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The Duality of Empowerment and Marginalization in Microtask Crowdsourcing: A Replication

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Abstract:

This paper describes an exact replication of a study by Deng, Joshi, and Galliers (2016) of crowd worker values on Amazon's Mechanical Turk (MTurk) crowdsourcing platform. The original study analyzed 210 MTurk crowd workers' narratives using value sensitive design (VSD). The results uncovered nine shared values: access, autonomy, fairness, transparency, communication, security, accountability, making an impact, and dignity. Further analysis in the original study revealed four crowdsourcing structures: compensation, governance, technology, and microtask, and the duality of crowd worker perceptions related to empowerment and marginalization. This study surveyed Amazon Mechanical Turk crowd workers about their work and used the original study's findings as *a priori* codes for analysis. The replication revealed new values and forms of empowerment and marginalization, offering additional implications for further research regarding microtask crowdsourcing.

Keywords: Microtask Working, Marginalization, Empowerment, Value Sensitive Design, Crowdsourcing Platforms.

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1 Introduction

Digital labor platforms have created new opportunities for workers, especially where opportunities for economic advancement are limited or when individuals are "in-between" full-time jobs (Archibugi, 2017; Taylor & Joshi, 2019). Digital labor platforms (crowdsourcing platforms) enable job requesters to break down larger jobs into individual tasks (i.e., microtasks) and to source task workers from a "crowd" (i.e., crowdsource) of ready and able people (i.e., crowd workers). However, the rise of digital labor platforms may be a double-edged sword (Deng, Joshi, & Galliers, 2016). Some researchers claim these platforms lead to economic insecurity, low-skilled jobs, increased personal debt, and fewer labor protections for crowd workers (Calo & Rosenblat, 2017; Fleming, 2017). Other scholars highlight the benefits that digital labor platforms offer workers seeking alternative work arrangements or new workplace challenges (Deng, Joshi, & Galliers, 2016; Taylor & Joshi, 2019).

Research by Deng et al. (2016) used value sensitive design (VSD) to consider the values of crowd workers as a possible explanation for their participation as crowd workers despite the competing perceptions of crowdsourcing platforms. Their results identified the following values among crowd workers: access, autonomy, fairness, transparency, communication, security, accountability, making an impact, and dignity. Deng et al. (2016) also found that empowerment and marginalization co-exist in the context of microtask crowdsourcing.

To examine if crowd worker values and perceptions have changed since the original study, we replicated Deng et al. (2016) by collecting data about crowd worker perceptions in May 2019. This study uses the same methodology, research instrument, setting, compensation structure, sample size, and coding scheme. We examine our findings in light of Deng et al. (2016) and identify additional themes and insights beyond the original study.

As we explain our study and findings, we organize this article as follows. The following section describes our research method, which includes a description of our data collection method and analysis. Then, we present our findings and offer direct comparisons between our results and those of Deng et al. (2016). The discussion section explains the similarities and differences between the original study and this replication and offers suggestions for future research based on our findings.

2 Method

For this exact replication, we followed the same methodology as Deng et al. (2016), which was an interpretive field study consistent with Klein and Myers (1999) and Lee and Baskerville (2003) with data analysis guided by Miles and Huberman (1994).

2.1 Data Collection

We collected data in May 2019 using the same survey instrument and data collection methods as the original study. We surveyed crowd workers about their perceptions of this form of work using Amazon's Mechanical Turk (MTurk) digital labor platform. Participants answered semi-structured and unstructured questions that indirectly questioned crowd workers' experiences performing microtasks on MTurk. We compensated participants consistent with the original study in that participants received two forms of payment. First, participants received $2.00 to complete a 16-minute survey, which corresponds to $7.50/per hour.[1] Second, we gave participants a post hoc bonus of $2.00 per response, effectively doubling their compensation. We also sought a similar sample size as the original study by targeting 200 responses from U.S.-based MTurk workers.

The original and replication study indirectly asked participants about their values associated with work, consistent with the approach presented by Friedman, Kahn, and Borning (2006). The survey asked questions about the crowd workers' career goals and their rationale for performing microtasks to gain insights into participants' values. Moreover, the survey included questions about a participant's length of time performing MTurk tasks, the hours dedicated to completing MTurk tasks every week, and other demographic questions (e.g., age, gender, household income, employment status, and education).

[1] The hourly rates for the original study and the replication study were consistent with the U.S. Federal Minimum Wage.

