TITLE: Controlling you watching me: Measuring perception control on social media

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KEYWORDS: social media, impression management, self-presentation

ABSTRACT

Online self-presentation assumes that individuals intentionally control how others perceive them based on their online behaviours. Existing tools are limited in their ability to measure this notion of perception control and there is little understanding around factors which may affect the desire for perception control. This paper reports on the development of a perception control scale and comparisons of perception control across age and between genders. A total of 222 participants completed an online survey with items measuring perception control and participant demographics. A principal components analysis revealed a one-factor, 12-item scale explaining 41.14% of the variance. Perception control was found to increase with age and did not differ between genders. Results are consistent with existing impression management research suggesting that while participants of both genders desire to control how others perceive them, as a person's sense of self stabilises over time, they are less motivated to change their behaviours to control others' impressions of them.

Together, the affordances and ubiquity of online social networking sites (SNSs) provide users with opportunity and motivation to engage in selective self-presentation[1]. As a one-to-many communication platform built on user-generated content[2], SNSs allow users to selectively show and hide certain aspects of themselves by posting particular types of images or self-commentary, and by removing or blocking associations with unwanted posts[3]. The widespread use of SNSs (Facebook reports, on average, 1.18 billion active users in September 2016[4]) has also increased information visibility and led to SNSs being used as sources to evaluate potential employees[5], and romantic partners[6]. There is thus an incentive for individuals to present positive aspects of themselves and create favourable impressions on others. This process has been referred to as both *self-presentation* and *impression management* in the literature; terms used interchangeably in this paper.

Self-presentation has been proposed as one of the two primary motivations for SNS use[7,8] and occurs in contexts with targeted and general audiences. Predictably, online dating profiles consist of carefully chosen photos to highlight positive features and hide undesirable features (such as those relating to height or weight[9,10]). Similarly, job applicants may edit or even deactivate social media accounts to prevent potential employers from accessing unfavourable information about them[11]. Even without a particular purpose (e.g. online dating or applying for a new position) SNS users engage in self-presentation. In a survey of undergraduate students, for instance, over 80% reported removing the link between their profile and photos of them posted by others[3]. Reasons included unflattering photo and images depicting behaviours that the student did not want publicised. Participants also chose particular profile pictures as they believed they looked attractive in the image, that the image showed them having fun or that it showcased their romantic relationship[12]. In addition, Peluchette and Karl[13] found that the amount of inappropriate content on college students'

Facebook profiles was consistent with the image they believed they were portraying. For example, students who believed their profile portrayed them as hard working were less likely to have inappropriate content on their page. Combined, these findings suggest that people actively engage in self-presentation or impression management.

Self-presentation describes the ways in which people intentionally manipulate information that they make available about themselves with the aim of creating a specific image to others[14]. It is a multidimensional concept, with intentionality being one of the dimensions[15]. The intention to manipulate another's impression of oneself requires (a) an awareness of how others perceive you based on the observable aspects of the self (i.e. public self-consciousness[16]), and (b) a desire to directly influence these perceptions (defined in this paper as a desire for perception control). Therefore, research that claims to have demonstrated self-presentation should be able to demonstrate participants' awareness of the impact of their behaviours on others' impressions of them as well as a desire to control others' perceptions.

Existing tools, however, limit researchers' ability to measure this desire for perception control. Zhao, Grasmuck and Martin[17] analysed Facebook profiles and identified features aimed to convince others that the user was popular. These included profile images that contained other people, making public others' posts on your profile and having large numbers of online friends. Here, users' desire for perception control is inferred. Although interviews were conducted, the findings reported did not explicitly discuss participants' desire to control how others' perceive them. Peluchette and Karl[13], discussed above, asked participants to retrospectively identify how others might perceive them after viewing their profile. This is not an indication of the intent of the post as it does not clarify the user's public self-

awareness nor their desire for perception control. Cognition is distinct from behaviour, and impression management research should be able to draw conclusions that distinguish between behaviours that are *intended to* influence others' impressions from behaviours that influence others' impressions.

