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Implicit theories of online trolling: Evidence that attention-seeking conceptions are associated with increased psychological resilience.

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Implicit theories of online trolling: Evidence that attention-seeking conceptions are associated with increased psychological resilience.

**Abstract**

Three studies were conducted to investigate people's conceptions of online trolls, particularly conceptions associated with psychological resilience to trolling. In Study 1, factor analytic analysis of participants' ratings of characteristics of online trolls found a replicable bifactor model of conceptions of online trolls, with both a general factor of general conceptions towards online trolls being identified, but five group factors (attention-conflict seeking, low self-confidence, viciousness, uneducated, amusement) as most salient. In Study 2, participants evaluated hypothetical profiles of online trolling messages to establish the validity of the five factors. Three constructs (attention-conflict seeking, viciousness, and uneducated) were actively employed when people considered profiles of online trolling scenarios. Study 3 introduced a 20-item 'Conceptions of Online Trolls scale' to examine the extent to which the five group factors were associated with resilience to trolling. Results indicated that viewing online trolls as seeking conflict or attention was associated with a decrease in individuals' negative affect around previous trolling incidents. Overall, the findings suggest that adopting an implicit theories approach can further our understanding and measurement of conceptions towards trolling through the identification of five salient factors, of which at least one factor may act as a resilience strategy.

*Keywords:* Trolling, Implicit, Conception, Conflict, Attention, Negative Affect, Resilience.

Implicit theories of online trolling: Evidence of possible resilient conceptions to "attention seekers"

Trolling via social media (such as social networking sites or message boards) is frequently an attempt to argue with and upset people by posting inflammatory and malicious messages (Buckels, Trapnell, & Paulhus, 2014; Hardaker, 2010, 2013). The severity of trolling can range from relatively minor incidents, such as "accidental trolls" (someone who is just speaking their mind), to more extreme versions in which individuals intend to cause grief to bereaved families (Hardaker, 2010, 2013). Recently, the CEO of Twitter admitted to its ineffectiveness at dealing with trolling incidents (Hern, 2015), and recent high-profile cases in the media have drawn attention to the criminality that surrounds acts of trolling. Consequently, several individuals have been jailed for this online behaviour (Morris, 2011; Press Association, 2014a, 2014b), having been prosecuted under the Malicious Communications Act 1988, as well as Section 127 of the Communications Act 2003. Furthermore, current debates led by the UK Government suggest extending, to two years, the current six-month prison term for online trolling (Watt, 2014).

Within the recent psychological literature, there have been a series of considerations about online trolling, drawing on disparate areas of psychological theory. While Thacker and Griffiths (2012) surveyed those who play games online and found that a majority of online gamers engaged in online trolling for amusement or entertainment, Hardaker (2010, 2013) concentrated on models of computer-mediated communication and identified themes within communication that reflect aggression, deception, manipulation, disruption and success in invoking aggression or responses from others. Buckels et al. (2014), drawing on personality psychology, found that online trolling is associated with sadistic and Machiavellian personality traits. Chamorro-

Premuzic (2014) considered the social status and enhancement of online trolling and highlighted how it can operate as a status-enhancing activity, with the troll gaining approval from others, potentially receiving greater recognition than they do in their offline lives.

The psychological approaches individuals adopt when dealing with trolling are yet to be empirically studied. Early research findings suggest different outcomes of trolling behaviour, with deleterious outcomes for some victims of trolling, including suicide (Robson, 2014; Sky News, 2014; Zetter, 2009). Some view trolling as simple stupidity (Chamorro-Premuzic, 2014), whilst others view it as a criminal offence and feel legal intervention is required (Ellis-Petersen, 2014). In the case of Chloe Madeley, for example, who received threats of sexual assault after commenting on a criminal case (Powell, 2014c), the victim was reported as wanting to challenge the "vicious attention seekers" (BBC News, 2014, n.p). Consequently, there seems to be an opportunity to explore the structures around individuals' conceptions of online trolls (1).

The study of individual differences in the conceptions of online trolls, based on an implicit theories approach, has not yet been considered. Implicit theories are defined as personal interpretations, constructions, and beliefs about phenomena that reside in the minds of individuals – essentially, lay ideas that surround a particular topic or area (Sternberg, 2001; Sternberg, Conway, Ketron, & Bernstein, 1981). Sternberg suggests four reasons why studying implicit theories is important: (i) they present a valuable approach when current knowledge is inadequate, (ii) they are able to inform psychological theories around the investigated construct, (iii) they are able to reveal how individuals perceive their own beliefs, and (iv) they present initial findings from which more formal theories can be developed. Implicit theories have been used by psychologists to study people's everyday ideas in regards to a variety of domains, most often intelligence (Berg & Sternberg, 1992; Dweck & Elliott, 1983; Sternberg, 2001). Within an

implicit theories framework, interpersonal relationships have also been considered (Puccio & Cheminto, 2001), along with the processing of social information when forming impressions of others (McConnell, 2001), social stereotyping and stereotype endorsement (Levy, Plaks, & Dweck, 1999; Levy, Stroessner, & Dweck, 1998), and motivations around the media (Maltby et al., 2008).

There is an opportunity to extend the scope of this work beyond providing descriptors of conceptions towards online trolls. The current literature suggests, similar to offline bullying (Narayanan & Betts, 2014; Sapouna & Wolke, 2013), that while the outcomes for some victims of online trolling are detrimental to their well-being and sometimes grave (e.g. suicide), other victims seem resilient to trolling (e.g. viewing them as stupid or confronting them). In psychological terms, these differences in reactions, are described by the buffering hypothesis, whereby resilience to a particular event can be viewed on a bipolar dimension, in opposition to risk, through an examination of whether specific psychological characteristics or processes interact with particular negative events as resilience buffers, reducing or amplifying the latter's impact (Johnson, Wood, Gooding, & Tarrrier, 2011; Lundman, Strandberg, Eisemann, Gustafson, & Brulin, 2007; Rutter, Freedenthal, & Osman, 2008; Tugade, Fredrickson, & Barrett, 2004). In the current paper we propose that one's implicit theories towards online trolls may be considered within the buffering hypothesis, particularly focusing on how implicit theories about online trolls might heighten or ameliorate the effects of experiencing online trolling. Specifically, we argue that adopting implicit theories of online trolls that have a negative valence (e.g. viewing them as "vicious attention seekers") will act as a resilience factor against the negative effects of experiencing online trolling.