We published the survey on Amazon's MTurk and we received positive feedback from MTurk workers about the survey, consistent with Deng et al. (2016). In this replication study, participants shared the following sentiments about the survey itself:

> *It was a good paid survey I felt comfortable writing my answers.*
>
> *Pretty good survey. Thank you for caring about workers.*
>
> *I enjoyed completing this survey and providing input on mechanical turk.*

We collected data from 195 crowd workers on MTurk. We received complete responses from 138 individuals identifying as male and 57 as female. Approximately 72% of crowd workers completing the survey were employed full-time, 11% were employed part-time, 10% were unemployed, and 7% identified their employment category as "other". On average, our sample of crowd workers spent 24 hours on MTurk each week, and approximately 73% of Turkers did not consider crowdsourcing work a full-time career. Our sample of participants is distributed into the following age groups: 18-24 years (13%); 25-30 years (30%); 31-40 years (40%); 41-50 years (9%); 51-60 years (4%), and 61+ years (4%). The average age of our sample was 33 years, with a standard deviation of 9.8 years. Participants spent an average of 23.7 weekly hours (standard deviation = 16.1) on the platform. We summarize the descriptive statistics of the original study sample and our replication study sample in Table 1.

Table 1. Descriptive Statistics and Correlation (n = 195)

Variable	Mean (SD)		Correlation Matrix (above diagonal, original study; below diagonal, replication study)					
	Replication	Original	(1)	(2)	(3)	(4)	(5)	(6)
(1) Age	33.6 (9.8)	35.0 (12.2)	---	.271	-.047	.093	.169	.101
(2) MTurk Tenure (Months)	29.9 (23.9)	15.2 (16.9)	.103	---	.084	.015	.170	.141
(3) Weekly HITs	514 (1256)	958 (1539)	-.037	.115	---	.409	-.019	.252
(4) Weekly Hours	23.7 (16.1)	26.1 (16.1)	.049	.171	.205	---	.007	.389
(5) Gender (Male=0)	0.29 (0.4)	0.52 (0.5)	.218	-.017	.030	.039	---	.114
(6) Consider crowd work as a full-time job (Y=0)	0.73 (0.4)	0.47 (0.47)	-.058	-0.035	-.227	-.455	-.079	---

Over half of the participants in our replication had at least a 4-year degree (see Table 2). In terms of annual household income, the most significant percentage of crowd workers earned between $25,000 and $49,999 (see Table 3).

Table 2. Levels of Education in Replication vs. Original Study

	Replication study	Original study
High school diploma	10.7%	12.9%
Associate degree	13.3%	11.9%
Some college but no degree	19.4%	29.5%
Bachelor's degree	48.2%	34.8%
Graduate degree	7.69%	11.0%

Table 3. Annual Household Income of Participants in Replication vs. Original Study		
	Replication study	**Original study**
< $25,000	17.9%	18.6%
$25,000 - $49,999	37.4%	39%
$50,000 - $74,999	22.5%	22.9%
$75,000 - $99,999	11.2%	11%
$100,000+	10.7%	8.6%

Consistent with the original study, we asked respondents to identify their frequency of performing different tasks (known as HITs) within Amazon MTurk. Table 4 identifies how frequently respondents in our sample perform HITs in each category.

Table 4. Percentage of Crowd Workers (n=196) Performing the Categories of MTurk HITs							
	Data Processing	**Categorization**	**Sentiment**	**Tagging**	**Content**	**Business Feedback**	**Academic Survey**
Not at all	18%	11%	18%	28%	12%	10%	0%
Very few	48%	38%	39%	46%	36%	24%	3%
Somewhat	23%	36%	31%	20%	38%	45%	19%
Quite a lot	11%	15%	12%	6%	14%	21%	78%

2.2 Data Coding and Analysis

To analyze the data, we used NVivo software to code the respondents' qualitative responses using the nine crowd worker values from the original study: access, autonomy, fairness, transparency, communication, security, accountability, making an impact, and dignity. We also coded the qualitative data based on codes and findings from the original study: empowerment (meaning, self-determination, impact, and competence), marginalization (economic, institutional (policy), institutional (technology), and competence), and structures (technology, governance, microtask structure, and compensation). We also let new categories emerge from the data during our data analysis process.

We followed the coding strategy proposed by Miles and Huberman (1994) to analyze the responses. We coded participants' statements to all questions by identifying the segments, sentences, or phrases representing one's values and empowerment or marginalization in crowd work. Two researchers independently coded eight responses (i.e., two responses from each of the four employment categories) as part of a pilot coding process (consistent with Deng et al. 2016). After completing this coding of eight responses independently, the authors met with a third author not involved in coding. During this meeting, the authors discussed the definitions from the original study and clarified the process for coding the data. The two authors who coded the data resolved their coding disagreements. Next, the two authors continued to code 69 additional observations independently and discussed discrepancies to refine the coding process further and resolve differences. Table A1 in Appendix A provides examples of coding discrepancies and their resolution. Overall, the interrater reliability (i.e., Cohen's kappa) among the two authors for these 78 observations was 80.6%, suggesting a high level of agreement (Ryan & Bernard, 2000). After achieving a high level of interrater reliability, one author coded the remaining sample data based on the final coding scheme.