Existing self-presentation scales do not quite meet this challenge. For example, Ackerman[18] developed a strategic self-presentation scale that asks participants about the perceived importance of others' impressions of them and how good they are at "putting on a show" but this does not seem to tap into public self-awareness or perception control in an online context. More recently, Yang and Brown[15] developed the Intentionality Scale. It uses five statements to measure participants' awareness of broader consequences of online posts and disclosures rather than the individual's awareness of, and desire to control, the consequences of their behaviour on others' impressions of them. Whilst research has grown in volume around self-presentation on SNSs over the last decade[19] further research explicitly examining perception control is needed.

In addition to tools for measuring perception control in online SNSs, studies are also needed to examine factors that affect people's desire to control others' impressions of them[20]. Many studies investigating self-presentation in SNSs draw on samples of adolescents or young adults[21,22,23]. Despite this, research comparing online self-presentation motivation and strategies across age is limited but suggests differences between younger and older adolescents[24] and Facebook and Internet users across the lifespan[12,25]. Facebook users aged 31 years or older were less likely to report regular changes to their profile pictures or make changes based on preferring more recent images. In addition, a study investigating communication preferences more broadly showed that younger adults reported significantly

greater preferences for online communication to establish and maintain relationships compared to older adults[25]. Combined, these findings suggest that, compared to young adults, older participants may be less likely to be influenced by their perception of others' impression of them having already established key (and satisfying) relationships.

In contrast to research exploring the relationship between age and self-presentation, findings regarding gender differences and impression management are less clear. This is, in part, due to confounding measures of sex (a biological categorisation) with gender (a socially constructed identity that individuals can choose and which may or may not align with their biological sex)[26], sometimes to the extent that methods for categorising gender/sex are not explicitly identified in manuscripts[1]. For example, Hum, et. al.[27] analysed the content of publically available Facebook profile pictures (as an indicator of self-presentation) and concluded that there were no significant differences between the photos used by men and women. These researchers drew conclusions about gender differences but they categorised participants as male or female based on physical characteristics in their profile pictures. The findings suggest no sex differences in self-presentation strategies rather than no gender differences. On the other hand, Tifferet and Vilnai-Yavetz[20] used more nuanced categories to code Facebook profile pictures and found that individuals who self-identified as either men or women on their Facebook profiles used different self-presentation strategies that are consistent with social constructions of gender. Specifically, participants who self-identified as men were more likely to use images of them in formal clothing or engaging in risk-taking behaviours while photos of participants who self-identified as women more often depicted familial relations and contained more emotional expression. These findings suggest that self-identified men and women may use different self-presentation strategies but they may be motivated by perception control to the same extent. Similarly, both male and female college

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students reported prioritising self-presentation on MySpace and believed that they did so in ways consistent with stereotyped gender norms[28]. This study, however, assigned students into single sex focus groups to discuss gender identity. Despite the overlap between gender and sex, research acknowledging and attempting to reduce and clarify the sex-gender confound is needed. Moreover, current research does not explicitly measure perception control. Generally, Facebook profile pictures are analysed and findings inferred about the desire for perception control[1,20,27]. Studies explicitly asking participants about their perception control needs are required to bridge this gap.

This study aims to build upon current work in online self-presentation by a) developing a scale that measures perception control and b) exploring factors which may affect the desire for perception control. This scale would enable researchers to develop studies that provide a more nuanced understanding of human interactions in, and motivations for using, social media. Based on previous studies, the developed perception control scale was then employed to test the hypotheses that (1) age significantly predicts perception control and (2) individuals who identify as man or woman do not differ in their desire for perception control.

METHODS

Participants and Sampling Control Measures

To obtain a wide demographic sample, 222 (164 identified as female; 56 male and 2 transgender) participants ranging from 16 to 72 years old with a mean age of 33 years ($SD =$ 12 years) were recruited via the [INSERT INSTITUTION] participant pool, flyers around the [INSERT INSTITUTION] campus, and social media sharing of the study link. Most participants were recruited from Australia (n=97), 45 were UK and Ireland residents, and 25 were from the USA. The remainder were stratified throughout the Western world. Of all

participants, 197 (88.7%) cited English as their first language. Of the 25 (11.3%) who reported English as not being their first language, only four lived in non-English speaking countries (Croatia=1; Indonesia=1; Spain=1; Sweden=1) at the time of their participation. An independent samples t-test was conducted to consider the difference between those who did ($M = 2.81$, $SD = .60$) and did not ($M = 3.00$, $SD = .41$) report English as their first language on their mean perception control study scores. Despite sample size variation and a significant Levene's test ($F = 7.49$, $p < .05$), the difference between the groups was not significant t $(220) = -.88$, $p = .39$.