The aim of the current research was twofold. The first two studies used an implicit theories approach to elucidate the content and structure of individuals' conceptions of online trolls. The third study examined whether adopting implicit theories of online trolls that have a negative valence acts as a resilience factor against the negative effects of experiencing online trolling.

## STUDY 1

The aim of Study 1 was to elucidate the content and structure of individuals' implicit theories about online trolls.

### Method

#### Sample

Two samples of data were collected; (1) was used for an exploratory factor analysis (EFA) and (2) for a confirmatory factor analysis (CFA).

The first sample comprised 445 respondents (67 males, 378 females) who were undergraduates or postgraduates enrolled on university courses at one university over a three-year period. Participants ranged from 18 to 46 years ( $M = 19.66$  years,  $SD = 3.21$ ). They were predominantly of a White ethnicity (61.8%), with the next highest reported ethnicities being Black (10.8%) and South Asian (13.4%), though four respondents did not reveal their ethnicity.

The second sample comprised 229 undergraduate and postgraduate students from the same university (31 males and 198 females), aged 18 to 37 years ( $M = 19.38$  years,  $SD = 2.3$ ). These participants were also predominantly White (58.1%); with South Asian (15.7%) and Black (12.7%) being the next highest reported ethnicities).

We focused on university students as this particular age group of 18 to 29 year olds has a higher prevalence of social media usage than any other age group from 2005 to 2014 (Pew



Research, 2014). Therefore, as social media is a key forum for trolling, people in this age group are the most likely to have had various trolling experiences.

For both samples, involvement was part of an experimental participation scheme. Studies were advertised and volunteers completed the studies online via a local university electronic survey system (2).

### **Procedure**

We followed a procedure described by Maltby et al. (2008) in their exploration of implicit theories of individuals wanting to be famous. First, a list of descriptors of “trolls” was compiled through the sampling of 41 students (8 males, 33 females) aged 18 to 23 years ( $M = 19.39$ ,  $SD = 1.4$ ). Respondents were provided with the following definition. To “troll online is to post deliberately inflammatory articles on an internet discussion board (such as Facebook [TM], Twitter [TM] or social message board or Forum)”. Participants received a blank page on which they were asked to list as many behaviours and attitudes as they could think of that they felt were characteristic of a person who engaged in online trolling. Behaviours and attitudes that were mentioned by more than three participants were compiled into a final list of 87 descriptors. Data collection stopped at the point when participants were no longer providing new descriptors. The items were then administered to a focus group of six university undergraduate students (two males and four females) who checked the items for suitability of language, wording, and clarity. The participants were then provided with each of the 87 descriptors and were asked to rate the extent to which each descriptor was characteristic of someone who trolled. The participants used a response scale ranging from “1 (not characteristic at all)” to “10 (extremely characteristic)”.

### **Ethical Consent**

All procedures received ethical approval from a University's Psychology Ethics Board. Respondents provided consent after receiving information regarding the nature of the study, the anonymity and treatment of the data, and rights of withdrawal from the study.

## **Results**

### **Exploratory Factor Analysis (EFA)**

The first step of the analysis was to determine the factor structure of the items. To allow any potential factor structure to emerge, EFA was used in the first instance. The number of participants (445) to variables (87) ratio exceeded the recommended minimum ratio for EFA of 5 to 1 (with a minimum number of participants of 150) (Cattell, 1978; Gorsuch, 1983). All items were subjected to maximum likelihood analysis (Kaiser-Meyer-Olkin measure of sampling adequacy = .96; Bartlett's test of sphericity,  $\chi^2=32154.45$ ,  $df = 3741$ ,  $p < .001$ ).

Preliminary analyses of the 87 items demonstrated that the data were not skewed overall, with a mean skew of -.43 and a mean kurtosis of -.30. Consequently, a maximum likelihood extraction method was used for the EFA.

The decision as to the number of factors to retain is crucial when carrying out EFA. Typically, it will be based on the K1 method (eigenvalues greater than one; Kaiser, 1960), a scree plot (Cattell, 1966), and/or a parallel analysis of Monte Carlo simulations (Horn, 1965), the latter of which enables the researcher to compare the eigenvalues to those that might be expected from purely random data. Various reports have suggested that parallel analysis is the most appropriate and accurate method for determining the number of factors, demonstrating the least variability and comparing favourably to other methods (Fabrigar et al., 1999; Glorfeld, 1995; Ledesma & Valero-Mora, 2007; Zwick & Velicer, 1986). Therefore, parallel analysis was used as the definitive guide in this study. The sixth eigenvalue using a maximum likelihood extraction

(34.73, 5.45, 4.16, 2.37, 1.95 and 1.71) failed to exceed the sixth eigenvalue from the parallel analysis (2.02, 1.94, 1.89, 1.84, 1.80 and 1.76) calculated from 1,000 generated datasets with 455 cases and 87 variables, suggesting a five-factor solution.

Given this, a five-factor solution (see Table 1) was sought, using a promax rotation, as it was expected that the factors would be correlated, with delta set to 0. Meaningful loadings were assessed using the criteria of .32 (*poor*), .45 (*fair*), .55 (*good*), .63 (*very good*) and .71 (*excellent*) (Comrey & Lee, 1992; Tabachnick & Fidell, 2007), and using these criteria 71 of the 87 items loaded above .32 on only one of the factors, with 12 items loading at .32 or above (but equal to or below .45) across two factors. We have presented the items in Table 1 by the order in which the factors loaded, and by the salience of each item to that factor. All loadings above .55 (i.e. *good* to *excellent*) are in bold.

