Mattering in Digital Labor

Purpose: Online gig labor platforms bring together a global and fast-growing workforce to complete highly granular, remote and decontextualized tasks. While these environments might be empowering to some workers, many others feel disenfranchised and removed from the final product of their labor. To better understand the antecedents of continued participation in forms of crowdsourced digital labor, we explore the relationship between worker's ability to create a narrative of their work mattering regardless, and their continued work engagement in these work setups.

Design: We approach the relationship between individual mattering and digital work engagement through a longitudinal study among workers on the crowdworking platform Amazon Mechanical Turk. We further provide qualitative insight into individual perceptions of mattering based on essay data.

Findings: We develop a measure of mattering in crowdworking with four dimensions: reliance, social recognition, importance, and interaction. Reliance is the most pronounced dimension, followed by interaction, importance and social recognition. In the final longitudinal model, only importance affects work engagement positively, while the other three mattering dimension do not have a significant effect.

Originality: The findings indicate that individuals who feel that they themselves and their work 'count' and 'make a difference' will be more engaged in their digital labor. By clarifying the dimensionality of mattering in crowdwork and studying its differentiated effect on work engagement, the paper makes a contribution to research on crowdwork and the future of work. Beyond the theoretical contributions, the finding that perceived importance fosters work engagement has important implications for task and platform design.

Keywords: digital labor, mattering, work engagement, importance, crowdwork

Mattering in Digital Labor

1. Introduction

"I am doing something that truly matters. [A]lthough I don't quite know what that is."

Participant 471

Individuals working on online gig labor platforms are often being referred to – or refer to themselves – as 'cogs in a machine', 'anonymous numbers' or 'artificial artificial intelligence' (e.g. Salehi et al. 2015). These metaphors suggest a perspective on digital workers as a commodity, as an inanimate resource or as replaceable parts of a larger system. To a certain extent these perceptions may be rooted in the highly granular, modular and decontextualized nature of digitally mediated work packages: Workers who are transcribing snippets of text, rating video sequences or filling out surveys are often removed not just from the requester but also from the final product of their work. On the other hand, digital workers might also perceive themselves as empowered 'micro-entrepreneurs' who work independently, take charge of their own schedule, and who are recognized for their talent and their results – independent of socioeconomic or demographic factors.

In this paper, we are interested in the individual perception of whether or not one's work and person *matters* as a key to understanding work engagement in digital labor. More to the point, we are interested in individual perceptions of mattering as a precondition for workers' ability and willingness to participate in digital work in a sustainable manner and experience a 'positive, fulfilling, affective-motivational state of work-related well-being' (Bakker et al., 2008). Here, we assume that individuals who feel that they themselves and their work 'count' and 'make a difference' will be more engaged and immersed in their digital labor. Instilling a sense of mattering is not just about worker dignity, but – extending the argument put forth by

Boons, Stam, & Barkema (2015) – it may be a novel explanatory factor for long-term activity and participation in crowdworking platforms.

This contribution follows a four-step approach. We will first offer a brief literature review on the core constructs of digital labor and mattering. Second, based on a longitudinal quantitative survey among 804 (1st wave) and 460 (2nd wave) workers on the crowdworking platform Amazon Mechanical Turk [AMT] we will introduce and establish a *measurement of mattering* as a multi-dimensional construct. In a third step, we use regression analysis to scrutinize the *relationship between mattering and work engagement*. Finally, in order to render our findings more tangible and lead into the discussion, we will offer qualitative insight into individual perceptions of mattering based on vignettes gathered during the second wave of data collection.

To date, mattering has predominantly been looked at from the perspective of psychological wellbeing and mental health (e.g. Elliott, Kao and Grant, 2004, Rayle and Chung, 2007; Rosenberg and McCullough, 1981;) as well as marginality (e.g. Gosset, Cuyjex and Cockriel, 1996; Schlossberg, 1989; Tovar, Simon and Lee, 2009). However, despite its recognized and growing importance, research on the construct has not been transferred to the context of work engagement or digital platforms yet. The current contribution seeks to pave the road for further inquiry into mattering – as it pertains to individual self-concepts – in digital labor by introducing key constructs, measurement and relationships.

2. Literature Review

2.1 Cog or Entrepreneur – Concepts of Self in Digital Labor

Increasingly more people in industrialized societies make use of digital technologies in their daily work. Even in less computer-focused work settings, large amounts of time are spent with

digital technologies and on the Internet. In addition to using digital media for offline tasks, progressively more individuals either make a living or earn additional income through freelance contracting via the Internet (Colbert, Yee, and George, 2018; Petriglieri, Ashford, and Wrzesniewski, 2018; Spreitzer, Cameron, and Garett, 2017). Examples of this include the completion of 'human-intelligence' tasks on digital labor platforms such as AMT, Clickworker, Upwork or 99designs.

In this article, we define digital labor based on Scholz (2013), Fuchs and Sevignani (2013) as well as Fish and Srinivasan (2011), as a collection of productive practices – both waged and unwaged – which are mediated through online platforms and carried out by independent actors. Practices may range from being purely digital (e.g. coding, tagging pictures, webdesign) to being only partially digital (e.g. Airbnb, Uber, see Howcroft & Bergvall-Kåreborn, 2018). The term digital labor may pertain to both the work practices as well as to the entirety of the laborforce (Fumagalli, Lucarelli, Musolino and Rocchi, 2018). We further define crowdworking – or online task crowdwork (Howcroft & Bergvall-Kåreborn, 2018) – as a particular form of digital labor which pertains to the completion of (1) digital tasks which are (2) predefined by requesters (individuals, groups or organizations) and (3) distributed through an online platform (4) to a large undefined number of workers (4) for some form of compensation. This definition builds on Howe (2009), Estellés-Arolas and González-Ladrón-de-Guevara (2012) as well as Kittur et al. (2013) and encompasses organizational, individual, and technological aspects. Digital batches usually consist of small digital tasks such as transcribing a snippet of hand-written text, classifying an image, categorizing the sentiment expressed in a comment, rating the relevance of a search engine result, or selecting the most representative frame in a video clip (Lehdonvirta & Ernkvist 2011, Kittur et al. 2013). The literature on humans in computerized work settings is divided into several scientific disciplines. Exemplary disciplines involved in the study of such new forms of work include: sociology/anthropology (Fish & Srinivasan, 2012),

communication and media studies (Irani, 2015; Fuchs & Sevignani, 2013; Paolacci, Chandler & Ipeirotis, 2010), psychology (Brawly & Pury, 2016), organization studies (Bauer & Gegenhuber, 2015; Boons, Stam, & Barkema, 2015), and information systems and computer science (see Kittur et al., 2013 for an overview).

