DEVELOPING A MEASURE OF ONLINE WELLBEING AND USER TRUST

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EXTENDED ABSTRACT

As interaction with online platforms is becoming an essential part of people's everyday lives, the use of automated decision-making algorithms in filtering and distributing the vast quantities of information and content to users is having an increasing effect on society, with many people raising questions about the fairness, accuracy and reliability of such outcomes. Users often do not know when to trust algorithmic processes and the platforms that use them, reporting anxiety and uncertainty, feelings of disempowerment, defeatism, and loss of faith in regulation (Creswick et al., 2019; Knowles & Hanson, 2018). This leads to concerns about wellbeing, which can negatively affect both the user and broader society. It is therefore important that mechanisms and tools are introduced which support users in the responsible building of trust in the online world. This paper describes the ongoing development of an 'Online Wellbeing Scale' to aid in understanding how trust (or lack of trust) relates to overall wellbeing online.

There are two broad aims of the Scale. For researchers, it will allow exploration of the relationship between different types of wellbeing, trust, and motivation, to understand how trust affects user's online experiences, as well as comparison across different online activities to highlight where the major issues are. For the users, the Scale will contribute to the development of a 'Trust Index' tool for measuring and reflecting on user trust, as part of engaging in dialogue with platforms in order to jointly recover from trust breakdowns. It will be part of a suite of tools for empowering the user to negotiate issues of trust online. This also contributes to design guidelines for the inclusion of trust relationships in the development of algorithm-driven systems.

The first stage of development of the Online Wellbeing Scale/Trust Index took place as part of a larger study into online trust, comparing attitudes of younger (16-25 years old) and older (over 65) adults. The study was approved by the Ethics Review Board for the Department of Computer Science at the University of Nottingham. Sixty participants took part in a series of 3 hour workshops. The project focused on user-driven, human-centred, and Responsible Research and Innovation approaches to investigating trust. Thus the workshop structure, including timings and ordering of tasks, the kinds of tasks to be completed, and practical consideration were co-created through a series of activities with members of the public in the relevant age groups, ensuring that the questions and tasks were relevant, understandable, and engaging. The workshops took a mixed-methods approach to encourage participants to think about issues in different contexts, and included pre- and post-session questionnaires exploring factors related to trust, motivation, digital literacy, and wellbeing.

The questionnaires were designed to explore whether there is a link between these factors, and how this might be measured. They consisted of a mixture of free text, multiple choice, and Likert-like items. The pre-session questionnaire asked about: *Activity:* 5 items of the type of activity that people do online, including socialising, shopping, information seeking, entertainment, and sharing content; *Trust:*

considerations of trust, including personal experiences and opinions; and *Digital Confidence:* Statements related to perceived digital literacy and how confident users are in carrying out tasks online.

The post-session questionnaire began with some questions about the session, then repeated statements from the pre-session questionnaire to see if there were changes in opinion, followed by open-text questions about online trust and wellbeing, and ratings of how much various features of websites affect their trust. Finally they were asked to complete 2 instruments for measuring wellbeing, modified to reflect online experiences: *Eudaimonic Wellbeing:* Basic Psychological Need Satisfaction (BPNS) scale (Gagné, 2003; Ryan & Deci, 2000; Ryan, Huta, & Deci, 2006); and *Emotional Wellbeing:* Scale of Positive and Negative experience (SPANE) (Diener & Biswas-Diener, 2009; Diener et al., 2010).

Rather than report the analysis of the responses to the questionnaire, the results here detail how they fed into the development of the prototype of the Online Wellbeing Scale, and how this will be used to investigate the role of trust online.

The 48 item scale is in 5 blocks, with each 'construct' measured by 6 statements on 7-point Likert or Likert-like scales. The *Activity* block covers the items from the initial questionnaire, plus an additional item, 'financial or organisation' which covers all activities suggested by participants. This block measures the frequency of each activity. The *Digital confidence* block with the original 7 statements from the pre-session questionnaire has cronbach's alpha (α) reliability of 0.800; removing one item to create a 6 item scale improves reliability to α=0.830. The *Eudaimonic Wellbeing* block from the original post-session questionnaire had low reliability for autonomy (α=0.605) and competence (α=0.510). Only relatedess reached an acceptable level (α=0.814). As such, the scale as a whole is not considered reliable. For the prototype Online Wellbeing Scale it has been replaced with a modified version of the Balanced Measure of Psychological Needs (Sheldon & Hilpert, 2012). This scale uses simpler language and reduces each construct to 6 items, with the ability to calculate the overall level of satisfaction and dissatisfaction of needs. It was noted that, particularly for the older age group, statements relating to interacting with people online were often either ignored or misunderstood. Therefore modifications include focusing wording on the online world and replacing specific references to 'people' with a more general interactional focus, eg "There were people telling me what I had to do" was replaced with "I was being told what I had to do". The *Emotional Wellbeing* block scored a good reliability for the positive experience scale of α=0.793, improved by removing one item to α=0.815, and the negative experience scale of α=0.830, improved by removing one item to α=0.831. As this is a bipolar scale, the equivalent positive and negative words were also removed, resulting in a modified scale with 6 items each for positive and negative experience, the reliability of which is α=0.819 and α=0.818 respectively. Finally, the *Trust* block consists of 6 statements using a combination of the qualitative results from the workshops and the questionnaire results surrounding levels of trust in online systems, with reference to related literature on trust (for example Gefen, Karahanna, & Straub, 2003). The modified prototype of the Online Wellbeing Scale will be tested in an online study to take place later this year. This will allow both validation of the scale and large-scale examination of the role of trust in online wellbeing. It will help lead to recommendations for ways in which online platforms can build user trust into their systems. At the same time, using the Scale as the beginning of a 'Trust Index' for reflection and empowerment will be explored with both stakeholders and users, including investigating ways to present results that are meaningful and engaging, and how this and other tools can encourage meaningful dialogue between the two groups.

KEYWORDS: wellbeing, trust, online experience, scale.

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