- Insert Table 1 here -

When considering these loadings, five factors emerge as having items with *good* to *excellent* loadings (i.e. above .55), and as exceeding the minimum criterion of three items for the establishment of a factor (Spector, 1992). The first factor is “seeking conflict-attention”, in which constructs such as attention seeking, conflict seeking, irritation, unkindness, immaturity, and time-wasting load most highly. The second factor is “low self-confidence and insecurity”, in which constructs such as low self-confidence, insecurity, being scared, and being lonely load most highly. The third factor is “viciousness-nastiness”, in which constructs such as nastiness, cruelty, vindictiveness, and viciousness load most highly. The fourth factor is “uneducated”, in which constructs such as low intelligence, low education, being of low interest, and being ignorant load most highly. The fifth factor is “amusement”, in which constructs such as funny, comedic, clever, and witty load most highly.

In light of these findings, two proposals were put forward: first, the five factors from the EFA can be used as a basis to measure different conceptions of online trolls, and second, five scales, using four items each, can be created using items that load on these factors under good or better criteria. These findings also exceeded the minimum criterion of three items for the establishment of a factor (Spector, 1992). The only factor that is an exception to this is the third factor, in which the descriptor “ignorant” loads below .55. However, we suggest that this is the best descriptor with which to create a four-item scale so as to provide an equivalent length of measurement to that of the other scales created.

### **Confirmatory Factor Analysis (CFA)**

To explore the structural validity and stability of the five-factor interpretation of the 20 items suggested by the EFA, responses to the 20 items (using the response scale of “1 [not characteristic at all]” to “10 [extremely characteristic]”) were collected from Sample 2 and subjected to CFA using AMOS 20. As it is useful to demonstrate the incremental value of proposed models (Barrett, 2007), we compared the five-factor interpretation of the data against three other models: (i) a unidimensional model, proposing that all 20 items could load on one factor, reflecting an underlying latent factor of implicit conceptions towards trolling; (ii) a higher order factor model to examine whether correlations between the first order factors are explained in terms of a higher order factor; and (iii) a bifactor model to allow for the identification of a single common construct (e.g. 'general everyday conception towards online trolls') while also recognising multidimensionality (five group factors of implicit theories of online trolls). To assess the model, the standard goodness-of-fit indices recommended by Hu and Bentler (1999) and Kline (2005) were applied, namely, the relative chi-square (CMIN/DF), alongside the chi-square and degrees of freedom, comparative fit index (CFI), non-normed fit index (NNFI), and

root mean square error of approximation (RMSEA) and the standardized root mean square residual (SRMR). Statistics that represent an 'acceptable' fit is indicated by a relative chi-square (CMIN/DF) of less than 3, CFI and NNFI of above .90, a RMSEA index of below .08, and a SRMR of less than .08 (Browne & Cudeck, 1993; Hu & Bentler, 1999; Tabachnick & Fidell, 2007). To diminish possible confusion around some of the statistics calculated for the bifactor model (e.g. common variance of factors and average loading of items on factors), for the CFA analysis we reverse coded all the 'amusement' items, so that within the model all the items indicated a lower acceptability of online trolls (i.e. 'low' amusement).

- Insert Table 2 here -

The goodness-of-fit statistics for the four models are presented in Table 2. For the five-factor model of online trolling, the fit statistics meet the aforementioned criteria. However, the bifactor model demonstrated improved goodness of fit statistics (with the exception of SRMR) than the five-factor model and a change in CFI ( $\Delta$  CFI) being  $> .01$  (Chung & Rensvold, 2002). The common variance accounted for the general factor in this model was 30.9%, with group factors explaining 2.7% (seeking conflict-attention), 12% (low self-confidence and insecurity), 20.6% (viciousness-nastiness), 16.4% (uneducated) and 16.4% ('low' amusement). Figure 1 shows the standardized loadings and measurement error terms for the bifactor model. In terms of salience of loading on the factors, the loading on the general factor were lower (Mean = .38) than on the group factors (Mean = .56). These findings suggest that although a general factor contributes to the description of online trolling, the group factors explain the majority of the common variance.

The Cronbach's alpha coefficients for the four-item scales (seeking conflict-attention, Sample 1,  $\alpha = .86$ , Sample 2,  $\alpha = .86$ ; low self-confidence and insecurity, Sample 1,  $\alpha = .78$ , Sample 2,  $\alpha = .85$ ; viciousness-nastiness, Sample 1,  $\alpha = .93$ , Sample 2,  $\alpha = .92$ ; uneducated,

Sample 1,  $\alpha = .83$ , Sample 2,  $\alpha = .87$ ; amusement, Sample 1,  $\alpha = .82$ , Sample 2,  $\alpha = .89$ ) exceed the *good* internal reliability criterion of  $\alpha > .7$  (Kline, 1999).

- Insert Table 3 here -

Table 3 shows the descriptive statistics for each of the online trolling scales for the overall sample and each individual sample in order of the highest mean for the overall sample. A within-subject analysis of variance suggested that there was a significant difference between each scale within the sample ( $F = 456.70, p < .001, \eta^2 = .41$ ), but not between samples ( $F = 1.22, p = .27, \eta^2 = .01$ ). A post-hoc pairwise comparison using Bonferroni corrections suggested a significant difference between each pair of scales for the whole sample ( $p < .001$ ). Together, these findings suggest that a 20-item Conceptions of Online Trolls measure can be proposed.

## STUDY 2

Sternberg (1985; Sternberg, Conway, Ketron, & Bernstein, 1981) notes the probity of any study of implicit theories of psychological constructs depends on whether the findings demonstrate any external validity, and can demonstrate that they do not just reside passively in participants' thinking, or are created merely as a result of participation in a psychological experiment. Therefore, Study 2 sought to test the external validity of the findings of Study 1 by examining whether individuals actively use those constructs identified in Study 1.