As we coded the participants' values, we also examined if participants expressed feelings regarding empowerment or marginalization. We analyzed our data using the same approach described by Deng et al. (2016) and employed data matrices (Miles & Huberman, 1994) to examine our data. Table 5 illustrates part of our data coding process. For example, one crowd worker shared that they value helping scholars by completing surveys on the MTurk platform, suggesting that "making an impact" is a value that the design of microtasks in crowd work enables. The crowd worker experienced empowerment as they contributed to research communities by completing microtasks. In another example, one crowd worker shared their perceptions about the low pay rate for certain types of microtasks given the level of effort required, suggesting that the value of fairness is important in microtask design. Economic marginalization occurs within the digital labor platform as some requesters design jobs that some crowd workers perceive as unreasonable.

Table 5. Sample Matrix Illustrating the Data Coding Process				
Value Statements: What a crowd of workers considers important in life	**Value Revealed**	**Value Category**	**Value Implicated in Current Design**	**Empowerment/ Marginalization**
"For the most part, I love it. Very enjoyable and I feel like I am helping people by doing studies."	Contributing to research and helping others	Making an impact: work influences others	Microtask Characteristics	Empowered through impact: Crowd worker perceives they help others through their work
"The pay is pretty low, sometimes you get some well-paying HITs but there are a ton of people submitting HITs that seem like slave labor. This is why I avoid the "bulk" HIT's, submitting receipts is basically doing data entry for $3 an hour. You are way better off just finding a data entry job somewhere."	Fair rate of compensation for microtasks	Fairness: fairness in the rate of payment	Crowdsourcing work structure and compensation	Economic marginalization: Crowd worker perceives that some requesters exploit crowd workers

3 Findings

This replication found support for the crowd worker values and forms of empowerment and marginalization identified in the original study. However, our analysis revealed additional categories for values, empowerment, and marginalization. The following sections describe the findings consistent with the results of the original paper as well as the findings from the replication study.

3.1 Crowd Worker Values

We found support for the nine values identified in the original study, and we identified a new value in our analysis: learning. We define learning as knowledge development and learning opportunities appreciated by workers through doing crowdsourcing jobs. The respondents in the replication study discussed their ability to learn new skills and improve existing skills, such as transcription in other languages, problem-solving, and reading stock reports. For instance, one participant described the value of learning when expressing, "MTurk gives me an opportunity to utilize my skills and to also learn new skills. I think this is very helpful to my career." Other participants shared how their crowd work helps them learn new things and opens their minds to new ways of thinking Table 6 lists and defines the ten values identified by crowd workers and the percentage of participants identifying the value in their responses in the original study and our replication. Table B1 in Appendix B provides quotes from participants in the replication study that exemplify the values identified in the original study and replication.

Table 6. Value Definitions and Frequency			
Crowd Worker Value	**Definition**	**Percentage: Replication**	**Percentage: Original**
Access	Open and equal access to work opportunities offered in the crowdsourcing environment.	74%	97%
Fairness	Work processes are unbiased (modified from Walldius, Sundblad, & Borning, 2005) and do not privilege one person, group, or stakeholder over another (Friedman et al. 2006).	71%	60%
Security	Protects people's rights to perform jobs; lack of job security is evidenced by disruption and threat to one's work environment (modified from Schein, 1985).	46%	20%

Table 6. Value Definitions and Frequency			
Crowd Worker Value	**Definition**	**Percentage: Replication**	**Percentage: Original**
Autonomy	Ability to decide, plan, and act in ways that will help one achieve their personal goals (Friedman, 1996); crowd workers have a sense of freedom and independence in work choices (Schein, 1985).	43%	85%
Learning	Knowledge development and learning opportunities are available to workers when performing microtasks.	28%	NA
Transparency	Processes by which crowdsourcing work standards and protocols are certified to be open and understandable (modified from Walldius et al., 2005).	23%	30%
Making an Impact	Crowd work influences other individuals, groups, and communities (Schein, 1985).	11%	16%
Communication	Capability to inform others and be informed during crowdsourcing job processes (derived from the original study).	10%	26%
Dignity	Sense of pride in oneself and self-respect (modified from Le Dantec and Edwards, 2008).	8%	11%
Accountability	Properties that ensure that the actions of a person, people, or institution may be traced uniquely to the person, people, or institution (Friedman & Kahn, 1992).	6%	20%
Note: Participants may identify multiple values in their responses; therefore. Percentages do not sum to 100%.			

Consistent with the original study, *access* was the most expressed value among our respondents. Crowd workers shared that they valued having access to crowdsourcing work to make money to pay bills or obtain cash for other needs within their household. Others said they benefited from the access to work from home due to health circumstances or because they are stay-at-home parents. Also, many acknowledged *autonomy* as a value gained through performing microtasks by sharing their appreciation to perform work whenever and wherever they desired. Others felt that their crowd work enabled them to *make an impact* by sharing their opinions and participating in research studies.