Given the diverse sample employed, a further potential confounding factor on perception control scores was employment status. A one-way ANOVA revealed no significant difference ($F (5,214) = 1.13$, $p = .35$) in mean scores on the perception control scale between those who reported studying full time (n = 77; $M = 3.64$, $SD = .90$), working full time (n = 97; $M = 3.40$, $SD = .86$), studying part time (n = 6; $M = 3.32$, $SD = 1.19$), in part time or casual employment (n = 27; $M = 3.22$, $SD = .64$) and those who were unemployed (n = 13; $M = 3.52$, $SD = 1.09$). Participant country of residence, English as a first language and employment status are thus not considered to be confounding and are given no further statistical consideration.

Materials:

A literature search revealed no other scale that measures perception control in social media use. There are a number of impression management scales (e.g., Fullwood, et al.[29]; Paulhus[30]), but the current work aimed to create a scale that measures peoples' awareness of how they explicitly manage others' impressions of them. This is a key premise of self-presentation/impression management. As such, a new set of items was devised to consider the

desire for perception control. Based on ongoing research within our team, the authors created 14 statements that represented affect, cognitions, and behaviours about perception control (see Table 1), each of which was scored on a 1 (not at all) to 5 (extremely) scale in response to being asked to mark each statement as characteristic of the self. As an attitudinal measure of perception control, Breckler's[31] tripartite model of attitudes (consisting of affect, cognition, and behaviour) was used to underpin the development of the scale. Since perception control is a relatively narrow construct, 14 items were developed with a minimum of three items for each proposed component of perception control. The items were reviewed by the authors, as impression management researchers, for content adequacy[32,33], specifically assessing the degree to which the items comprehensively address perception control, i.e. the beliefs and attitudes that underpin intentions to behave in specific ways so as to control others' perceptions of oneself. In line with established guidelines for survey research[34] (Alreck & Settle, 2003), a five-point likert scale was used.

[INSERT TABLE 1 HERE]

Procedure

The items were presented to participants via an online survey hosted on www.surveymonkey.com. Participants were directed to the survey via links shared on participant pools, flyers around campus and social media. Once landing on the survey, participants read ethical considerations and confirmed that they were over the age of 18. Participants completed a series of demographic questions prior to completing the perception control scale items. Upon submitting their data, they were debriefed, provided with researcher details and thanked for their participation.

RESULTS

The suitability of the data for a factor analysis was considered prior to the 14 items of the

Perception Control Scale (PCS) being subjected to a principal components analysis (PCA)

using SPSS Version 20. Principal components analysis was considered suitable given a ratio

of more than fifteen participants to each scale item, and this method being psychometrically

more reliable and less likely to create factor indeterminancy than a factor analysis[35].

Inspection of the correlation matrix (Table 2) revealed the majority of intercorrelations to be

higher than .30 and significant at $p < .01$. Whilst items eleven and fourteen stood out as not

meeting this criteria, the Kaiser-Meyer-Olkin Measure of Sampling Adequacy was .90,

exceeding the recommended value of .6[36,37]. Moreover, Bartlett's Test of Sphericity indicated

that a factor analytic model was suitable for the data, $\chi^2 = 1256.57$, df $= 91$, $p < .001$.

[INSERT TABLE 2 HERE]

Principal Components Analysis was used to explore the latent factor structure of the PCA,

revealing potential for three components with Eigenvalues > 1.0, explaining 41.14%, 10.51%

and 8.44% of the variance, respectively (total 60.09% of variance explained). Inspection of

the scree plot as a more reliable indicator of the number of factors to extract[38] also indicated a

possible three principal components model with Eigenvalues of 5.76, 1.47 and 1.18.