### Method

#### Sample

The participants were 28 undergraduate students (8 males, 20 females) at a university in central England, aged 18 to 28 years ( $M = 19.96; SD = 1.9$ ).

#### Procedure

Participants were presented with 60 profiles of fictitious content. Each profile was constructed from a combination of each of the four descriptors from each of the five factors identified in Study 1 and an additional four constructs (conscientious, depressive, prudent, stable). These additional four constructs were included to provide variance in the eventual regression model and were chosen from the IPIP list of scales by use of random number from the Alphabetical Index of 230 International Personality Item Pool scales listed on the International Personality Item Pool website (Goldberg et al. 2006; International Personality Item Pool, 2015). These 24 descriptors were then randomly assigned to each profile, until each of the 60 profiles had five descriptors each. An example of a profile would describe the content as “nasty, vicious, cruel, comedic, and prudent”.

Participants were presented with the following instructions:

“The following are descriptions of the typical content of messages posted on online social media forums (i.e. Facebook, Twitter, social message boards or forums) by a particular person. For each profile; rate the profile in terms of how much they are likely to reflect someone who is 'trolling' online”.

Participants were then asked to rate each of the 60 profiles on a 10-point scale ranging from 1 ‘Not at all likely to troll online’ to 10 ‘Extremely likely to troll online’.

## **Results**

Multiple regression was used to predict the overall ratings of each profile from the 5 factors. The sample size for the analysis was 60 (based on the number of profiles, not the number of participants in the experiment). Counts for each of the descriptors used from each factor in the profile were entered as predictor variables. Therefore, using the example cited above, if the profile contained three items from the viciousness-nastiness factor, and 1 item from the

amusement factor, then the predictor variables entered into the regression would be: 0 (conflict-attention seeking), 0 (low self-confidence and insecurity), 3 (viciousness-nastiness), 0 (uneducated), and 1 (amusement).

The regression statistic was significantly different from zero ( $F [5,54] = 14.68, r = .78, r^2 = .58, \text{adj } r^2 = .54, p < .001$ ). Table 4 shows the full results for the model. The present findings suggest that three regression weights, ‘conflict-attention seeking’, ‘viciousness-nastiness’ and ‘uneducated’ predicted unique variance (to at least a medium effect size) in the extent to which the profiles were describing online trolling behaviour. This finding suggests that these three factors are used actively in individuals’ evaluation of online trolling.

- Insert Table 4 here -

### STUDY 3

The third study examined whether adopting implicit theories of online trolls that have a negative valence acts as a resilience factor against the negative effects of experiencing online trolling.

#### Method

##### Sample

The sample comprised 263 participants (101 males, 162 females) aged 18 to 44 years ( $M = 22.88; SD = 5.2$ ) who were recruited from a university in central England through an experimental participation survey scheme as described in Study 1 ( $n = 157$ ), or were students surveyed online recruited via the Amazon Mechanical Turk programme ( $n = 106$ ; with a further 58 participants being excluded because they did not report being current students).

##### Procedure

Respondents were administered the negative affect scale from the Positive and Negative Affect Scale (Watson, et al., 1988), which is a 10-item measure of a number of mood states (e.g.



"upset", "nervous", "irritable") on a five-point response scale, rated from 1 ("Very slightly or not at all") to 5 ("Extremely"). This measure was administered to provide an indication of individuals' current level of negative affect pre-experiment and to control for it within the analysis. Respondents were then asked to respond to the 20-item Conceptions of Online Trolls scale developed in Study 1, but on this occasion we used a five point scale, with responses ranging from 1 (*Strongly Disagree*) to 5 (*Strongly Agree*). Then, they were presented with the following scenario:

"To troll online is to post deliberately inflammatory articles on a social media forum [such as Facebook [TM], Twitter [TM] or a social message board or forum]. Now think about a time when someone posted an inflammatory statement on a social media forum that was designed to UPSET and PROVOKE you."

The respondents were asked to indicate, on the following response scale, the time when this had happened: (1) "Never", (2) "More than a year ago", (3) "Within the last year", (4) "Within the last six months", (5) "Within the last three months", (6) "Within the last month", (7) "Within the last two weeks", or (8) "Within the last week". They were asked to rate how distressed they had felt about the incident at the time, scored on a five-point scale of 1 = "Not at all" to 5 = "Extremely". This measure was included so self-reported level of disturbance at the time of the event could be controlled for within the analysis. They were also given the option of describing the incident. They were then administered the negative affect scale from the Positive and Negative Affect Scale again. However, the instructions directed the respondents to think about the trolling event, and then answer each item in terms of how they felt about it now.

## Results

As CFA statistics have yet to be provided for the 20 item Conceptions of Online Trolls using the 5 point response scale, we provide fit statistics for the five-factor interpretation of the data, the higher order model and the bifactor model. As with Study 1, to diminish possible confusion around some of the statistics calculated to inform the bifactor model, for the CFA analysis only, we reverse coded all the amusement items, so they indicated 'low' amusement. The fit statistics meet the aforementioned criteria. However, the bifactor model (chi-square = 327.26, df = 150, CMIN/DF = 2.18, CFI = .94, NNFI = .92, RMSEA = .08, SRMR = .07) demonstrated improved model fit, by virtue of  $\Delta\text{CFI} > .01$ , than the five-factor model (chi-square = 413.26, df = 160, CMIN/DF = 2.58, CFI = .92, NNFI = .90, RMSEA = .08, SRMR = .07) and higher order model (chi-square = 488.14, df = 165, CMIN/DF = 2.96, CFI = .89, NNFI = .88, RMSEA = .09, SRMR = .12). The common variance accounted for the general factor in the bifactor model was 32.0%, and with group factors explaining 5.2% (seeking conflict-attention), 9.4% (low self-confidence and insecurity), 12.3% (viciousness-nastiness), 9.0% (uneducated), and 22.1% ('low' amusement). In terms of salience of loading on the factors, the loading on the general factor were lower (Mean = .37) than on the group factors (Mean = .62). These findings suggest that although a general factor contributes to the description of online trolling, the group factors explain the majority of the common variance.