Across these disciplines, we can distinguish between two basic perspectives. The first perspective takes on a rather optimistic view on digital labor by emphasizing its economic and social potentials and benefits. In line with this perspective, digital labor may be framed as a productive and playful way to spend one's spare time or "cognitive surplus" (Shirky, 2010). Also, according to this perspective, digital labor is associated with high flexibility, autonomy, intrinsic motivation and even flow. Lastly, through digital labor – and crowdwork in particular – individuals can leverage down time in a productive manner. This perspective assumes a concept of self on the side of the worker as an empowered and voluntary participant or 'micro-entrepreneur' (*empowered self*) – see table 1.

The second and more critical perspective on the other hand (present in the sociology of work, media studies, critical philosophy), argues that digital work in general, and crowd work in particular, may be alienating workers by disconnecting them from the larger intellectual product which they help to create (Aytes, 2013). In the same vein, digital labor has been deemed exploitative in the sense that crowd workers often earn below minimum wage and are left entirely without worker protection (Fuchs & Sevignani, 2013; Paolacci, Chandler & Ipeirotis, 2010; Scholz, 2013). Also, digital labor platforms have been criticized for putting workers systematically at a disadvantage by supporting power-imbalances between requester/employer and worker (e.g., the chapters in Scholz, 2012). In summary, digital labor critics identify various themes of exploitation as key mechanisms in digital labor (Fuchs & Sevignani, 2013). This second perspective may explain worker's concept of self as integral but replaceable parts of a larger system, or – metaphorically put – as 'cogs in a machine' (*disenfranchised self*)

Table 1

Conceptualizations of Crowdwork on a Spectrum from Empowerment to Disenfranchisement

ABOUT HERE

What distinguishes empowered self-concepts from disenfranchised self-concepts to a considerable extent is the question of whether or not workers perceive themselves or their work to have a significant impact on their environment. Here, we posit, that in order to better understand individual notions of self in digital labor, we must look into individual perceptions of mattering.

2.2 Being able to make a difference - Mattering in Digital Labor

People have a natural desire to feel needed and valued both in society and in a work context (Schlossberg, 1989, 1997; Jung, 2015). However, in work environments marked by high anonymity and isolation, where workers are quickly replaceable, it may be difficult for workers to identify with their work and to feel that they themselves or the output of their labor matter. Here, individual perceptions of mattering may advance to become key constructs in assessing work experiences (Jung, 2015). Mattering may be especially relevant in the context of crowdworking where individuals complete series of micro-tasks which are very far removed from the final intellectual product of their work. While there are obvious benefits to specialization in terms of the productivity of knowledge labor (Malone, Laubacher, & Johns, 2011), specialization might make individual tasks repetitive, and through their performance in a virtual environment also devoid of context, meaningful social interaction. The notion of "being a cog" in the wheel is a recurring metaphor used by workers in this environment (e.g. Fieseler, Bucher & Hoffmann, 2017).

6

Mattering has a fruitful history in clinical psychology where it is discussed in relation to mental health outcomes such as wellness (Connolly, 2003; Dixon Rayle, 2005) or – when mattering is absent – anxiety, depression and negative mental states such as hostility, aggression and irritability (e.g. Taylor and Turner, 2001, Flett, 2012; Rosenberg & McCullough, 1981). In social psychology and work psychology, mattering is linked to work on job satisfaction, job-stress and productivity (Schlossberg, 1989; Dixon Rayle, 2005) – see table 2.

Table 2

Mattering and Related Constructs

ABOUT HERE

Elliot et al. (2004) built on Rosenberg and McCullough (1981), putting forth an empirical validation of the mattering concept which encompasses the dimensions' awareness, importance, and reliance as distinct but related unobserved factors. In particular, Elliot et al. (2004) distinguish mattering from related constructs such as perceived social support, self-esteem, self-monitoring, self-consciousness and alienation (antonym) but state in their concluding remark that other related constructs could be regarded as well. There are three groups of potentially related constructs discussed in the literature. First, there are *potential antecedents* to mattering such as belonging, purpose, communion or self-esteem where the related construct might be fostering conditions for mattering. Second, there are *potential outcomes* of mattering such as wellness, depression (neg.), alienation (neg) or marginality (neg.). Third, there are *potential elements* of mattering tying into a broader interpretation of awareness, importance and reliance (Rosenberg & McCullough, 1981; Elliot et al., 2004) such as perceived social support (e.g. potential element of reliance) or self-esteem (e.g. potential element of importance).

Mattering has an interpersonal dimension (I matter to my immediate environment) and a societal dimension (I make a difference in society/the world in general) (Rosenberg, 1985).

Interpersonal mattering refers to a person's perception that he or she matters to a specific group of people (Rosenberg & McCullough, 1981). The construct encompasses perceptions of being needed (*reliance/dependence*), being able to make a significant contribution (*importance*), and feeling that others are interested in what individuals say and do (*attention*) (Jung, 2005; Rosenberg & McCullough, 1981). Occasionally, and in line with Rosenberg (1985), the *feeling of being missed* as well as *ego-extension* are also mentioned as additional dimensions of interpersonal mattering. Interpersonal mattering has a positive impact on mental health (Amundson, 1993). Individuals who perceive themselves as having higher interpersonal mattering at work report higher job satisfaction and lower job-related stress (Dixon Rayle, 2005). In the work context, perceived mattering is linked to increased productivity and job satisfaction (Schlossberg, 1997). Societal mattering goes beyond the mattering vis à vis one's colleagues, supervisors, or other specific groups of people to encompasses "the feeling of making a difference in the broader scheme of sociopolitical events – of feeling that one's thoughts and actions have an impact, create ripples, are felt" (Rosenberg, 1985, p.215).

To clarify the role of mattering in digital labor, we follow a two-step research design. In a first step, we investigate the dimensionality of mattering, using principal component analysis. In a second step, we look into the role of mattering in fostering work engagement. This serves to test the differentiated role of mattering in terms of outcomes.

