classify it into the corresponding dimension of online disinhibition. After the card sorting exercise, they were asked to provide qualitative feedbacks toward the items.

Two measurements, Cohen's (1960) Kappa and item placement ratio, were computed to assess the reliability of the sorting procedures and the content validity of the instrument. The results of the first round of card sorting are shown in Tables 3 and 4. The Cohen's Kappa score ranges between 0.62 and 0.83. The overall placement ratio of the items within the target dimension is 84%, suggesting that the candidate items were generally sorted into the intended dimensions. Following the first round of result, we dropped ambiguous and confusing items and further revised the remaining items based on the panel members' comments. Thirty-eight items were retained for the second round of card sorting exercise.

The results of the second round of card sorting are significantly better than the previous round. As shown in Tables 5 and 6, the Cohen's Kappa score ranges between 0.81 and 0.94. The overall placement ratio of the items within the target dimension is 94%, suggesting that the candidate items were satisfactorily sorted into the intended dimensions.

**Table 3. Round 1 Card Sorting - Degree of Agreement (Cohen's Kappa)**

	<i>Judge A</i>	<i>Judge B</i>	<i>Judge C</i>	<i>Judge D</i>	<i>Judge E</i>	<i>Average</i>
<i>Judge B</i>	0.76					
<i>Judge C</i>	0.71	0.71				
<i>Judge D</i>	0.69	0.66	0.62			
<i>Judge E</i>	0.81	0.78	0.66	0.74		
<i>Judge F</i>	0.78	0.76	0.73	0.83	0.83	0.74

**Table 4. Round 1 Card Sorting - Item Placement Ratio**

<i>Dimension</i>	<i>Actual Categories</i>							<i>Total</i>	<i>TGT %</i>
	<i>DA</i>	<i>IN</i>	<i>AS</i>	<i>SI</i>	<i>DI</i>	<i>MA</i>			
Dissociative Anonymity (DA)	43	5	1	2	3		54	80%	
Invisibility (IV)	7	38	2	4	3		54	70%	
Asynchronicity (AS)			47		1		48	98%	
Solipsistic Introjection (SI)	3		1	44			48	92%	
Dissociative Imagination (DI)	10				38		48	79%	
Minimization of Authority (MA)	4			1	1	42	48	88%	
<i>Total Items Placement: 300</i>	<i>Hits: 252</i>			<i>Overall Hit Ratio:</i>				84%	

**Table 5. Round 2 Card Sorting - Degree of Agreement (Cohen's Kappa)**

	<i>Judge K</i>	<i>Judge L</i>	<i>Judge M</i>	<i>Judge N</i>	<i>Judge O</i>	<i>Average</i>
<i>Judge L</i>	0.87					
<i>Judge M</i>	0.84	0.91				
<i>Judge N</i>	0.87	0.94	0.91			
<i>Judge O</i>	0.87	0.87	0.84	0.87		
<i>Judge P</i>	0.81	0.84	0.81	0.84	0.84	0.86

**Table 6. Round 2 Card Sorting - Item Placement Ratio**

<i>Dimension</i>	<i>Actual Categories</i>						<i>Total</i>	<i>TGT %</i>
	<i>DA</i>	<i>IN</i>	<i>AS</i>	<i>SI</i>	<i>DI</i>	<i>MA</i>		
Dissociative Anonymity (DA)	33	2			1		36	92%
Invisibility (IV)	2	38			2		42	90%
Asynchronicity (AS)			42				42	100%
Solipsistic Introjection (SI)		1	1	32	2		36	89%
Dissociative Imagination (DI)	3				27		30	90%
Minimization of Authority (MA)						42	42	100%
<i>Total Items Placement: 228</i>	<i>Hits: 214</i>			<i>Overall Hit Ratio:</i>				94%

To conclude, the 38 candidate items demonstrated sufficient content validity for the next stage of instrument validation tests.

**Instrument Testing**

**Pilot Study**

A self-administered online questionnaire was randomly distributed to fifty respondents for review and refinement. The respondents were recruited from the Amazon Mechanical Turk (MTurk) system, an online crowdsourcing platform where people participate in tasks in exchange for remuneration. This platform was chosen due to its relative advantages (higher demographics variability (Matzler, Veider and Kathan 2015), comparative reliability (Närvänen, Gummesson and Kuusela 2014), widespread utilization by researchers from other fields and the relatively low risk of dishonest responses due to the anonymity offered by the platform; a very crucial element in conducting research on the dark side of IT) compared to traditional offline questionnaire and online questionnaire offered by other platforms (Paolacci, Chandler

and Ipeirotis 2010; Rand 2012). To detect potential careless, random or haphazard responses, four “captcha” questions were included to screen out respondents who did not pay attention during the survey (Yannopoulou, Moufahim and Bian 2013). Cronbach’s alpha was calculated for assessing scale validity and reliability (See Table 7). Scale reliability met conventional standards of internal consistency (Hair et al. 2006), with Cronbach’s alpha greater than 0.70.

