Understanding the Microtask Crowdsourcing Experience for Workers with Disabilities: A Comparative View

Supplementary Material

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1 SURVEY 1 QUESTIONS

(1) How long have you been performing work on Mechanical Turk? (*workTime*)[*]
  (a) Less than 6 months
  (b) Between 6 months and 1 year
  (c) Between 1 year and 2 years
  (d) Between 2 years and 4 years
  (e) Greater than 4 years
(2) Why did you get started with Mechanical Turk? (*startingReason*)
  (a) To make money
  (b) For enjoyment/something to do
  (c) To see what it was about
  (d) Other
(3) What is your employment status outside of your work on Mechanical Turk? (*outsideEmployment*)[1]
  (a) Full-time employment
  (b) Part-time employment
  (c) Self-employed
  (d) Freelance worker
  (e) Pursuing further studies
  (f) Unemployed
  (g) Other
(4) What portion of your income is earned through Mechanical Turk? (*incomePortion*)*
  (a) Full-time income

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[*]Denotes a question that was analyzed as categorical in the full paper and as ordinal in the supplementary materials.
[1]We ended up choosing to remove the results of this question from our analysis. We found that the responses we received conflicted with responses to some of our other questions, and we believe that the question may have been worded poorly due to its focus on worker experiences *outside* of MTurk rather than on it, unlike the rest of the questions.

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(b) Part-time income

(c) Supplemental income

(d) Other

(5) On average, how many hours do you spend on Mechanical Turk in a day? (*hoursPerDay*)*

(a) Less than 1 hour

(b) Between 1 and 2 hours

(c) Between 2 and 5 hours

(d) Between 5 and 8 hours

(e) More than 8 hours

(6) On average, how much do you earn on Mechanical Turk in a week? (*earnedPerWeek*)*

(a) Less than $10

(b) Between $10 and $50

(c) Between $50 and $200

(d) Between $200 and $500

(e) More than $500

(7) What is your goal for a weekly income from performing work on Mechanical Turk? (*weekly-IncomeGoal*)*

(a) I don't have a goal

(b) Less than $10

(c) Between $10 and $50

(d) Between $50 and $200

(e) Between $200 and $500

(f) More than $500

(8) What do you believe is the lowest hourly wage from performing work on Mechanical Turk that can be considered as fair? (*fairHourlyWage*)*

(a) Less than $3/hr

(b) Between $3/hr and $5/hr

(c) Between $5/hr and $10/hr

(d) Between $10/hr and $15/hr

(e) Greater than $15/hr

(9) What type(s) of tasks have you been performing most on Mechanical Turk in the last 2 weeks? (*tasksPerformed*)

(a) Query relevance

(b) Information search

(c) Experiments

(d) Classification

(e) Website testing

(f) Image tagging

(g) Content generation

(h) Data entry

(i) Survey

(j) Voting

(k) Transcription

(l) Other

(10) What communication with others related to your work on Mechanical Turk do you take part in? (*communication*) [*Go to Question 13 if answer choice (c) is not chosen*]

(a) I do not communicate with others

(b) Social media

(c) Online forums

(d) Phone calls

(e) Email

(f) In person

(g) Other

(11) Which online forums for discussion about Mechanical Turk tasks do you visit? (*onlineForums*)

(a) TurkerNation Slack channel

(b) MTurk Crowd

(c) TurkerView

(d) MTurk subreddit

(e) HITsWorthTurkingFor subreddit

(f) Other

(12) Do you actively post and/or comment on these forums? (*forumParticipation*)

(a) Yes, I actively post and/or comment

(b) No, I only browse existing posts and comments

(13) Do you receive additional benefits from performing work on Mechanical Turk other than pay? (*additionalBenefits*)

(a) Interaction with others and/or being part of a community

(b) Opportunity to learn something new

(c) Something fun/interesting to do

(d) Feeling of satisfaction from completing HITs/helping others

(e) None

(f) Other

(14) On a scale from 1 to 5, how often do you have difficulty finding a HIT that you can work on? (*findingHIT*)

(a) 1 - Never

(b) 2

(c) 3 - Sometimes

(d) 4

(e) 5 - Very often

(15) On a scale from 1 to 5, how often do you have difficulty finding a HIT that you would enjoy working on? (*findingEnjoyingHIT*)

(a) 1 - Never

(b) 2

(c) 3 - Sometimes

(d) 4

(e) 5 - Very often

(16) On a scale from 1 to 5, how often do you have difficulty completing a HIT within the allotted time? (*completingHIT*)

(a) 1 - Never

(b) 2

(c) 3 - Sometimes

(d) 4

(e) 5 - Very often

(17) Amongst all of the HITs that you have completed on time, on average, what percentage of the total time allotted do you use? (*timeUsed*)