Inspection of the component matrix revealed that all but two items (11 & 14) loaded strongly

(above .40) onto a single component. Component two had quite weak loadings except for

items 11 and 14 (.72 and .63), and the third component had varied loadings.

Using Oblimin rotation for a two factor solution, 51.65% of the variance was explained

(component one = 41.14% and component 2 = 10.51% of variance) with a weak negative

correlation of (r = -.12), suggesting a good fit for a two factor model. From 14 items, 12 load onto the first component and 5 onto a second component. Of these, 3 load more strongly onto the first than second component, whilst the remaining two (items 11 & 14) load only onto Component Two.

Using a further forced single component solution, a 12-item scale emerged that removed items 11 and 14 and accounted for 41.14% of the variance. In this one factor solution, item 14 had an extraction of .05 (5% variance explained) and item 11 an extraction of .04 (4%). Given that items 11 and 14 were singled out in the correlation matrix (Table 2) as having weak intercorrelations, the single component scale with twelve items was retained (see Table 3). Removing the two items increased the reliability of the scale with the 14-item scale achieving a Cronbach's alpha of .84, whilst the retained twelve item scale achieved a Cronbach's alpha of .90.

[INSERT TABLE 3 HERE]

Age and Perception Control

On considering the first hypothesis, a standard linear regression was conducted, which revealed age to be a significant predictor of participants' mean perception control scores, $F(1,220) = 16.94$, $p < .001$, standardised beta = -.27. The negative correlation evident in Figure 1 was statistically significant, $r = -.278$, N = 222, $p < .001$, thus confirming that age is negatively related to perception control scores.

[INSERT FIGURE 1 HERE]

Gender and Perception Control

Given the small size of the transgender group ($N=2$, 0.9%; $M = 3.35$, $SD = .35$), and therefore limited power for statistical analyses, these participants were excluded from further analysis. An independent samples t-test found no significant difference between males ($N=56$, 25.2%; $M = 3.61$, $SD = .85$) and females ($N=164$. 73.9%; $M = 3.42$, $SD = .90$), $t(218) = -1.33$, $p = .18$. Given the differences in male and female sample sizes, a Mann-Whitney U test was also conducted to further underpin the non-significant difference between males and females in perception control, $U = 3992.50$, $Z = -1.50$, $p = .15$.

DISCUSSION

The analyses revealed a 12-item scale that measured participants' conscious desire to control how others perceive them. As an attitudinal scale for a narrow construct, the internal consistency was sufficiently high and the 12 items allow the scale to be completed quickly. In the context of survey research more broadly, and survey research about online behaviour in particular, brevity would potentially reduce survey fatigue and dropout rates (e.g. as suggested by Crawford, Couper, and Lamias[39]). The current findings about perception control across age and between genders suggest alignment between what the PCS measures and self-presentation. Consistent with the two hypotheses, this study found that perception control decreases with age, and that there are no differences between men and women on perception control. That the need to control others' perceptions on SNSs decreases with age is in line with research showing that older adults are less likely to post Facebook profile pictures containing friends. Their profile photos tend to be images of themselves alone[12]. This

suggests that the influence of peers (and, relatedly, the desire to influence how they see you) is reduced.

One potential explanation is the changing role of peer and social relationships as identity is constructed through adolescence and adulthood. Young adults are transitioning into a period where romantic relationships and relationships with peers become gradually more salient than previous relationships with parents and immediate family[40]. In this context, how others perceive you become more important and the individual may be more aware of others' impressions of them and have a stronger desire to control how they are perceived. In contrast, adults and older adults have established these relationships[41] where perhaps impressions are set and in less need of managing. Fullwood, James and Chen-Wilson[29] found that younger adolescents presented different selves across communication contexts compared to older adolescents who presented a more stable identity. This suggests that younger adults may be more attuned to audience and tailor their self-presentation to the different audiences compared to older adolescents.

A related but separate explanation could be social comparison, the process where individuals compare themselves with their peers. Recent research has drawn attention to the role of social comparison as a mediator of SNS use and wellbeing outcomes[42,43,44]. Older adults report lower social comparison than younger people[45]; perhaps this reduced focus on others throughout the lifespan explains the lower need for perception control. There is less emphasis on others and their perceptions of you. The method used in this study, however, cannot test or distinguish between these proposed explanations. Further research explicitly investigating the relationship between age, confidence in relationships, social comparison orientation and perception control is suggested.