The Cronbach's alpha (Cronbach, 1951) values of the five Conceptions of Online Trolls subscales and the two negative affect scales exceeded the *good* internal reliability criterion of  $\alpha > .7$  (seeking conflict-attention,  $\alpha = .85$ ; low self-confidence and insecurity,  $\alpha = .82$ ; viciousness-nastiness,  $\alpha = .86$ ; uneducated,  $\alpha = .85$ ; amusement,  $\alpha = .92$ ; pre-experiment negative affect,  $\alpha = .91$ ; negative affect around the trolling incident,  $\alpha = .83$ ).

Returning to the main aim of Study 3, of the original 263 respondents, 177 reported being trolled within one of the time frames provided ("More than a year ago",  $n = 53$ ; "Within the last year",  $n = 29$ ; "Within the last six months",  $n = 18$ , "Within the last three months",  $n = 18$ ; "Within the last month",  $n = 17$ ; "Within the last two weeks",  $n = 15$ ; and "Within the last week",  $n = 27$ ). In terms of the rating of the distress felt about the event, the mean score was 2.88 ( $SD = 1.2$ ). Of these 177 respondents 88 described the incident in detail. Of these, 45 described trolling events that would be viewed as a personal attack (e.g. "openly accused me of things", "anonymous teasing about a photo", "messages from an individual deliberately designed to make me feel isolated and excluded"), 30 described trolling events that could be seen as attempts to provoke reaction around a discussion point ("anti-feminists ranting against feminists and what they stand for on a video campaign for equality", "provoking by describing how they keep their dog purposely to upset people") and 13 respondents described trolling events that involved information being posted about them ("someone had posted a picture of me and wrote (sic) a horrible thing", "an incident happened in school and it was posted all over \*the social forum\*").

Table 5 shows the descriptive statistics for each of the online trolling subscales comparing the conceptions of trolls of those that have and have not experienced trolling. Those who have experienced scored statistically significantly higher on the uneducated subscale, and statistically significantly lower on the seeking conflict-attention, low self-confidence and insecurity, and amusement subscales.

- Insert Table 5 here -

To examine whether any of the conceptions towards trolling predicted negative affect regarding the trolling incidents, we ran a two-step multiple regression among the sample of respondents who reported to have been trolled ( $n = 177$ ) to examine whether the five conceptions

(predictor variables in step 2) predicted negative affect (dependent variable), after controlling for sex, age, which subsample the participant came from (English = 1; Mechanical Turk = 2), reported level of distress at the time of the incident, and time since the event (predictor variables in step 1). The results from GPower-3 (Faul, Erdfelder, Lang, & Buchner, 2007) suggested that with 11 predictor variables, a total sample of  $n \geq 122$  was required to detect a significant difference at the  $p < .05$  level of significance (two-tailed), to achieve a power of .8, and for findings to be of a medium effect size ( $f^2 = .15$ ). The current sample size exceeded this criterion. Variance inflation factors (VIFs) and tolerance factors for the predictor variables were no larger than 3.73 and no smaller than .52 respectively. These did not contravene the criteria of VIFs of at least 5 and tolerance statistics of less than .2, which are used to suggest multicollinearity (Kutner, Nachtsheim, Neter, & Li, 2004).

- Insert Table 6 here -

The results of the regression analysis for each well-being variable are presented in Table 6. In step 1, sex, age, subsample, pre-experiment negative affect, original distress, and time since the incident did not demonstrate a statistical significance in predicting the present-day level of negative affect regarding the incident ( $F [6,170] = 13.95, r = .57, r^2 = .33, \text{adj } r^2 = .31, p < .001$ ). In terms of specific variance, being a participant in the Amazon Turk group, pre-experiment negative affect and original distress predicted unique variance in higher levels of negative affect. In step 2, the inclusion of the conceptions scales led to a statistically significant change in  $R^2$  for negative affect (subjective well-being,  $\Delta R = .06, p = .012$ ). In terms of specific variance, higher levels of attention-seeking conceptions predicted unique variance (to a medium effect size) in lower levels of negative affect.

## Discussion

Five replicable factors emerge from individuals' implicit theories about online trolls, reflecting four conceptions about trolls with a negative valence that they are attention seeking, have low self-confidence, are vicious, are uneducated – and one conception with a positive valence, namely, that they are amusing. These findings are consistent with themes previously identified in the literature, the seeking conflict-attention factor reflects need for recognition and acknowledgement (Chamorro-Premuzic, 2014), the viciousness-nastiness factor reflects sadistic personality traits and aggression (Buckels et al., 2014; Hardaker, 2010, 2013), the low self-confidence factor suggests that trolling is a status-enhancing activity (Chamorro-Premuzic, 2014), and the amusement factor captures the idea that trolling is a source of entertainment for the troll and those around them (Thacker & Griffiths, 2012). Our findings suggest an additional “uneducated” factor, which might be symptomatic of the university student sample studied, reflecting the particular attention paid to this dynamic within the sample. However, the current findings suggest that one conception adopted towards trolling is that the intellectual capabilities of the troll are considered to be low.

A Confirmatory Factor Analysis of the conceptions of online trolls item scores in Studies 1 and 2 suggested that a bifactor model provided the best goodness-of-fits statistics for the data. This indicates that there is evidence that conceptions of online trolls may be best described as within both identification of a single common construct (e.g. 'general conception of online trolls') while also recognising the multidimensionality of the five group factors (conflict/attention seeking, low self-confidence, vicious, uneducated, and amusing). The emphasis of the common variance explained from the factor loading in terms of the general compared to the group factors suggest that in terms of conceptions of online trolls, researchers may gain more from recognising the multidimensionality of the construct as described by the group factors. However, future

research would also gain from understanding conceptions of online trolls within the bifactor model that incorporates a general factor of conceptions of online trolls. Endorsement of the five conceptions indicated that respondents viewed online trolls mostly as attention seeking, followed by displaying viciousness, having low self-confidence, being uneducated, and finally a source of amusement (there being a significant difference between each pair of conceptions). In the first instance, these findings suggest a replicable model of implicit theories of the characteristics of online trolls.