(a) Less than or equal to 50%

(b) Greater than 50%

(18) On a scale from 1 to 5, how often do you reach out to the requester of the HIT you have been working on? (*contactRequester*)
  (a) 1 - Never
  (b) 2
  (c) 3 - Sometimes
  (d) 4
  (e) 5 - Very often
(19) On a scale from 1 to 5, how often have you required assistance from another person in order to complete a HIT? (*requireAssistance*)
  (a) 1 - Never
  (b) 2
  (c) 3 - Sometimes
  (d) 4
  (e) 5 - Very often
(20) On a scale from 1 to 5, please rate the Mechanical Turk interface's ease of use. (*useDifficulty*)
  (a) 1 - Very easy to use
  (b) 2
  (c) 3 - Neutral
  (d) 4
  (e) 5 - Very difficult to use
(21) On a scale from 1 to 5, what is your overall satisfaction with the Mechanical Turk platform? (*satisfaction*)
  (a) 1 - Very unsatisfied
  (b) 2
  (c) 3 - Neutral
  (d) 4
  (e) 5 - Very satisfied
(22) What motivates you to keep doing work on Mechanical Turk? (*motivation*)
  (a) Money
  (b) Interaction with others and/or being part of a community
  (c) Opportunity to learn something new
  (d) It is fun/interesting
  (e) Sense of satisfaction from completing HITs/helping others
  (f) Other
(23) Do you have a disability? (*disabilityStatus*) [*Go to Question 25 if the answer is "No"*]
  (a) Yes
  (b) No
(24) Which category/categories best describe(s) your disability/disabilities? (*disability*)
  (a) Problems or disabilities (including arthritis or rheumatism) connected with your arms or hands
  (b) Problems or disabilities connected with your back or neck
  (c) Depression, bad nerves, or anxiety
  (d) Mental illness or suffer from phobias or other nervous disorders
  (e) Learning difficulties
  (f) Problems or disabilities connected with your legs and feet
  (g) Chest or breathing problems, asthma, bronchitis
  (h) Difficulty in hearing
  (i) Difficulty in seeing (while wearing spectacles or contact lenses)

(j) Would prefer not to say

(k) Other health problems or disabilities

(25) What is your gender? (*gender*)

(a) Male

(b) Female

(c) Other

(d) Prefer not to say

(26) What is your age? (*age*)

2 SURVEY 2 QUESTIONS

(1) If you feel comfortable doing so, can you describe your disability/disabilities? This question is optional and can be left blank if you wish to do so.

(2) Please describe a typical day for you involving performing work on Mechanical Turk.

(3) On Mechanical Turk, how do you decide what tasks to work on in general? Are there any aspects of a task that you will specifically look for before deciding to accept it? Which, if any, of these aspects involve your condition?

(4) What impact, if any, does your condition have on your ability to work on Mechanical Turk? Please share how your condition has had a positive and/or negative impact on your work. Is there an impact on your ability to find interesting tasks and finish them on time (without sacrificing quality)? How about your ability to receive appropriate payment and approval on HITs?

(5) How important is it for you to make money through working on Mechanical Turk? Do you believe that your disability has an impact on the amount of money that you make from Mechanical Turk? Why or why not?

(6) Do you have any experience interacting with other people relating to your work on Mechanical Turk? This may include online communication (e.g. online forums), in-person communication, or other forms. [*Go to Question 10 if the answer is "No"*]

(7) Please share your experience interacting with others relating to your work on Mechanical Turk. How do you typically interact with others, and what do you talk about with them? Why are you interested in having these interactions? What do you get out of these interactions?

(8) Consider your experience interacting with others relating to your work on Mechanical Turk. During these interactions, have you ever mentioned your disability or discussed disability as a topic? Why or why not?

(9) Are you more motivated to keep working on Mechanical Turk by money or the interactions that you have with others? Why? [*Go to Question 11*]

(10) Beyond making money, what are some other aspects that you find valuable in your experience working on Mechanical Turk, if any? [*Go to Question 12*]

(11) Beyond making money and interacting with others, what are some other aspects that you find valuable in your experience working on Mechanical Turk, if any? How would you rank all of these aspects (including money and interaction with others) by their value to you?

(12) How has working on Mechanical Turk affected you? Compared to before you started working on Mechanical Turk, do you perceive any changes in your life now? (Possible changes could be emotional, mental, physical, social, financial, etc.)

(13) Imagine that you could change anything about (or add anything to) the current Mechanical Turk platform. What would you do to improve your Mechanical Turk experience as it relates to your condition?

(14) Do you have any other comments that you would like to share with us? (This question is optional)

3   SURVEY 1 ORDINAL DATA ANALYSIS

For our Survey 1 analysis in the full paper, we chose to treat a particular set of our survey questions as categorical data although they could also have been considered ordinal data: *workTime*, *hoursPerDay*, *earnedPerWeek*, *weeklyIncomeGoal*, *fairHourlyWage*, and *incomePortion*. We chose to consider these questions as categorical in the full paper due to the constraints that come with analyzing ordinal data. Since ordinal data does not guarantee that the distances between each of the categories are equivalent (and the distances between the categories in our questions are not equivalent), the interpretation of the data's mean, as well as the result of other arithmetic operations, is unclear.