3. Methods

3.1 Questionnaire and Sample

To answer the research questions, we conducted a two-wave online survey among crowdworkers on AMT. The TurkPrime platform, which facilitates participant recruitment and management for scientific purposes through AMT, was used to administer both waves of the survey

(Litman, Robinson, & Abberbock, 2017). TurkPrime allows for sophisticated participant screening based on a wide range of attributes, including participation in previous studies. Thus, TurkPrime was deemed useful for our longitudinal survey design. We required at least 100 completed HITs on AMT to exclude participants with no substantial work experience on the platform. 805 individuals started the first wave of the survey in mid-October 2016. The second wave of data collection took place one year after the first wave, in October 2017. Only respondents who had completed the first wave were invited to participate in the second wave. 466 individuals started this second wave survey, with six drop-outs, so that the final sample that took part in both waves was 460. Given that few workers use Amazon Mechanical Turk as their full-time job (Paolacci, Chandler & Ipeirotis, 2010) and turnover tends to be high due to the flexibility of the work (Brawley & Pury, 2016), we deem this attrition rate to be acceptable. The surveys in both waves were identical with the exception that in the first wave, we also added two open-ended essay questions pertaining to the self-concept of workers. Respondents were paid 3 US Dollars for completing the survey in both waves (2 Dollars basis and 1 Dollar bonus). The median completion time was 16 minutes in wave 1 and 11 minutes in wave 2, amounting to an hourly wage of 11 Dollars in wave 1 and of 16 Dollars in wave 2. This is well above the average wage on Amazon Mechanical Turk in the US, where crowdworkers have a median wage of 7.50 US Dollars and an average wage of 8.51 US Dollars (Berg, Furrer, Harmon, Rani, & Silberman, 2018).

51 percent of respondents are female, 49 percent male. The average age in the sample is 35.5 years and the median is 32 years (standard deviation 10.99 years, with a range of 52 years from 18-70 years). In terms of education, 25.5 percent of all respondents have some college education, 38 percent have a 4-year bachelor's degree, and 13 percent have a 2-year bachelor's degree. On the lower end of the spectrum, 11 percent have a high school diploma as their highest

qualification and on the higher end, 1.5 percent have a doctorate. Thus, the sample includes a broad range of educational backgrounds.

3.2 Method

We analyzed the data with a principal component analysis (PCA) and with a linear regression analysis. The PCA was carried out in IBM SPSS Statistics (v.25). We applied the default Kaiser criterion for the extraction of components, so that components were extracted until an eigen-value of 1 or smaller was reached. For the PCA, we relied on the sample of respondents who completed the survey at T1 but not at T2. Thus, the sample used for the PCA consists of all drop-outs for T2 (N=345). This was done to then repeat the PCA with the same specifications at T2 to ensure its reliability and stability for the ensuing regression analysis (see Appendix, Loadings at T2).

In a second step, we carried out a linear regression analysis in Stata (v.15), using the "robust" command to account for potential heteroscedasticity and non-normality of the data. We also tested for multicollinearity, using the post-estimation "vif" command, but the largest variance inflation factor was 1.72, indicating the absence of severe multicollinearity. WE was the dependent variable and the mattering dimensions as well as control variables served as the independent variables. For this analysis, we used the sample at T2 (N=460).

In a third and last step, we coded the essay questions along the mattering-factors to provide a more nuanced qualitative understanding of the various facets of mattering in digital labor.

3.3 Measures

The dependent construct of work engagement (WE) was measured on a 1-5 Likert scale, using all nine items of Schaufeli and Bakker's (2003) Utrecht Work Engagement Scale (UWES-9, see Appendix, Questionnaire). Respondents at T1 who did not fill out the survey at T2, and were thus the basis for the initial PCA, scored relatively highly on WE, with arithmetic means per item ranging from 3.05 to 4.03. The overall arithmetic mean across all items was 3.50 (SD = 1.13) for this sample, showing moderate to high work engagement. Respondents at T2, who the regression analysis is based on, scored similarly, with an arithmetic mean of 3.57 (SD = 1.17).

We used self-developed items to measure mattering. The existing literature on the topic inspired the formulation of these items but we adapted them for the context of AMT. Elliott, Kao and Grant (2004) provided the starting point for the development of our items. They distinguish three dimensions of mattering: awareness, importance, and reliance. We replicated the dimensions but substantially adapted the items by 'activating' them in order to stress worker's agency and actively reaching out in achieving this trait. In the end, we included six items for awareness and importance and seven items for reliance (19 items in total, all measured on 1-5 Likert scales, see Appendix). Across all 19 items, the arithmetic mean for mattering was 3.91 at T1 (SD = 1.01) and 4.01 at T2 (SD = 1.02), revealing high prevalence.

As control variables, we used age in years, gender, education in seven categories assessing the respondents' highest educational degree, and whether respondents are working AMT full-time or part-time.

In the first wave, in order to gain a more nuanced understanding of mattering in digital labor, we added two essay questions aimed at learning more about digital worker's self-concepts. The first question inquired about the reasons for individuals to participate in the work

platform. In the second essay question worker were asked about their opinion on the metaphor of being 'a cog in a machine'.

4. Results

4.1 Dimensionality of Mattering

The initial PCA with all 19 mattering items resulted in a clean structure with four components. The first component had seven items, the second one had four items, the third one had five items and the last one had three items. 59 percent of the total variance was extracted through this solution and the KMO value of 0.84 indicates "meritorious" sampling adequacy (Kaiser & Rice, 1974). However, four items had high crossloadings and were subsequently removed (see Appendix 1, items ma_2, ma_6, ma_7, ma_17). Table 3 displays the final factor structure after the removal of these four items. Again, a clean structure with four components is visible. With a KMO value of 0.81, the sampling adequacy was slightly lower than before, but the explained variance increased to 64 percent.

Table 3

Principal Component Analysis of Mattering

ABOUT HERE

Component 1 has five items and is close to the original sub-dimension of reliance. It describes workers' perception of being reliable and involved, taking care to produce high-quality output. We thus name this component *Reliance*. The values for *Reliance* are extremely high, with an arithmetic mean of 4.76 (SD = 0.53) at T1 and of 4.73 at T2 (SD = 0.62). Thus, workers perceive themselves as very reliable and relied upon by requesters. This is mirrored closely in the qualitative vignettes (see Table 4) as well. One worker describes himself for instance as 'highly skilled, educated, and knowledgeable' and argues that requesters are dependent on his skill.

Another emphasizes that she delivers particularly high-quality work which 'sets [her] apart from other workers'. While most workers perceive themselves to be reliant and valuable contributors, there are also some who feel that they are easily replaceable or that 'nobody would even notice if [they] stopped doing the work'.

Component 2 has four items and is different from previous conceptualizations of mattering. It related to social recognition and exchange, particularly through online forums and communities. In that sense, this component is mattering through individuals' social context. We term this second component *Social Recognition*. The values for *Social Recognition* are moderate to high, with an arithmetic mean of 3.39 (SD = 1.37) at T1 and of 3.41 (SD = 1.35) at T2. Social recognition can be traced as a strong theme in the qualitative essays as well. Here, workers reflect about their overall significance not just with respect to the quality of their work output, but also – and perhaps more importantly – in terms of their role and voice vis a vis requesters and peers. In particular, workers point to instances where they have 'developed relationships with requesters' who appreciated the quality-work that they did. In particular, 'nice comments', 'bonuses' or 'feedback' were named as marker of recognition provided by requesters. Furthermore, several workers visit online forums to 'talk about the good and bad points [of digital labor]', 'mentor newbies' and generally 'share what they've learned' as digital workers. There were also some participants who did not experience social recognition in their digital labor. One participant noticed that their name was 'replaced by a series of letters and numbers' and they 'never see or talk with anyone' they work with. The component of social recognition is distinct from the theoretical construct of social support (e.g. as proposed by Elliot et al., 2014 or Sherbourne & Stewart, 1991) in that the latter pertains to a passive role of the individual (do I receive support within the social context?) while the latter pertains to an active role of the individual (am I recognized for my role and actions in the social context?).