Notably, a further test regarding the probity of these constructs suggests that two of the five factors, namely, low self-confidence and amusement, did not predict the identification of fictitious profiles of social media of behaviour. This finding suggests that these interpretations of the characteristics of online trolls were not actively used by individuals when presented with a summary (albeit fictitious) of social media behaviour. The type of scenario used may be one particular reason why these factors did not emerge. For example, we asked participants to consider traits in terms of postings on online social media forums. However, trolling for amusement is more common in online gaming than in other types of social media (Thacker & Griffiths, 2012). Future research might consider the appropriateness of these factors targeted at behaviour across general (i.e., experiences across all social media) and specific (e.g., experiences in gaming, discussion forums, forums where material is posted) social media domains, enabling the development of a psychologically robust model of online behaviour.

Study 3 explored whether these five group factors, as assessed by the introduced 20-item Conceptions of Online Trolls scale, comprising five subscales, could be used to examine whether attitudes towards online trolls act as a resilience factor against the negative effects of experiencing online trolling. Results revealed that it is only when individuals view online trolls as

“seeking conflict or attention” it ameliorates the negative effect of the latter. Since the effect size of this outcome, for both sets of descriptors, is medium, it can be considered of practical significance (Cohen, 1992; Lipsey, 1998). Consequently, the adoption of a conception that online trolls are conflict or attention-seekers may serve as a resilience factor against the negative emotional effects of being trolled. However, as aforementioned, a recommendation of this study is that the applied value of these constructs is further considered within specific domains (e.g. gaming). Furthermore, research may wish to consider the perceived underlying motives for the trolling events, and explore whether particular conceptions (e.g. online trolls as being vicious) act as a resilience factor against particular types of online trolling (e.g. vicious trolling).

The two significant outcomes from this study pertain to the measure of conceptions of online trolls and the application of practical skills around emotional resilience to online trolls. Firstly, the identification of 20 characteristics that could form the basis of a measure of conceptions of online trolls (Conceptions of Online Trolls scale), demonstrates adequate reliability and structural validity (Messick, 1995). This could be used as a screening tool or psychometric test for assessing the adoption of these conceptions, and has practical applications to be used with individuals who may be considered vulnerable to trolling. One identified caveat was that only three of the five factors demonstrated robustness in terms of being shown to be actively used by individuals in their evaluation of descriptions of social media behaviour.

The second main outcome suggests possible discussions around how to be emotionally resilient to online trolls, although the causality of this relationship has yet to be explored. Given the limited evidence, the discussion might have most impact at a macro level, disseminating the views of expert individuals (i.e., individuals who have grown up with online trolls) through the media or forums, reinforcing the negative stereotypes of online trolls as attention seekers, and

thereby developing a narrative that could be used to devalue the status of online trolls. This would be advantageous for helping individuals not seeking help.

The current study examined the conception of online trolls among a sample comprising a large majority of individuals who grew up with social media and who are likely to be familiar with all the vicissitudes of that technology. The advantage of implicit theories is that the methodology allows for comparisons within and across cultures (Sternberg, 1981). Such a possible variation can be noted from the findings in Study 3, where individuals who reported being trolled scored significantly differently on four of the five Conceptions of Online Trolls subscales than those who had not experienced being a victim of trolling. Therefore, further work could begin to explore this topic among samples who differ in their experiences of trolling (e.g. perpetrator, victim, and witnesses), and other population groups, for example non-student samples and schoolchildren. Such considerations would extend current findings by exploring to what extent conceptions of online troll vary across culture and to what extent these variations need to be considered when exploring narratives around online trolling. The second future direction is to further expand on the psychological correlates of conceptions of online trolls, particularly if they are likely to expand on possible resilience factors that may ameliorate the effects of online trolls on victims. For example, comparing conceptions towards online trolls against measures of personality, coping, and affective states might further elucidate possible resilience factors to the effects of online trolls.

In summary, the current findings present an initial five-factor framework that provides a context in which to explore conceptions of online trolls. From our adoption of an implicit theories approach to online trolls, the findings suggest that five themes emerge in everyday ideas about online trolls: that they are attention seeking, exhibit viciousness, have low self-confidence, are



uneducated, and are a source of amusement; although three of these themes (attention seeking, viciousness, and uneducated) seem to be most active in the samples' minds. Furthermore, the findings suggest that the adoption of a conception reflecting one of these factors (i.e. that online trolls are conflict or attention seeking) may be potentially useful in helping individuals to be resilient to online trolling situations.

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**Tables**

Table 1

*Maximum Likelihood Factor Analysis with Promax Rotation of Trolling Descriptors*

Item	1	2	3	4	5
1. seeks conflict	<b>.951</b>	-.208	-.023	-.091	-.049
2. seeks attention	<b>.910</b>	.009	-.152	-.062	-.015
3. annoying	<b>.877</b>	-.092	-.141	.003	-.156
4. irritating	<b>.833</b>	-.051	-.104	.132	-.099
5. unkind	<b>.831</b>	.055	-.127	.034	-.075
6. immature	<b>.831</b>	.047	-.134	.070	-.136
7. time-wasting	<b>.810</b>	-.075	-.067	.111	-.034
8. bored	<b>.805</b>	.160	-.235	-.171	.036
9. provoking	<b>.801</b>	-.183	.152	-.102	.143
10. disruptive	<b>.787</b>	-.076	.061	-.042	.037
11. too much time on their hands	<b>.740</b>	-.037	-.064	.139	.006
12. inconsiderate	<b>.735</b>	.068	.127	-.067	-.125
13. controversial	<b>.697</b>	-.024	.022	-.190	.293
14. insensitive	<b>.671</b>	.081	.259	-.132	-.038
15. rude	<b>.667</b>	-.051	.265	.051	-.015
16. argumentative	<b>.663</b>	.026	.133	-.242	-.069
17. trouble-maker	<b>.654</b>	-.096	.203	.126	.059
18. persistent	<b>.624</b>	.093	.040	-.052	.145
19. idiotic	<b>.572</b>	.074	-.004	.153	-.113