Many of the values identified in the original study and our replication arose due to concerns and problems experienced while conducting crowdsourcing work. Many respondents referred to *fairness* concerning compensation and governance. While some crowd workers shared that they valued the potential earnings available on the platform, many expressed discontent with the payment they received on the MTurk platform. Also, they valued the *security* offered by crowdsourcing platforms, which enabled them to feel protected from requesters who may try to take advantage of them. *Transparency* is embedded in open-source work in which crowd workers described the importance of HIT descriptions about processes for ratings or rejecting requests. Open and direct *communication* was also critical to many crowd workers as they desired to receive feedback from the requesters. Requesters respond to them whenever workers reach out, questioning the reasons behind a rejection. Crowd workers also expressed the desire to be treated with *dignity*. They would find enjoyment when the requesters appreciated their work or disrespect when others did not value their time performing crowd work. Finally, crowd workers valued *accountability*, believing that people's or institutions' actions should be traceable and accountable. Those who valued accountability described scenarios in which requesters misrepresented the requirements of HITs by stating a task will be easier or quicker to complete than advertised. Crowd workers also wanted a means to hold requesters accountable if a job or task is rejected (i.e., the worker is not paid for their time) without due cause.

3.2 Empowerment through Value Fulfillment

In addition to identifying ten values among crowd workers, we also noted that participants expressed empowerment similar to the original study. Our analysis identified two additional forms of empowerment: empowerment through technology and empowerment through community.

Empowerment through technology is the ability to perform crowdsourced work because the platform is user-friendly. This form of empowerment occurred due to changes in the design features and functionality of the crowdsourcing platform. For example, one worker shared:

> *Everything was good. Mturk also keep giving comfort. they have recently change the dashboard in a very user-friendly way. (Female, 30 years; Bachelor's degree; Household income $25,000-$49,999; Employed full-time)*

Empowerment through community refers to the crowd workers' ability to use supporting resources, such as review websites and groups, when deciding if they should accept a microtask. Crowd workers have developed these websites and communities outside the MTurk platform to share information. These online resources enable crowd workers to find and share their experiences about different HITs and microtasks posted on the MTurk platform. Many crowd workers find this information helpful in deciding if they should accept a request. Likewise, microtask workers obtain insight from the MTurk community outside of Amazon's crowdsourcing platform and share information with their peers:

> *I use TurkerView to look at Requester/HIT reviews. Other turkers leave reviews and this allows me to determine if the HIT is worth my while. (Female, 46 years; Associate degree; Household income $50,000-$74,999; Employed full-time)*

Table 7 defines and identifies the frequency of each empowerment type identified in this study. Table B2 in Appendix B offers additional examples of each form of empowerment.

Table 7. Worker Empowerment and Examples

Type	Definition	Percentage: Replication	Percentage: Original
Meaning	Crowd work is experientially, financially, or cognitively meaningful.	73%	96%
Self-determination	Crowd workers can be their own boss and decide how to do their work.	50%	85%
Community	Sense of belonging coming from the support of virtual communities of crowd workers.	15%	NA
Competence	Improving one's capabilities and skill-sets when performing crowd work.	15%	15%
Impact	Crowd work contributes to research or the greater good.	10%	16%
Technology	Crowd work is enabled because the platform is user-friendly.	3%	NA

In our replication, empowerment through *meaning* was the most common form of empowerment (73%); however, it was more prevalent in the original study (i.e., 96%) than in the replication. Some HITs are financially meaningful to workers (making extra money), while others are cognitively meaningful (building a tolerance for working long hours). In addition, many crowd workers shared that performing HITs is experientially meaningful (the crowdsourcing work is enjoyable). Crowd workers expressed *empowerment through self-determination* when sharing their appreciation of the freedom in decision-making regarding where and when to perform tasks on MTurk. Several participants commented on *empowerment through impact* when they experienced the ability to contribute to research communities, individuals, and groups. Finally, others noted *empowerment through competence* arising from access to various work-related opportunities on the crowdsourcing platform where they could use their skill sets. Interestingly, since many microtasks can be repetitive and mind-numbing, we expected empowerment due to competence to occur

less frequently than other forms of empowerment. However, we observed that empowerment through competence often occurred in conjunction with other forms of empowerment (e.g., meaning).

3.3 Marginalization Due to Unfulfilled Values

Crowd workers expressed feelings of marginalization when the crowdsourcing platform was incongruent with their work values. Consequently, these conditions led to the feeling of powerlessness among some workers. Our analysis revealed an additional type of marginalization: psychological marginalization. We define psychological marginalization as the compromised mental health of workers resulting from crowdsourcing work. Crowd workers expressed feelings of burnout, depression, and stress due to unequal access to work opportunities. Many of these workers noted that the competition for good HITs on the platform increases every day:

> *The only problem is that taking so many studies can really burn a person out and it becomes isolating. (Male, 33 years; Associate degree; Household income $25,000-$49,999; Employed full-time)*

> *It is really competitive. There are a lot of people scrapping the bottom of the barrel to make a little money. It can be depressing at times. (Female, 31 years; Bachelor's degree; Household income $100,000 or more; Employed full-time)*

Others expressed concerns that the work often requires high levels of self-reflection with no benefit other than the compensation provided:

> *No. It's miserable grinding work for 12 hours a day. It's highly stressful answering some of the psychological research surveys and, hundreds of times a week, exploring your own psyche. And there are no benefits outside of compensation. (Male, 38 years; Some college, no degree; Household income $50,000-$74,999; Unemployed)*

Table 8 defines the types of marginalization and the frequency of each marginalization type. Table B3 in Appendix B provides examples from our replication study of each type of marginalization.