Component 3 has four items and aligns with previous understandings of the importance dimension of mattering. The items describe cognitive processes how workers convince themselves that they themselves and/or the output of their work is important and valuable, so to speak indispensable. We thus name this component *Importance*. The values for *Importance* are moderate to high, with an arithmetic mean of 3.61 (SD = 1.10) at T1 and of 3.65 (SD = 1.13) at T2. Thus, workers perceive themselves as important and valuable. Participants who scored high on this dimension stressed their importance as an integral and crucial part of the whole. While acknowledging that they were but one of several thousand workers, one worker stressed that it is 'the little work that makes the big picture vivid'. Another participant pointed out that even if they were but one 'small datapoint' they felt 'incredibly important' because they were part of the larger and meaningful project. Furthermore, many participants stressed that it was their emotions and their individuality which rendered them indispensable to requesters and superior to 'machines'. While the majority perceived their personal contribution to be of importance, in some of the essays, this notion was absent. One participant noted somewhat resignedly that they were 'just one of thousands of [workers] who log on every day' and that they indeed felt that they were 'just a cog in a machine'.

Component 4 has two items and is thus the weakest dimension of mattering. It is behavioral in nature (rather than perceptional) and relates to interactions with the requester, in the sense of making oneself heard and speaking up. We thus name this component *Interaction*. The values for Interaction are high or even high to very high, with an arithmetic mean of 4.21 (SD = 1.05) at T1 and of 4.30 at T2 (SD = 1.00). Thus, workers report speaking up and making themselves heard when they have a question about the rejection of a task and feel treated unfairly.

Table 4

14

4.2 The Impact of Mattering on Work Engagement

The results of the linear regression analysis are displayed in Table 5. The extracted components described in the previous paragraphs were included in this regression model as independent variables, controlling for demographic characteristics and full-time vs. part-time work. The analysis was conducted at T2. Thus, only respondents who answered the survey at both T1 and T2 are included. The component structure from the analyses at T1 was superimposed to build the independent variables for the regression model, revealing a vastly similar structure (see Appendix, Loadings at T2).

The regression analysis shows that the control variables have a significant but weak effect on work engagement. Older, female and part-time workers are more engaged than younger, male and full-time workers. Education has a negative effect, so that more educated workers are less engaged. Turning to the mattering variables, we find that the two established mattering components – reliance and importance – influence work engagement positively while the social components of social recognition does not. Perceived importance of one's contribution to the overall platform is by far the strongest predictor of work engagement. An increase of one standard deviation in importance leads to an increase of almost half a standard deviation in work engagement. The effect for reliance is much weaker but still significant at the 5-percent level.

Table 5

Regression Analysis of Work Engagement at T2 on Mattering and Control Variables

ABOUT HERE

In a final step, we ran a model that included work engagement at T1 as a control variable but was otherwise the same as the previous model (Table 6). This served to check whether the effects would still hold when accounting for changes in work engagement. Comparing Table 3 and Table 4, we see that only full-time vs. part-time and importance remained significant. The effect of importance is much weaker than before but still significant at the 1-percent level. Again, higher values in perceived importance lead to increased work engagement and part-time workers are more engaged than full-time workers. Taken together, the findings indicate that there is an effect of mattering on work engagement, but this is mostly the case for part-time workers that succeed in authoring narratives of their importance.

Table 6

Regression Analysis of Work Engagement at T2 on Work Engagement at T1, Mattering and Control Variables

ABOUT HERE

---

5. Discussion and Conclusion

In this paper, we investigated the phenomenon of mattering on Amazon Mechanical Turk based on a longitudinal quantitative survey study and qualitative vignettes. Our point of departure was that common criticisms levied against online gig labor often refer to issues of job simplification, isolated working conditions and limited opportunities for feedback. This might make it rather difficult for crowdworkers to be able to experience that they *matter* at work (Fuchs & Sevignani, 2013; Kingsley, Gray, & Sury, 2015; Rosenblat & Stark, 2016).

Here, we showed that the ability to positively frame one's work as a significant contribution to – and even beyond – the crowdworking platform (importance) is key in predicting how well online gig labor is enjoyed long-term. More to the point, our research suggests that the narrative of the "empowered digital entrepreneur" may be a self-fulfilling prophecy: Workers

16

who manage to ensure their mattering – e.g. through reinforcing narratives about the larger significance of their overall contribution – will be less bothered by the disenfranchising properties of digital labor while simultaneously becoming more engaged in their work environment.

Our results further suggest that part-time workers are overall more likely to employ positive framings of their own contribution. Judging from the vignette statements, this may be due to the fact that they experience their activity on the platform as a welcome way to earn additional income, to learn new skills or to pass the time. This may also offer an avenue to explain why crowdwork can be both experienced as intrinsically motivating and fun (crowdwork as empowerment) or as alienating and potentially exploitative (crowdwork as disenfranchisement).

This subjective perspective put forth in the notion of mattering may add to better explain the paradox in the digital labor debate put forth by Fish & Srinivasan (2012) and Postigo (2014): Why is it that people seem to voluntarily and continuously work in conditions that may be exploitative and disenfranchising?

Future research may not just employ task characteristics (e.g. Saks, 2006) or job resources (Bakker, Hakanen, Demerouti & Xanthopoulou, 2007) as a predictor of work engagement but additionally take the individual narrative frames employed with respect to the significance of one's overall contribution into account as well. While our study confirmed perceived importance to be the most salient element of mattering in the anonymous context of digital microwork on AMT, it is possible that other contexts may stress other elements of mattering. For example, Boons, Stam and Barkema (2015) have shown that in more community-driven environments where individuals are more visible (e.g. crowdsourced innovation community), it may not be importance (own attribution of significance) but respect (others' attribution of significance) that are key in driving perceptions of mattering and engagement. The question whether

or not respect would be an alternative or additional dimension of mattering or rather a combination of attention (others are aware of my contribution) and reliance (others value my contribution) would have to be addressed in future research and measures.

These inherent factors such as lack of appreciation, distance from colleagues, a lack of transparency, and the reification of workers may decrease feelings of mattering. However, given that these are characteristic elements of digital labor, and given that feelings of insignificance, alienation, and 'non-mattering' can have wide social impacts, mattering becomes a core construct in how we should examine the experience of work in the digital economy (Jung, 2015). In order to prevent marginalization and promote social cohesion, it is thus critical to design fair procedures and business models, which can support and promote experiences of mattering among its workforce.