Here, we extend our Survey 1 analysis in the full paper by analyzing these six questions as ordinal data. We did so by attributing each question's options to a number category such that option (a) became 1, (b) became 2, and so on (with option (a) removed from *weeklyIncomeGoal* and option (d) removed from *incomePortion*). This was done because for the majority of these questions, the values of the question's options were in ascending order, so that a higher numeric value indicated a higher value range chosen by the respondent. The only question where this is not the case is *incomePortion*, but we adjust our interpretation of the ordinal results of this question to account for how its answer options were represented.
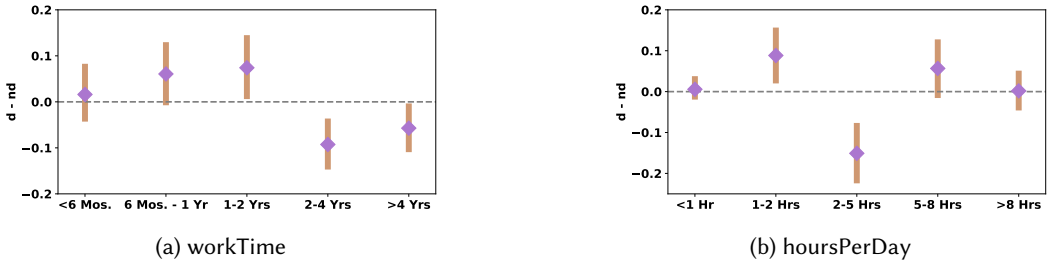

Fig. 1. Comparing responses of how long respondents have been working on MTurk and how long they spend working on MTurk in a day. Error bars represent 95% bootstrap confidence intervals. An interval above (or below) the horizontal line indicates a larger (smaller) proportion of respondents in the disability sub-group chose that option, compared to respondents in the non-disability sub-group.

We first present the categorical confidence interval plots for the two questions not shown in the full paper (*workTime* and *hoursPerDay*) in Figure 1. We see that although the results of Figure 1a show a clear trend of workers with disability having worked on the platform for a shorter amount of time than workers without disability, the results of Figure 1b corresponding to *hoursPerDay* are not as clear. The distribution for the results of *hoursPerDay* is bimodal (similar to the distributions of results for *earnedPerWeek* and *fairHourlyWage*), so there is not a clear relationship between number of hours worked in a day and disability status.

Next, we compare responses for these six questions between our sub-groups of respondents as ordinal data with confidence intervals. Specifically, treating the values of the six questions as ordinal, we conducted the same analysis that we did for Likert scale questions in the full paper. We plotted the difference of mean values of responses between the two sub-groups of respondents along with their 95% bootstrap confidence intervals. The results are shown in Figure 2. By our definition of significance (whether the confidence interval falls entirely on one side of 0), we see that there is a significant difference between sub-groups for questions *workTime* ($d=-0.30$ [-0.50, -0.10]), *weeklyIncomeGoal* ($d=-0.17$ [-0.33, -0.02]), and *incomePortion* ($d=-0.62$ [-0.75, -0.49]).
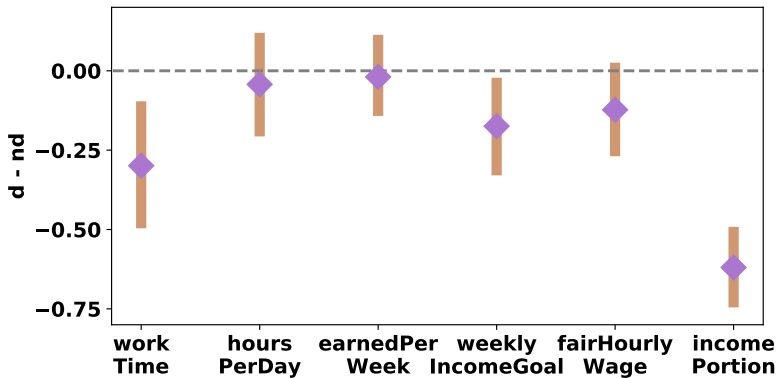
Fig. 2. Comparing responses to various questions when considering the data as ordinal. Error bars represent 95% bootstrap confidence intervals. An interval above (or below) the horizontal line indicates a higher (or lower) mean for the disability sub-group, compared to the non-disability sub-group.

When a Wilcoxon Rank-Sum test was conducted for each of these six questions, significant results were also only found for *workTime* ($Z=-2.67$, $p=0.007$), *weeklyIncomeGoal* ($Z=-3.31$, $p<0.001$), and *incomePortion* ($Z=-8.14$, $p<0.001$). This indicates that workers with disability have been working on MTurk for a shorter period of time, have a lower weekly goal for income earned on MTurk, and are more likely to consider their work on MTurk as their full-time source of income than workers without disability.

Although treating this data as ordinal can strengthen some of the claims of trends that we identified in the full paper, we choose to leave this analysis as additional consideration for the reader. We caution the reader to not interpret the ordinal differences across the two sub-groups as any specific value and instead focus on the broader findings.