Table 8. Worker Marginalization and Examples

Type	Definition	Percentage: Replication	Percentage: Original
Institutional (policy) marginalization	Feeling helpless regarding the crowdsourcing platform and the requesters	44%	38%
Economic marginalization	Feeling exploited by the job design and payment for work	34%	60%
Institutional (technology) marginalization	Feeling constrained by the platform's features because it prevents the full participation of workers	16%	23%
Competence marginalization	Feeling deskilled when performing simple and repetitious work	6%	18%
Psychological marginalization	Feelings of compromised mental health due to performing crowdsourcing work	5%	NA

Economic marginalization is a feeling of being powerless due to unfair compensation for work and exploitation by the platform structures and requesters. As mentioned by some participants, the wages for microtasks had not increased, likely because the minimum wage was unchanged when we conducted our data collection effort. Some individuals experienced *institutional (policy) marginalization* due to the crowdsourcing platform structure and governance. Some crowd workers expressed feelings of helplessness because of the suppressed rights of crowd workers and a lack of recourse when requesters unfairly reject a worker's task. Crowd workers indicated insufficient features within the platform to protect them from bad requests and scams, suggesting *institutional (technology) marginalization*. *Competence marginalization* manifested as crowd workers described the tedious and repetitive nature of work on the

platform. One participant described work on the MTurk platform as “mind-numbing,” suggesting that some microtasks fail to address the learning value desired by many crowd workers.

4 Discussion

This replication study confirms the primary findings of the original study by Deng et al. (2016) and identifies discoveries that contribute to the literature beyond the original research. The value sensitive design (VSD) proposed by previous studies (e.g., Wiener, 1950, 1954, 1964) was the focus of the original paper with which Deng et al. (2016) captured human values (in their case, crowd workers’ values) in identifying core value constructs. Likewise, we began our data analysis considering those core value constructs.

In the original study, the surveyed crowd workers revealed nine fundamental values concerning their expectations regarding interaction and engagement in the crowdsourcing work on MTurk. Consistent with the original paper, the crowd workers we surveyed shared the same value categories. Moreover, our data analysis revealed one additional value, the value of learning through crowdsourcing work. The most commonly identified value among respondents in the original study was access (i.e., 97% of respondents referred to access as a value). Access was still the most prevalent value discussed in the replication study, but only 74% of respondents commented on access as a value.

Fairness and security were two values that were more widely identified among our respondents in the replication than in the original study. Additional research studies or future replications could identify if the higher salience for fairness and security are related to sample characteristics, recent events, or long-term trends related to crowd work. In reviewing our findings, we considered if there were systematic changes between the original study and the replication study that may have altered the prevalence of crowd worker values. We noted that in July 2015, Amazon doubled the surcharge for requesters, from 10% to 20%, for any payments and bonuses issued to crowd workers.[2] It is uncertain how requesters altered their payments to crowd workers due to this surcharge increase instituted by Amazon. To accommodate this change in Amazon’s surcharge, requesters may have (a) increased their budgets to cover the costs of the additional surcharge for the same number of microtasks; (b) offered the same pay for crowd workers and paid the higher surcharge, but requested fewer crowd workers to complete microtasks; (c) requested the same number of crowd workers, but paid crowd workers a lower rate to cover the cost of the surcharge. Requesters implementing option (a) would be engaging in a solution that offers crowd workers the same wage (i.e., no change in perceived fairness) and would not change the number of microtasks available for crowd workers (i.e., no change in perceived security). Requesters implementing option (b) would reduce the number of HITs available for crowd workers, thereby disrupting the work environment and lowering perceived security. Many respondents referred to the highly competitive nature of finding microtasks that offer good pay for reasonable effort. If fewer attractive microtasks are available, this could lower one’s perception of security on the platform. Requesters adopting option (c) would be reducing the pay for crowd workers, which would affect their perception of fairness on the platform. When workers must engage in the same amount of time and effort for completing the work, but they receive less compensation than before the surcharge, the worker is likely to perceive the situation as impacting the value of fairness. We note that the posited relationship between the change in the platform payment structure and its impact on the perceived values of crowd workers is speculative. However, this analysis suggests the potential for future research to examine how changes within the platform (e.g., price increases) affect the behaviors and perceptions of values among requesters and crowd workers.