We would argue that going forward, these forms of personal coping strategies with a form of labor that, at least from a structural perspective, seems less than ideal, are a promising avenue of research. On the one hand, they introduce worker agency into the picture, and might help explain the uptake of (and loyalty to) this kind of labor, beyond socio-economic context factors. On the other hand, the findings tie nicely into organizational scholarship on workers' disidentification practices.

Our study comes with certain limitations that point to additional avenues for future research. First, our research, while introducing the concept of mattering to a new context, did not differentiate task types and characteristics within this work environment. Instead, we aimed at exploring the topic of mattering in crowdwork more holistically. Future research is encouraged to analyze whether different crowdwork types (e.g., survey taking, image tagging, content production) and task characteristics come with heightened or lowered levels of mattering. Ethnographic methods would be particularly suited to research how perceptions of mattering and the

type of work crowdworkers do relate to each other. Second, we looked at the outcome of mattering rather than the antecedents. Future research could investigate what personal, platform, and cultural characteristics can enhance mattering. For example, do crowdworkers in less wealthy countries and those traditionally excluded from the labor market (e.g., former convicts, retired professionals, women who are home-bound as a result of domestic or care responsibilities) experience higher values of mattering? Third, our measure of mattering requires refinement. Traditional measures of mattering often focus on how respondents think that others perceive them. This is extremely difficult to gauge in the highly anonymized setting of digital crowdwork. Here, it might be more meaningful to measure not the *perceptions of perceptions* (e.g. do I feel that others value my work?), but the *perceptions of behaviors* instead (e.g. do I feel that I deliver good work?). We have addressed this partially by 'activating' some of the items for social recognition and interactions which were measured mostly through (self-reported) behavioral cues. Future research may refine the measurement further for instance by testing it in other – more or less anonymous – settings of digital work.

Fourth and finally, our research model did only incorporate one outcome and this outcome is generally seen as positive. Future research could test the effect of mattering on additional outcomes, including negative ones such as exhaustion due to overwork or overcommitment. Here, a combination of survey data with observational and trace data, for example about individuals' health data through fitness and self-tracking apps, would be appropriate.

Despite these limitations, we believe that our study makes an important contribution to the psychology and sociology of work in an increasingly digitized context. By pointing to the differentiated forms and functions of mattering, we not only advance the theoretical understanding of new forms of work but are also able to point to possible intervention points that could improve workers' mattering and meaning in digital work environments. This has particular im-

plications for the design and management of digital platforms which play an increasingly important role in facilitating collaboration, communication and task coordination – both within and outside the boundaries of traditional organizations. With the advent of increasingly specialized digital work platforms, it is crucial for platform managers to attract and retain skilled and reliable workers. Here, designing inclusive platform experiences which emphasize mattering in the form of social recognition and reliance (e.g. through reputation and feedback mechanisms) interaction (e.g. through communication and community features) as well importance (e.g. through incentives and status badges) will be key.

References

Amundson, N.E. (1993), "Mattering: A Foundation for Employment Counseling and Training". *Journal of Employment Counseling*, Vol. 30 No. 4, pp. 146-152.

Archer Jr, J. (1987). College Students' Attitudes Toward Wellness. *Journal of College Student Personell*, Vol. 28 No. 4, pp. 311-17.

Aytes, A. (2013), "Return of the Crowds: Mechanical Turk and Neoliberal States of Exception". In Scholz T (ed.) *Digital Labor. The Internet as Playground and Factory,* Routledge, New York, NY, pp. 79-97.

Bakan, D. (1966). T*he duality of human existence: An essay on psychology and religion*. Oxford, England: Rand Mcnally.

Bauer, R. M., and Gegenhuber, T. (2015), "Crowdsourcing: Global search and the twisted roles of consumers and producers". *Organization*, Vol. 22 No. 5, pp. 661-681.

Berg, J., Furrer, M., Harmon, E., Rani, U., and Silberman, M. S. (2018), "Digital labour platforms and the future of work". *International Labour Organization Report*, available at https://www.ilo.org/global/publications/books/WCMS_645337/lang--en/index.htm (accessed September 25 2018)

Boons, M., Stam, D., and Barkema, H. G. (2015), "Feelings of pride and respect as drivers of ongoing member activity on crowdsourcing platforms". *Journal of Management Studies*, Vol. 52 No. 6, pp. 717-741.

Brawley, A. M., and Pury, C. L. (2016), "Work experiences on MTurk: Job satisfaction, turnover, and information sharing". *Computers in Human Behavior*, Vol. 54, pp. 531-546.

Colbert, A., Yee, N., and George, G. (2016), "The digital workforce and the workplace of the future". *Academy of Management Journal,* Vol. 59 No. 3, pp. 731-739.

Connolly, K. M., & Myers, J. E. (2003). Wellness and mattering: The role of holistic factors in job satisfaction. *Journal of Employment Counseling*, Vol. 40 No. 4, pp. 152-160.

Deci, E. L., & Ryan, R. M. (1991). A motivational approach to self: Integration in personality. In R. A. Dienstbier (Ed.), *Current theory and research in motivation, Vol. 38. Nebraska Symposium on Motivation, 1990: Perspectives on motivation* (pp. 237-288). Lincoln, NE, US: University of Nebraska Press.

DeForge, B. R., & Barclay III, D. M. (1997). The internal reliability of a general mattering scale in homeless men. *Psychological Reports*, Vol. 80 No. 2, pp. 429-430.

Dixon Rayle, A. D. (2005), "Adolescent gender differences in mattering and wellness." *Journal of Adolescence*, Vol. 28 No. 6, pp. 753-763.

Elliott, G., Kao, S., and Grant, A. M. (2004), "Mattering: Empirical validation of a social-psychological concept". *Self and Identity,* Vol. 3 No. 4, pp. 339-354.

Estellés-Arolas, E., and González-Ladrón-De-Guevara, F. (2012), "Towards an integrated crowdsourcing definition." *Journal of Information Science*, Vol. 38 No. 2, pp. 189-200

Fenigstein, A., Scheier, M. F., & Buss, A. H. (1975). Public and private self-consciousness: Assessment and theory. *Journal of Consulting and Clinical Psychology*, Vol. 43 No. 4, pp. 522-527.

Fish, A., and Srinivasan, R. (2012), "Digital labor is the new killer app". *New Media & Society*, Vol. 14 No. 1, pp. 137–152.

France, M. K., & Finney, S. J. (2009). What matters in the measurement of mattering? A construct validity study. *Measurement and Evaluation in Counseling and Development*, Vol. 42 No. 2, pp. 104-120.