Dimension	No. of item	Alpha	Mean	Std. Dev.
Dissociative Anonymity (DA)	6	0.92	3.69	1.68
Invisibility (IV)	7	0.95	3.93	1.65
Asynchronicity (AS)	7	0.74	5.75	0.65
Solipsistic Introjection (SI)	6	0.79	5.12	1.02
Dissociative Imagination (DI)	5	0.87	2.90	1.43
Minimization of Authority (MA)	7	0.91	3.72	1.50

Based on participants’ feedback in the pilot study, we refined the wording of the scale items (See Appendix A for the full list of items of online disinhibition).

## The Current Stage

We are now preparing a refined online questionnaire for the full-scale field study. We plan to recruit 400 respondents also through MTurk due to the aforementioned reasons.

The instrument development and validation process will be continued. First, the reliability of the 38 items will be evaluated using Cronbach’s alpha. The convergent validity and discriminant validity will then be assessed. We expect that some items will be dropped from the 38-item scale after the full-scale field study. During the conference, we will be able to report the finalized scale. In addition, we will test the nomological validity of the construct by empirically testing the relationship between online disinhibition and problematic Internet use. Building upon the study of Casale, Lecchi, and Fioravanti (2015), we expect that a high level of online disinhibition is associated with the preference for online social interactions (POSI), the belief that one is safer, more comfortable, and less threatened online than in Face-to-Face interactions, and POSI, in turn, explains problematic Internet use.

## Conclusions and Expected Contributions

In this study, we revisit the concept of online disinhibition and develop and validate its measurement instrument. We find that researchers defined and measured online disinhibition in a mixed way, and there are mainly three major conceptualizations of the construct: (1) Online disinhibition as a behavior; (2) online disinhibition as a psychological state; and (3) online disinhibition as Internet attributes. Among the three types of conceptualization, we believe that viewing online disinhibition as a composition of Internet attributes is a more relevant perspective to both IS researchers and system designers. Building on Suler’s (2004) conceptualization of online disinhibition, six key dimensions (i.e., dissociative anonymity, invisibility, asynchronicity, solipsistic introjection, dissociative imagination, and minimization of authority) are identified and their measurement items were developed. The scale validation processes will be continued.

We expect that this study will have significant implications for researchers and practitioners. In response to the call for research on the dark side of technology use (e.g., Tarafdar, Gupta and Turel 2013) to contribute to the potential ICT-enabled bright society research through problem identification approach (Lee 2016), we revisited and defined the online disinhibition construct. Furthermore, we developed and validated its measurement items by following a rigorous instrument development approach. We expect that the newly developed and validated measurement items will be added to the repository of rigorous research instrument for IS researchers. Essentially, this study helps explain three basic issues: (1) what defines online disinhibition; (2) how online disinhibition is formed; and (3) which attributes are relatively more important to the formation of online disinhibition. The result will also provide system designers with some practical insights in formulating design tactics.

<b>Appendix A. A List of 38 Refined Candidate Items</b>	
	<i>When I am in the online environment,...</i>
DA1	I feel that my acts are unidentifiable from the others.
DA2	I believe that other users would not figure out my identity.
DA3	I feel I am anonymous.
DA4	I believe that my personal identity remains unknown to others.
DA5	I feel that I can hide my identity.
DA6	I believe that my actions are not identifiable.
IV1	I feel that nobody can tell what I look like.
IV2	I feel like invisible.
IV3	I feel that others cannot see any of me.
IV4	I feel that I am invisible.
IV5	I feel that others cannot see me.
IV6	I feel that others are unaware of my look like.
IV7	I feel that my actions are invisible.
AS1	I can reply others anytime I like.
AS2	I can control the pace of communication.
AS3	I can have time lags for communication.
AS4	I can have time lags to review and edit my messages.
AS5	I do not need to reply others immediately.
AS6	I can delay my feedback to others.
AS7	I can postpone replying others.
SI1	I merge others' words with my own internal monologues.
SI2	I project a voice to a person with my own internal monologues.
SI3	I assign a character to that person I am communicating with.
SI4	I interpret others' messages with my expectation.
SI5	I perceive how that person's intended to talk about.
SI6	I read messages based on my thinking.
DI1	I feel like people in the online space are just imaginary with no connection to reality.
DI2	I feel that it is an imaginary world.
DI3	I feel that my online act has no connection to reality.
DI4	I feel that my online life is separated from the offline world.
DI5	I feel that there is no connection between my online world and my offline world.
MA1	I feel that there is no authority figure.
MA2	I do not need to care about real life authorities.
MA3	I feel that I am away from real life authorities.
MA4	I feel that I can get rid of authority.
MA5	I feel less fear of authorities.
MA6	I feel free from authorities.
MA7	I feel that authorities are absent.

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