The respondents in our replication study discussed autonomy, communication, and accountability much less than participants in the original research study. The replication study found evidence of the nine values from the original research demonstrating that values are robust and consistent among crowd workers at two different points in time. This replication study reveals that the nine values identified by Deng et al. (2016) and the additional value identified in our replication (i.e., learning) would be relevant to consider in future studies examining the values of crowd workers.

Initially, we were hesitant to identify the new value of learning, given the comprehensiveness of the values identified by Deng et al. (2016). Initially, we considered if learning was related to the existing value

[2] http://mechanicalturk.typepad.com/blog/2015/06/followingup-on-our-commission-structure.html

categories within Deng et al.'s (2016) study. We read the definitions and examples for each value, but we could not find a value that captures the idea of learning expressed by our respondents. In considering the responses from the replication study participants, we discovered that the value of learning is of great importance to many crowd workers. Several respondents shared that they do not enjoy repetitious and tedious tasks and feel marginalized when asked to perform simple tasks. Those who valued learning gained a sense of empowerment as crowd workers when performing microtasks. When crowd workers identified a learning opportunity within a microtask, they found meaningfulness in the job. In contrast, some crowd workers felt deskilled and less motivated when learning opportunities were absent as a result of repetitive and straightforward tasks.

Aligning with the original study, we observed that many crowd workers felt marginalized and empowered simultaneously. Some aspects of the tasks and platform contributed to workers' feelings of marginalization, while other platform elements enabled crowd workers to feel empowered. The majority of crowd workers in our sample did not rely on MTurk as their primary source of income and used the platform to earn additional money. Respondents shared that MTurk does not pay a living wage, and there is extensive competition for jobs posted on MTurk. While most respondents mentioned the inclination to do surveys and emphasize the learning aspect of doing academic surveys, there are insufficient HITs of this type for all MTurk workers who enjoy these tasks. Crowd workers noted their desire to claim academic surveys quickly since they are perceived as easier tasks. Our findings reveal that more challenging jobs on MTurk pay crowd workers better, but these tasks are not accessible to all workers given the skills needed to perform these tasks. Therefore, some crowd workers' lack of skills or education marginalized them by limiting their ability to complete certain types of tasks. These insights explain why crowd workers are likely to value learning. Doing specific tasks on MTurk enables workers to gain skills and empowers them by improving their financial status or knowledge. Future research could explore the benefits gained from crowdsourcing tasks that enable learning and the detriments that occur to participants when tasks require little knowledge or insight to complete.

The original study identified four types of worker empowerment, and our study identified six worker empowerment categories. Our two additional categories entail technology empowerment and community empowerment. The most mentioned empowerment by crowd workers was the meaningfulness dimension of empowerment in both original and replication papers. One fascinating finding was the importance of community as a form of empowerment among some respondents. Several respondents appreciated the availability of MTurk forums. Many crowd workers shared that they use these websites and community groups to identify "good" requests or tasks based on reviews from other crowd workers performing tasks within MTurk. Respondents shared that people in MTurk-related forums, like MTurk Suite, provide them feedback on requesters and HITs, which can help workers identify potentially problematic tasks or requesters before they accept the request. One respondent specifically mentioned that their satisfaction as a crowd worker on MTurk was due to the available resources (forums) for investigating the tasks before agreeing to work on them. We observed the increasing number of forums with a growing number of members created after Deng et al. (2016) collected their data. For instance, MTurker Crowd and Turker Hub were created in January 2016 and November 2016. These websites are useful forums to support MTurk workers. The development of these new communities yielded a new type of empowerment available to crowd workers (i.e., empowerment through community).

Some respondents described recent changes to the MTurk platform and how these modifications have made the platform more user-friendly. Our replication identified a new category of empowerment related to technology. Relatedly, in addressing a call for more transparency on the requester side, Amazon MTurk platform added a new feature for the MTurk marketplace where workers can now see requester activity level, approval rate, and average payment review time. Using this feature, workers can view a set of requester metrics and decide if they want to accept a task (Amazon Mechanical Turk, 2019). These recent platform and technology-based changes were likely salient among respondents answering our survey.

Worth noting, we completed our data collection process in May 2019. Therefore, we based our findings on a world before the global pandemic caused by SARS-CoV-19. Thus, an additional replication of Deng et al. (2016) in a post-COVID world may identify new insights as much of the world shut down and moved online during the pandemic. The pandemic created many workplace shifts as some workers gravitated towards telework during lockdowns, experienced layoffs, or changed job designs to accommodate digital work. Another consequence of the pandemic has been the "great resignation," which occurred in 2021-2022 when workers quitting their jobs reached a 20-year high as individuals demanded improved pay, job design, and meaning from work ("What Is The Great Resignation?", 2021; Parker & Horowitz, 2022).