Fuchs, C., and Sevignani, S. (2013). "What Is Digital Labour? What Is Digital Work? What's their Difference? And Why Do These Questions Matter for Understanding Social Media?" *tripleC: Communication, Capitalism & Critique,* Vol. 11 No. 2, pp. 237-293.

Fumagalli, A., Lucarelli, S., Musolino, E., and Rocchi, G. (2018). Digital labour in the platform economy: The case of Facebook. *Sustainability*, Vol. 10 No. 6, 1757.

Gossett, B. J., Cuyjex, M. J., and Cockriel, I. (1996), "African Americans' and Non-African Americans' Sense of Mattering and Marginality at Public, Predominantly White Institutions". *Equity and Excellence in Education*, Vol. 29 No. 3, pp. 37-42.

Greene, C.N. (1978), "Identification modes of professionals: Relationship with formalization, role strain and alienation". *Academy of Management Journal*, Vol. 21 No. 4, pp. 486–92.

Howcroft, D., and Bergvall-Kåreborn, B. (2018). "A typology of crowdwork platforms". *Work, Employment and Society*, Vol. online first. doi: 10.1177/0950017018760136

Howe, J. (2009), *Crowdsourcing: Why the Power of the Crowd Is Driving the Future of Business,* Random House Business Books, London.

Irani, L. (2015), "The cultural work of microwork". *New Media & Society*, Vol. 17 No. 5, pp. 720-739.

Jung, A. K. (2015), "Interpersonal and societal mattering in work: A review and critique". *The Career Development Quarterly*, Vol 63 No. 3, pp. 194-208.

Kaiser, H. F., and Rice, J. (1974), "Little jiffy Mark IV". *Educational and Psychological Measurement,* Vol. 34, pp. 111-117.

Kingsley, S., Gray, M., & Suri, S. (2015). Accounting for market frictions and power asymmetries in online labor markets. *Policy & Internet*, Vol. 7 No 4, pp. 383-400.

Kittur, A., Nickerson, J. V., Bernstein, M., Gerber, E., Shaw, A., Zimmerman, J., Lease, M., and Horton, J. (2013), "The Future of CrowdWork". *Proc. CSCW,* pp. 1301– 1318.

Kosmala, K., and Herrbach, O. (2006), "On cynicism and jouissance in audit firms". *Human Relations*, Vol. 59 No. 10, pp. 1393-1428.

Lehdonvirta, V. and Ernkvist, M. (2011), *Knowledge Map of the Virtual Economy*. World Bank, Washington, DC.

Litman, L., Robinson, J., & Abberbock, T. (2017). TurkPrime. com: A versatile crowdsourcing data acquisition platform for the behavioral sciences. *Behavior Research Methods, 49*(2), 433-442.

Malone, T. W., Laubacher, R. J., & Johns, T. (2011). The age of hyperspecialization. *Harvard Business Review*, Vol. 89 No. 7/8, pp. 56-65.

Maslow, A. H. (1970). *Motivation and personality*. New York: Harper & Row.

McAdams, D. P. (1989). *Intimacy: The need to be close*. New York: Doubleday & Co.

Paolacci, G, Chandler, J. and Ipeirotis, P.G. (2010), Running experiments on amazon mechanical turk. *Judgment and Decision Making*, Vol. 5 No. 5, pp. 411-419.

Petriglieri, G., Ashford, S. J., and Wrzesniewski, A. (2018), "Agony and Ecstasy in the Gig Economy: Cultivating Holding Environments for Precarious and Personalized Work Identities." *Administrative Science Quarterly*. DOI: 10.1177/0001839218759646 journals.sagepub.com/home/asq

Postigo, H. (2016), "The socio-technical architecture of digital labor: Converting play into YouTube money". *New Media and Society*, Vol 18 No. 2, pp. 332-349.

Prasad, A., and Prasad, P. (1993), Reconceptualizing alienation in management inquiry: Critical organizational scholarship and workplace empowerment. *Journal of Management Inquiry*, Vol. 2 No. 2, pp. 169–83.

Rosenberg, M. (1985), "Self-concept and psychological well-being in adolescence". In R. L. Leahy (Ed.), *The development of self,* Academic Press, Toronto, Ontario, Canada, pp. 205–246.

Rosenberg, M. (1989). *Society and the adolescent self-image*. Middeltown, CT: Wesleyan University Press.

Rosenberg, M., and McCullough, B. C. (1981), "Mattering: Inferred significance and mental health among adolescents." *Research in Community & Mental Health*, Vol. 2, pp. 163-182

Rosenblat, A. & Stark, L. (2016). Algorithmic labor and information asymmetries: A case study of Uber's drivers. *International Journal of Communication*, Vol. 10, pp. 3758-3784.

Salehi, N., Irani, L. C., Bernstein, M. S., Alkhatib, A., Ogbe, E., and Milland, K. (2015), "We Are Dynamo: Overcoming Stalling and Friction in Collective Action for Crowd Workers". *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems, ACM.* pp. 1621-1630.

Schaufeli, W. B., and Bakker, A. B. (2003), *Utrecht work engagement scale: Preliminary manual*. Occupational Health Psychology Unit, Utrecht University, Utrecht.

Schlossberg, N. K. (1989). Marginality and mattering: Key issues in building community. *New Directions for Student Services*, No. 48, pp. 5-15.

Schlossberg, N. K. (1997), "A model of worklife transitions". In R. Feller & G. R. Walz (Eds.), *Career transitions in turbulent times,* ERIC/CASS Publications, Greensboro, NC, 3rd ed., pp. 93-104.

Scholz T (ed.) (2013). *Digital Labor. The Internet as Playground and Factory,* Routledge, New York.

Seeman, M. (1959). On the Meaning of Alienation. *American Sociological Review*, Vol. 24 No. 6, pp. 783-791.

Sherbourne, C. D., & Stewart, A. L. (1991). The MOS social support survey. *Social Science & Medicine*, Vol. 32 No. 6, pp. 705-714.

Shirky, C. (2010), *Cognitive surplus: Creativity and generosity in a connected age,* Penguin, London.

Snyder, M. (1974). Self-monitoring of expressive behavior. *Journal of Personality and Social Psychology*, Vol. 30 No. 4, pp. 526-537.

Spreitzer, G., Cameron, L., and Garrett, L. (2017), «Alternative work arrangements: Two images of the new world of work". *Annual Review of Psychology and Organizational Behavior,* Vol. 4, pp. 473-499.

Taylor, J., Turner, R. J., Noymer, A., Beckett, M. K., & Elliott, M. N. (2001). A longitudinal study of the role and significance of mattering to others for depressive symptoms. *Journal of Health and Social Behavior*, Vol. 42 No. 3, pp. 310-325.