20. unthoughtful	.515	-.158	.280	.261	-.071
21. likes anonymity	.484	.078	.071	-.045	-.005
22. ridiculous	.473	.065	.053	.304	-.010
23. ignorant	.465	.221	.103	.089	-.117
24. lack of social decorum	.463	.220	.019	.158	-.092
25. opinionated	.441	.230	.055	-.189	.225
26. cowardly	.426	.307	.186	-.110	-.136
27. tactless	.394	.090	.164	.123	.015
28. impulsive	.390	.296	-.040	.001	.155
29. false	.359	.179	.179	-.005	.046
30. aggressive	.352	.200	.273	-.129	-.097
<hr/>					
31. low self-confidence	-.001	<b>.804</b>	-.044	-.002	-.099
32. insecure	.156	<b>.747</b>	.010	-.102	-.155
33. lonely	-.118	<b>.726</b>	-.025	.070	.055
34. emotional	-.209	<b>.667</b>	.019	-.071	.116
35. scared	.179	<b>.662</b>	-.070	.010	-.071
36. jealous	.027	<b>.647</b>	.247	-.019	-.084
37. has unresolved issues	.074	<b>.645</b>	.150	-.084	-.172
38. disappointed	-.125	<b>.631</b>	.006	-.030	.209
39. envious	.007	<b>.613</b>	.175	-.028	-.114
40. introverted	-.182	<b>.613</b>	-.010	.042	.077
41. sad	.068	<b>.599</b>	.043	.101	-.011
42. awkward	.151	.534	-.258	.082	.077

43. powerless	.073	.474	-.196	.269	.049
44. troubled	.141	.471	.231	.091	-.083
45. sheltered	-.032	.443	.131	.193	.170
46. odd	.139	.351	-.013	.303	.154
47. unattached	.118	.345	.125	.271	.091
<hr/>					
48. vicious	.067	.006	<b>.824</b>	-.027	.047
49. nasty	.226	-.050	<b>.804</b>	-.010	.023
50. cruel	.182	-.140	<b>.791</b>	-.036	-.013
51. vindictive	.121	-.034	<b>.730</b>	.101	-.027
52. spiteful	.264	.094	<b>.688</b>	-.146	.065
53. mean	.396	-.081	<b>.660</b>	-.042	.019
54. bullying	.424	.097	.502	-.209	-.089
55. unpleasant	.311	-.135	.448	.281	-.118
56. vocal	.269	-.126	.438	-.056	.289
57. sly	.097	.199	.383	.143	.198
58. selfish	.262	.181	.374	.101	.012
<hr/>					
59. unintelligent	-.217	.074	.015	<b>.882</b>	-.112
60. uneducated	-.083	.125	-.021	<b>.789</b>	-.093
61. uninteresting	.072	.076	-.053	<b>.666</b>	-.041
62. ignorant	.040	.294	-.077	.441	.088
63. weird	-.012	.220	.055	.426	.095
<hr/>					
64. funny	-.181	.070	-.113	-.041	<b>.715</b>
65. comedic	-.004	.008	-.214	-.017	<b>.712</b>

66. clever	-.162	.095	.016	-.064	<b>.646</b>
67. witty	.102	-.037	.060	-.059	<b>.626</b>
68. social	-.254	.041	.131	-.004	.443
69. different	.042	.234	-.104	.046	.392
70. mischievous	.510	-.201	.105	.180	.469
71. sarcastic	.457	.065	.013	-.040	.425
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Items that cross-loaded on factors					
72. dramatic	.442	.376	-.008	-.109	.155
73. angst-ridden	.388	.370	.036	-.072	-.094
74. lacking compassion	.367	.124	.324	.099	-.023
75. seeks approval	.119	.499	-.393	.216	.063
76. unsympathetic	.366	-.155	.442	.216	-.033
77. uncaring	.341	-.133	.404	.269	-.002
78. untrustworthy	.126	-.009	.399	.323	.007
79. bitter	.192	.343	.354	-.034	-.065
80. cheeky	.347	.029	-.029	.055	.636
81. excited	-.119	.415	-.040	-.116	.504
82. unique	-.401	.096	.235	.062	.438
83. self-confident	.136	-.308	.231	-.051	.417
Items that didn't load saliently on a factor					
84. contentious	.290	-.062	.061	-.075	.279
85. liar	.168	.266	.189	.177	.146

86. two-faced	.120	.260	.249	.184	.067
87. irrational	.278	.297	.134	.121	.025

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Table 2.

*Confirmatory Factor Analysis Fit Statistics for the Different Models Proposed for Implicit Theories of Online Trolls.*

	$\chi^2$	df	$P = <$	CMIN/DF	CFI	NNFI	RMSEA	SRMR
Unidimensional	2094.263	170	.000	12.312	.318	.238	.223	.192
Five factor	388.711	160	.000	2.429	.919	.904	.079	.070
Higher Order	416.599	165	.000	2.525	.911	.897	.082	.089
Bifactor	327.263	150	.000	2.182	.937	.920	.072	.082

Table 3

*Mean and Standard Deviation of the Conceptions of Online Trolling 20-item subscales.*

Scale	Total Sample ( <i>n</i> = 673)		Sample 1 ( <i>n</i> = 444)		Sample 2 ( <i>n</i> = 229)	
	Mean	SD	Mean	SD	Mean	SD
Seeking conflict-attention	32.33	7.1	31.98	7.7	32.97	6.0
Low self-confidence and insecurity	26.66	9.2	27.15	9.3	25.71	8.9
Viciousness-nastiness	24.43	7.4	23.43	7.5	26.37	6.7
Uneducated	21.27	8.0	20.93	8.3	21.93	7.4
Amusement	15.68	7.9	16.18	8.0	14.72	7.6