These changes in the labor market likely are affecting the pool of workers available on crowdsourcing marketplaces, such as Amazon Mechanical Turk (MTurk). For many scholars in the social sciences, MTurk is a vital source for recruiting subjects for research studies (Horton et al., 2011). It would be insightful to see how values, marginalization, and empowerment categories would change, strengthen, or weaken during and post pandemic. Studies conducted about crowd work reveal that the diversity of crowd workers has been high during the pandemic (Arechar & Rand, 2021). As the crowd worker population shifts and needs change, future research could examine changes in crowd workers' values and differences in expressions of empowerment and marginalization.

A final new category identified in this replication study is psychological marginalization. Many participants mentioned the feeling of being burned out, stressed out, and isolated when working on the crowdsourcing platform. Some crowd workers expressed that they would not consider crowdsourcing work a means for full-time employment since they feared the type of work performed on the platform would compromise their mental health. It would be worth exploring how perceptions of psychological marginalization among crowd workers were affected during the great resignation as more people may have engaged in crowd work to gain autonomy and access. It would be interesting to identify if certain values, such as autonomy or security, would be compromised by psychological marginalization if competition increased for microtasks during the great resignation. Moreover, other types of marginalization may be present or increase due to increasing competition among crowd workers on platforms if requesters continue to offer low-paying microtask jobs. Further studies could identify if there are novel values, types of empowerment, and forms of marginalization occurring in the post-pandemic world.

5 Conclusion

Replication studies are invaluable because they can test the validity and reliability of the original research (Niederman & March, 2015). It is possible to identify the robustness of the original findings and identify new developments by performing replication studies. Replication studies can increase (or diminish) our confidence in the original research. Many replication studies attempt to reproduce the results of quantitative studies. However, this research sought to replicate a qualitative research study. Niederman and March (2015) encourage replication of qualitative studies, such as case studies, to identify similarities and differences from the original research. This study finds that the original values and categories for marginalization and empowerment are robust and consistent over time. Furthermore, our replication study found evidence of a new value (i.e., learning) and new mechanisms that contribute toward empowerment (i.e., technology and community) and marginalization (i.e., psychological). These new findings can be examined and considered in future studies examining the duality of empowerment and marginalization in crowdsourcing work.

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Appendix A

The following table provides examples of coding discrepancies and how the authors resolved them.

Table A1. Examples of Coding Discrepancies and Resolution

Examples	Initial Coding and Resolution of Coding Discrepancies
"Crowd-sourcing jobs on MTurk gives me more confident, you can take any task and work." Respondent 86	During the initial coding, the two coders both coded the statements "empowerment." Still, they disagreed on their coding of empowerment: coder 1 considered it *"empowerment- competence"* while coder 2 regarded it as "*empowerment- meaning.*" To resolve this issue, the two coders first discussed their rationale for the coding. They agreed that "gaining confidence for doing any work" is one of the indications for feeling competent in doing the crowd-sourcing work. Moreover, "feeling confident" is one type of empowerment through cognitively meaningful. Based on the discussion, the two coders reconciled and decided to keep both codes.
"There are a lot of things I would change. Relations between workers and other parties often involve power imbalances. Workers do not have a lot of recourse when they are blocked or when they have work rejected. All sorts of things change without notice, even when no one wants them to. It makes me wonder whether or not Amazon really wants this platform to succeed at all." Respondent 167	During the initial coding, the two coders disagreed on their coding type: coder 1 considered it "*fairness value*" while coder 2 regarded it "*policy marginalization*." To resolve the coding discrepancy, the coders first discussed their rationale for the coding. Moreover, they went back to the definitions for fairness and policy marginalization. Consequently, the coders agreed the experience of feeling marginalized through policy (e.g., feeling helpless in relation to job requesters with being blocked or the work rejection) can be resulted from experiencing a lack of fairness (e.g., power imbalances). Based on the two coders' discussion and reasoning, they decided to keep fairness and policy marginalization codes.

Appendix B

Table B1 provides examples of quotes from the replication study for each of the value categories identified in the original study and replication.