Tovar, E., Simon, M. A., and Lee, H. B. (2009), "Development and validation of the college mattering inventory with diverse urban college students". *Measurement and Evaluation in Counseling and Development*, Vol. 42 No. 3, pp. 154-178.

Table 1: Conceptualizations of Crowdwork on a Spectrum from Empowerment to Disenfranchisement

	Conceptualization of Crowdwork…	
	…as Empowerment	…as Disenfranchisement
Concept of Self	Player, Entrepreneur	Worker, Resource
Experience	playfulness enjoyment absorption flow […]	Powerlessness normlessness meaninglessness isolation self-estrangement […]
Motivation	Intrinsic motivation Hedonic motive	Extrinsic motivation Utilitarian motive
Relational narrative	Empowerment Autonomy/Flexibility Entrepreneurship	Exploitation Disenfranchisement Depersonalization
Identification	*High* (Identification, Belonging)	*Low* (Alienation)
Mattering	*High* (Awareness, importance, reliance)	*Low* (low perception of personal or social significance)

Authors	Bucher & Fieseler (2016) Paolacci et al. (2010) Shirky (2010) Howe (2009)	Postigo (2014) Fuchs & Sevignani (2013) Scholz (2013) Fish & Srinivasan (2012)

Table 2: Mattering and Related Constructs

Author	Context/ Study	Applied definition of mattering	Potentially related construct	Definition of related construct	Potential relationship to mattering
Rosenberg & McCullough, 1981	6,568 junior and senior high school students (survey)	"mattering is a motive: the feeling that others depend on us, are interested in us, are concerned with our fate, or experience us as an ego-extension exercises a powerful influence on our actions" p. 165	Parental mattering	Student's feeling that they mattered to their parents and that their parents held positive or negative attitudes toward them.	*element*
Schlossberg, 1989	24 men and women ranging in age from 16 to 80 (interviews)	Mattering refers to our belief, whether right or wrong, that we matter to someone else. This belief acts as a motivator.	marginality (ant)	feeling of not being central or not belonging in a group or place. "Feeling marginal leads us to conclude that we do not matter or confuses us about the group to which we do."	*outcome*
DeForge and Barclay, 1997	199 homeless men (survey)	the extent to which we consider ourselves significant to others. [...] Our belief that significant others, e.g., family, friends, colleagues, etc., see us as important and an object of their attention, and that they depend on us and are concerned with our fate	Significance	importance to others	*element*
Taylor and Turner, 2001	1300 members of an urban community sample	Mattering is conceptualized as a personal resource and as perceptions of significance of the self to others.	intimacy	*referring to* McAdams 1989	*outcome*
			belongingness	*referring to* Deci and Ryan, 1991	*antecedent*
			communion	*referring to* Bakan, 1966	*element*
Connolly, 2003	82 employees (survey)	employees' perceptions of whether they matter to their supervisors, their organization, and other aspects of their work setting	Holistic wellness	"the process and state of a quest for maximum human functioning that involves the mind, body, and spirit" *referring to Archer, Probert, and Gage, (1987, p. 311)*	*outcome*

Elliott, Kao and Grant, 2004	388 private university students (survey)	"perception that, to some degree and in any of a variety of ways, we are a significant part of the world around us."	Self-conscious-ness	chronic tendency to be the object of one's own attention *referring to Fenigstein, Scheier, and Buss (1975)*	*antecedent*
			Self-monitoring	extent to which people observe, regulate, and control the self-presentations that they proffer in everyday social interactions *referring to Snyder (1974)*	*antecedent or outcome*
			perceived social support	sense that others provide the resources (mate-rial, psychological, and emotional) that help one carry on *referring to Sherbourne and Stewart (1991)*	*element*
			self-esteem	global evaluation of one's personal character-istics and attributes *referring to Rosenberg (1989)*	*angecedent*
			alienation (ant.)	The sense that there are no rules for living, so that outcomes of interaction are unpredictable (meaninglessness) and the belief that social norms are ineffective, so that socially disap-proved behaviors are necessary for success (normlessness). *referring to Seeman (1959)*	*outcome*
France and Finney, 2009	594 students at a midsized mid-Atlantic university (survey)	Mattering is our feeling that we make a difference in the lives of other people and that we are significant to the world around us	belonging	"Having an acknowledged presence in a group. [...] developing meaningful relation-ships with other people who provide a sense of mattering fulfills the fundamental need to belong" *referring to Maslow (1970)*	*antecedent*
			purpose	"Perception of individuals that [they] cogni-tively and affectively [understand] their meaning in life"	*antecedent*

Table 3: Principal Component Analysis of Mattering

	Item	Component			
		1	2	3	4
Reliance	*Requesters can rely on me to deliver good results.*	**.847**	.051	.085	.100
	I take care to maintain a good rating on Amazon Mechanical Turk	**.836**	.032	-.019	.060
	I take care to finish the tasks that I have started.	**.790**	.040	.096	.002
	I take care to continuously deliver good results in order to build up a good reputation with requesters.	**.727**	.087	.041	.049
	I am a reliable worker.	**.726**	-.008	.191	.163
Social Recognition	*I engage with other 'Turkers' online.*	-.001	**.901**	.041	.119
	I find that online forums are a good place to talk to other workers.	.159	**.818**	-.004	.091
	I offer advice and support to other workers.	.018	**.814**	.255	.140
	I talk to others about my work on Amazon Mechanical Turk.	.010	**.609**	.183	.138
Importance	*I am a valuable resource for Amazon Mechanical Turk.*	.238	.123	**.731**	.117
	I generally look for meaningful tasks that allow me to make a difference in the world.	-.041	.036	**.695**	-.032
	If they are smart, Amazon Mechanical Turk would not want to lose me.	.196	.210	**.642**	.228
	It makes no difference to Amazon Mechanical Turk if I work there or not. (reverse)	.026	.090	**.611**	-.197
Interaction	*If I have a question about the rejection of the task, I contact the requester directly.*	.155	.148	.050	**.851**
	When I feel treated unfairly by a requester, I try to make my-self heard.	.104	.288	-.056	**.796**

Standardized loadings are displayed.