The results showing no significant gender difference on perception control is consistent with existing literature on self-presentation in online dating and SNS contexts. The online dating context makes impression management more salient as users enter sites with the specific intention to create positive impressions and attract romantic partners. Toma, et al.[10] found no gender differences in the amount of inaccurate information on online dating profiles. Both men and women exaggerated particular characteristics that would make them more attractive to potential romantic partners. Importantly, though, Toma, et al.[10], showed that users of online dating sites were aware that some of the information they posted on their profiles was inaccurate. This implies an intention to portray a particular image and an awareness of factors which affect this image. No gender differences were observed in the amount of inaccurate information on dating profiles.

Similarly, research has found that men and women do not differ in their use of SNS self-presentation tools such as the number of Facebook profile pictures and friends, and the amount of information disclosure[20,27]. Tifferet & Vilnai-Yavetz[20] did find, however, that profile pictures of men and women contained characteristics that would be considered attractive or favourable by potential partners. So it seems that men and women do not differ in their need to control others' perceptions of them but do differ in the type of impression they wish others to have of them.

Perception control findings are consistent with self-presentation findings in the literature. This suggests that at least part of online self-presentation is conscious and reflects both an awareness of others' perceptions of oneself and a desire to manage and influence that impression. Current theories about human behaviour (e.g. Theory of Reasoned Action[46] or

the Theory of Planned Behavior[47]) highlight the need to consider external influences such as context and social norms on individual's decisions and behaviours. In addition to conscious intention, research has shown that self-presentation behaviours can be influenced by personality[48,49], body esteem and self-esteem[50], and interactional context (e.g. online dating, gaming, or blogging contexts)[51]. This paper focuses on one component of the processes affecting online self-presentation, namely conscious intention and the desire to control others' perceptions. Future research could build on current work to consider potential interactions between contextual, personal, and conscious intentions in online self-presentation.

Limitations and future research

There are several limitations in this study that could be addressed by future research.

The content adequacy assessment was conducted by the authors as a method of assessing content validity. Although this method is accepted in the literature, more quantitative and slightly less subjective methods (such as those described by Schriesheim, et al.[52]) could be used. Moreover, whilst high internal consistency was established using Cronbach's alpha for the current use of the PCS, further assessments of external reliability could also be conducted. Concurrent validity could also be examined in future studies by comparing responses on the PCS with other self-presentation measures such as the Impression Management subscale of the Balanced Inventory of Desirable Responding (BIDR6[30]) and the Presentation of Online Self Scale[29]. Uziel[53] used the BIDR6 across four studies and found a strong correlation between high levels of impression management and responses on a lie scale[54]. Uziel[53] also found that when a participant's romantic partner rated the participant as high on IM, they also rated them as having higher levels trait self-control. Uziel[53] suggested

this to indicate that self-control is integral to impression management. Fullwood, et al.[29] used the POSS (Presentation of Online Self Scale) to assess online self-presentation amongst adolescents. The POSS scale assumes some level of perception control and could be used with the PCS developed here to explore whether perception control moderates or mediates self-presentation as measured by the POSS scale.

The nature of this project is also such that it is limited in its ability to provide evidence for the proposed mechanisms underlying the differences in perception control across age. Studies explicitly investigating the relationship between perception control, age, social comparison, and confidence in relationships would help disentangle potential explanations for our findings, as would studies that consider the role of individual factors in perception control.

Future research could also investigate perception control and actual impression management in a range of SNSs. At present, research comparing self-presentation across age and between gender focuses on Facebook images. The variety of SNSs and research showing the different ways in which these tools are used[55]highlight a need to explore existing constructs such as perception control and self-presentation across platforms. The PCS was designed to be SNS agnostic but further exploration is required to determine its ability to capture perception control needs in different SNS sites.

As it is, this study shows that the PCS is a brief, reliable tool and that perception control differs across age but not between genders. Whilst further research is needed to evaluate the evidence for the potential reasons for these findings, the current work does provide a novel and unique exploration of perception control, age and gender.