Table 4

*Regression analysis with each experimental factor used as predictor variables and average rating of profile descriptions used as the dependent variable*

	B	$\beta$	T	Sig
Seeking conflict-attention	.54	.34	3.03	.004
Low self-confidence and insecurity	.2	.23	1.97	.054
Viciousness-nastiness	.79	.72	4.91	.000
Uneducated	.42	.31	2.44	.018
Amusement	-.32	-.24	-1.93	.059

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Table 5

*Mean and Standard Deviation of the Conceptions of Online Trolling 20-item subscales between those reporting to have been trolled and those not reporting to have been trolled.*

Scale	Sample that has been 'trolled' ( <i>n</i> = 177)		Sample that has not been 'trolled' ( <i>n</i> = 86)		t	Sig
	Mean	SD	Mean	SD		
Seeking conflict-attention	15.94	4.0	17.10	2.7	2.46	.015
Low self-confidence and insecurity	13.38	3.7	14.85	3.3	3.15	.002
Viciousness-nastiness	12.92	4.4	12.24	3.2	-1.28	.203
Uneducated	10.51	4.0	8.84	3.7	-3.27	.001
Amusement	12.19	4.5	15.40	3.4	5.84	.001

Table 6

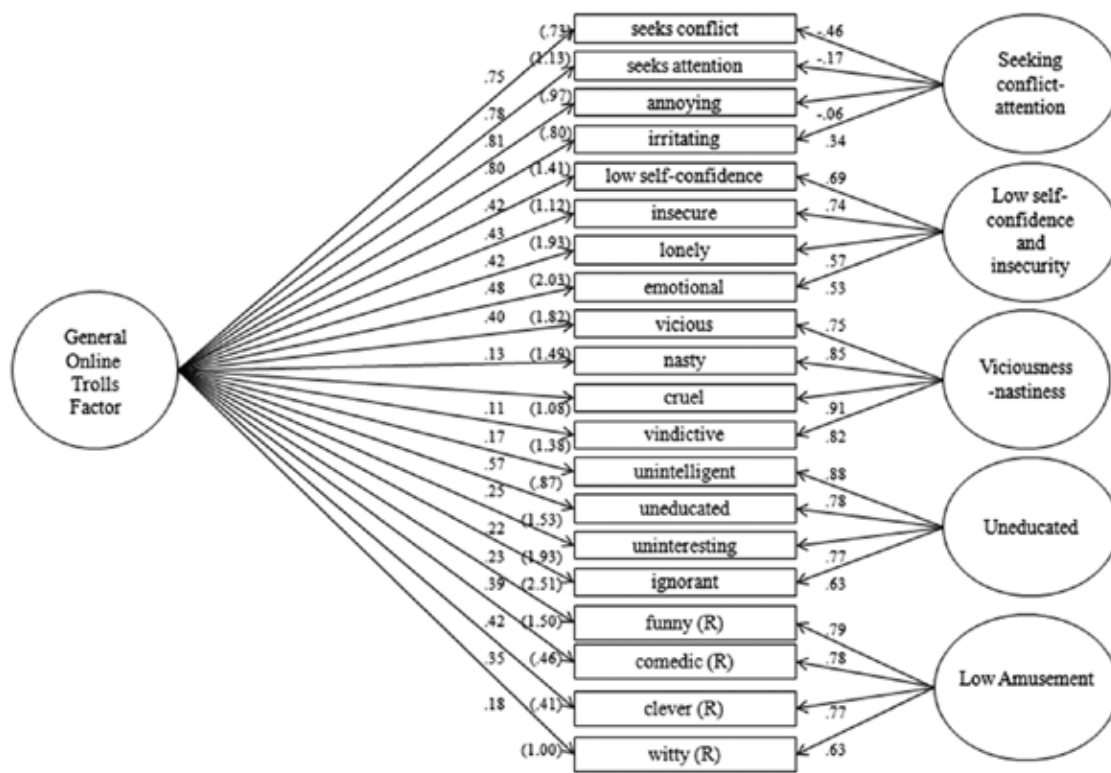
*Regression Analysis with Negative Affect as Dependent Variable, and Sex, Age, Time since Event, Level of Distress, and Conceptions of Online Trolls Subscales Used as Predictor Variables*

	B	$\beta$	T	Sig
Step 1				
Sex	-.04	-.01	-.04	.969
Age	-.02	-.02	-.23	.821
Sample	7.32	.52	5.20	.001
Time since the event	-.01	-.01	-.04	.857
Level of distress reported for the original event	2.33	.41	5.37	.001
Pre-experiment negative affect	.43	.46	6.51	.001
Step 2				
Seeking conflict-attention	-.59	-.34	-3.46	.001
Low self-confidence and insecurity	.17	.09	1.16	.247
Viciousness-nastiness	.13	.08	.99	.324
Uneducated	.19	.11	1.48	.141
Amusement	-.14	-.09	-1.16	.246

Figures

Figure 1

*Standardized loadings (with measurement error terms in parenthesis) for the 20 item implicit theories toward online trolls bifactor structure.*



## Footnotes

(1) We chose 'conception' as the term over 'perception' or 'attitude' given that conception emphasises abstract ideas or mental symbols. In many trolling events, it is the case that the troll or reason for the trolling will be unknown to the individual, and therefore, implicit ideas regarding the event will rely more on abstract information or mental symbols, rather than sensory information or processing of previous or current knowledge.

(2) The data collection for the initial generation of descriptors and Sample 1 in Study 1 occurred before the Buckels et al. (2014), Chamorro-Premuzic (2014), Hardaker (2013) and Thacker and Griffiths (2012) articles were published and covered in the media. Therefore, those various reports would not have influenced the findings reported in this study.