Table 4: Exemplary Qualitative Vignettes on Mattering

	Mattering high *(Self-Concept of Empowerment)*	**Mattering low** *(Self-Concept of Disenfranchisement)*
Reliance	- I am highly skilled, educated, and knowledgable. The work I do helps requesters […] they depend on us! - Some people may just put forth the bare minimum […], others are quick, efficient, and provide high quality responses. I like to think I'm one of the latter […] that sets me apart from other workers. - the requesters need us, and many academics need us […], it's in the job description - I've never tailored my answers to what I believe the requester is interested in learning or predicting. At the cost of being efficient and quicker in my work, I've always answered truthfully.	- For the most part requesters don't really care who does the work. - I would not be missed if I did not work one day but that is the same with many jobs anymore. - Almost anyone else could do the work I do and the requester knows absolutely nothing about me and would never even notice if I stopped doing the work.
Social Recognition	- I participate in a few small online groups of other [workers]. We talk about the good and bad points, mentor newbies, share what we've learned about turking. - I do have requesters tell me that they appreciate and note my efforts - It's always a pleasure to get a bonus and especially the bonus with nice comments, they make me feel that my work was not worthless	- My name is replaced by a series of letters and numbers. I never see or talk with anyone I work with. - Maybe someday I'll get some recognition and get more out of MTurk.
Importance	- I'm a person and my opinions matter. My feelings are important - Well it's the little work that makes the big picture vivid. I feel like my work is very valuable. - Although you may only be a small data point, as part of the larger data set	- I don't identify myself from what I do on here. - It's not like the world will cease if I don't log in tomorrow. [I feel that I am] a piece of the machinery that is only identified by an Id number.

	- you become incredibly important to answering big questions. - I believe the fingerprints of my work are displayed in everything I do smeared and unique, like me.	- I am just one of thousands of turkers who log on every day […] I guess I am just a cog in a machine.

Interaction	- I have developed relationships with requesters that appreciate the quality work that I have done. - Several times I have gotten emails thanking me for my honest feedback. Some even gave bonuses - We do have a voice. I think there is a sense of community(especially with the forums) when it comes to turking.	- We really have no recourse other than to [complain] on [online forums] - Amazon never responds to worker complaints and doesn't [care], as long as they get paid on their end.

Table 5: Regression Analysis of Work Engagement at T2 on Mattering and Control Variables

	Unstandardized Regression Coefficient (Robust Standard Errors)	Standardized Regression Coefficient
Age	0.01* (0.00)	0.09*
Education	-0.07* (0.03)	-0.09*
Gender: Female	0.18* (0.08)	0.09*
Full-Time vs. Part-Time: Part-Time	0.26* (0.10)	0.11*
Reliance at T1	0.09* (0.04)	0.09*
Social Recognition at T1	0.08 (0.04)	0.08
Importance at T1	0.48*** (0.05)	0.49***
Interaction at T1	-0.02 (0.05)	-0.02
Constant	-0.18	.

N= 438;* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$; $R^2 = 0.28$

Table 6: Regression Analysis of Work Engagement at T2 on Work Engagement at T1, Mattering and Control Variables

	Unstandardized Regression Coefficient (Robust Standard Errors)	Standardized Regression Coefficient
Work Engagement at T1	0.60*** (0.05)	0.61***
Age	0.00 (0.03)	0.03
Education	-0.04 (0.03)	-0.06
Gender: Female	0.06 (0.07)	0.03
Full-Time vs. Part-Time: Part-Time	0.18* (0.09)	0.08*
Reliance at T1	-0.06 (0.03)	-0.06
Social Recognition at T1	-0.02 (0.04)	-0.02
Importance at T1	0.15** (0.05)	0.15**
Interaction at T1	-0.07 (0.05)	-0.07
Constant	-0.04	.

N= 428;* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$; $R^2 = 0.50$

Appendix

Questionnaire

Construct	Item	Wording (Scale)
Work Engagement (WE)	we_1	*At my work, I feel that I am bursting with energy.*
	we_2	*At my job, I feel strong and vigorous.*
	we_3	*When I get up in the morning, I feel like going to work.*
	we_4	*I find the work that I do full of meaning and purpose.*
	we_5	*I am enthusiastic about my job.*
	we_6	*My job inspires me.*
	we_7	*Time flies when I am working*
	we_8	*When I am working, I forget everything else around me.*
	we_9	*I feel happy when I am working intensely.*

Construct	Item	Wording (Scale)
Mattering (MA)	ma_1	*I talk to others about my work on Amazon Mechanical Turk.*
	ma_2	*I take pride in my rating on Amazon Mechanical Turk.**
	ma_3	*When I feel treated unfairly by a requester, I try to make myself heard.*
	ma_4	*I take care to continuously deliver good results in order to build up a good reputation with requesters.*
	ma_5	*If I have a question about the rejection of the task, I contact the requester directly.*
	ma_6	*I ask requesters for feedback on my own work.**
	ma_7	*I am a valuable resource for Amazon Mechanical Turk.**
	ma_8	*I engage with other 'Turkers' online.*
	ma_9	*I generally look for meaningful tasks that allow me to make a difference in the world.*
	ma_10	*I find that online forums are a good place to talk to other workers.*
	ma_11	*If they are smart, Amazon Mechanical Turk would not want to lose me.*
	ma_12	*It makes no difference to Amazon Mechanical Turk if I work there or not.* (reverse)
	ma_13	*I take care to maintain a good rating on Amazon Mechanical Turk.*
	ma_14	*Requesters can rely on me to deliver good results.*
	ma_15	*I offer advice and support to other workers.*
	ma_16	*I am a reliable worker.*
	ma_17	*I don't shy away from difficult tasks.**
	ma_18	*I am a valuable asset to Amazon Mechanical Turk.*
	ma_19	*I take care to finish the tasks that I have started.*

*Not included in the final PCA due to high cross-loadings.

PCA Loadings at T2

Item	Component			
	1	2	3	4
Requesters can rely on me to deliver good results.	**.852**	.081	.083	.120
I take care to maintain a good rating on Amazon Mechanical Turk	**.840**	.043	.026	.094
I take care to finish the tasks that I have started.	**.778**	.050	.110	.113
I take care to continuously deliver good results in order to build up a good reputation with requesters.	**.726**	.094	.149	.242
I am a reliable worker.	**.810**	.080	.062	.163
I engage with other 'Turkers' online.	.040	**.907**	.038	.107
I find that online forums are a good place to talk to other workers.	.158	**.770**	-.043	.102
I offer advice and support to other workers.	.030	**.867**	.099	.086
I talk to others about my work on Amazon Mechanical Turk.	.052	**.713**	.140	.136
I am a valuable resource for Amazon Mechanical Turk.	.296	.127	**.697**	.234
I generally look for meaningful tasks that allow me to make a difference in the world.	.153	.141	**.705**	-.095
If they are smart, Amazon Mechanical Turk would not want to lose me.	.191	.099	**.526**	.496
It makes no difference to Amazon Mechanical Turk if I work there or not. (reverse)	-.100	-.061	**.760**	-.023
If I have a question about the rejection of the task, I contact the requester directly.	.291	.142	.040	**.769**
When I feel treated unfairly by a requester, I try to make my-self heard.	.183	.219	-.021	**.820**