Table B1. Value Categories and Examples

Crowd Worker Value	Example
Access	It does not as these jobs have little to do with my goals. I crowd work because it pays my bills and I care for two small children at home. *(Female, 31 years: Bachelor's degree; Household income $50,000-$74,999; Other)*
Accountability	I would like to be able to hold some requesters accountable for outright lying about how long it takes to finish their survey. *(Male, 28 years; Bachelor's degree; Household income $25,000-$49,999; Unemployed)*
Autonomy	I am very satisfied. I of course wish the pay would be higher, but I very much enjoy the flexibility of being able to do this at home. *(Female, 32 years; Bachelor's degree; Household income more than $100,000; Employed full-time)*
Communication	I'd like requesters to be allowed to communicate better with the workers in order to get the tasks done properly so that both are satisfied. *(Female, 60 years; Bachelor's degree; Household income $25,000-$49,999; Other)*
Dignity	No, a lot of these work have absolutely zero value to potential employers. I don't even list mturk or talk about it with anybody because it's not something I am proud of. *(Male, 22 years; Bachelor's degree; Household income $25,000-$49,999; Employed full-time)*
Fairness	I would change the pay rates. A lot of requestors want a lot of work for a small amount of money such as an hour-long survey that pays only $1. *(Male, 45 years; Associate degree; Household income $25,000-$49,999; Employed full-time)*
Learning*	It allows me to meet my career goals because it gives me an opportunity to learn new skills and also to earn money towards starting my business in the future. *(Female, 33 years; Associate degree; Household income less than $25,000; Employed full-time)*
Making an Impact	I love the fact that I can help with survey and studies for people. I always said I wanted to be studied and this is a way I can get my opinion out there and get paid for it. I started this just to feed my family but have come to enjoy it. *(Female, 35 years; High school graduate; Household income less than $25,000; Employed part-time)*
Security	Also, I don't like the fact that the requestor has all of the power. One example recently was I did a .75 survey and was immediately rejected. I looked online and found that this person had rejected everyone that had done the work. *(Male, 26 years; Graduate degree; Household income of $25,000-$49,999; Employed full-time)*
Transparency.	HIT descriptions guide me to which ones I will work on. It is easy to find this information it's usually on the hit itself or on the 1st page of starting the hit. *(Female, 29 years; Some college, no degree; Household income $25,000-$49,999; Employed full-time)*

Note: *Value identified in the replication study.

Table B2 offers quotations from the replication study explaining the different types of empowerment identified during the replication study.

Table B2. Worker Empowerment Examples

Type	Example
Community*	I use MTurk Suite which really helps because they give you feedback from other users on requesters and HITs so you can see red flags before you get into working on it. *(Male, 39 years; Graduate degree; Household income $50,000-$74,999; Employed full-time)*
Competence	It is helping me maintain life goals of exercising my mind and supplementing my retirement income. Not sure that it relates to any career goals. *(Male, 73 years; Graduate degree; Household income $75,000-$99,999; Unemployed)*
Impact	Putting aside all the negatives I've just listed above in general the jobs aren't that bad and sometimes they can be pretty satisfying, like helping researchers track animal populations for what I'm assuming (and hoping) are conservation efforts. *(Male, 27 years; Some college, no degree; Household income <$25,000; Employed full-time)*
Meaning	I do turking for the fun and the extra income; this is my reasoning. *(Male, 42 years; Associate degree; Household income $100,000 or more; Employed full-time)*
Self-determination	I like the freedom it gives me to set my own hours and control my earnings. For example, I was able to take a week off to visit my family last month with no consequences and no need to get permission from anyone. *(Female, 31 years; Bachelor's degree; Household income $75,000-$99,999; Employed full-time)*
Technology*	The only reason I am still here doing work on mturk is thanks to "Mturk Suite" chrome extension app that allows workers to stay clear of HITS that pay you 10 cents for 60 minutes. *(Male, 35 years; Associate degree; Household income <$25,000; Employed full-time)*

Note: *Worker empowerment type identified in the replication study.

Quotes from the replication study about the different types of marginalization are provided in Table B3.

Table B3. Worker Marginalization Examples

Type	Example
Competence marginalization*	As far as I'm concerned, none of the skills needed to complete jobs on Mechanical Turk are particularly useful in the labor force, nor do they make the worker more competitive or allow them to develop skills that would be useful in the future. The work that's posted is designed so that it can be fulfilled by just about anyone, and the simplicity of the tasks mean that the worker probably isn't learning anything useful while completing the task. *(Male, 32 years; Bachelor's degree; Household income $50,000-$74,999; Employed full-time)*
Economic marginalization	It's disheartening to see people working on slave-wage batches such as the one I mentioned before, but it's also fun to turn some penny batches into a gold mine, very rewarding, and working on MTurk allows me to work from home, by myself, and with my family around. *(Male, 26 years; Bachelor's degree; Household income $25,000-$49,999; Employed full-time)*
Institutional (policy) marginalization	My main issue with the platform involves how many scammers there are and how Amazon doesn't seem to really do anything about either American workers scamming or people from countries outside the US using stolen US based accounts they bought on Facebook + VPNs. *(Female, 27 years; High school graduate; Household income $50,000-$74,999; Employed full-time)*
Institutional (technology) marginalization	I would like it to be more organized. Hits that we have completed shouldn't keep showing up on our list and things should have different categories that they are placed into.

Table B3. Worker Marginalization Examples	
Type	**Example**
	(Female, 35 years; High school degree; Household income <$25,000; Employed part-time)
Psychological marginalization	It's miserable grinding work for 12 hours a day. It's highly stressful answering some of the psychological research surveys and, hundreds of times a week, exploring your own psyche. And there are no benefits outside of compensation. *(Male, 38 years; Some college, no degree; Household income $50,000-$74,999; Unemployed)*
Note: *Worker marginalization type identified in the replication study.	

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