Extended Abstract

Paper/Poster Title	**Investigating inconsistencies in complex lotteries: The role of cognitive skills of low-numeracy subjects**

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Abstract	***200 words max***
Comprehension in risk elicitation tasks is crucial, as otherwise the results are rather noisy than reliable. One prominent risk-elicitation tool, the Holt and Laury task (HL-task), is particularly prone to a noisy outcome - indicated by high inconsistency levels - when used among low-literacy subjects. Yet, it is unclear what drives inconsistencies. We investigate the HL-task inconsistency levels of 247 smallholder farmers from rural Cambodia. Cognitive skills, measured through Raven's Progressive Matrices (RPM), are a statistically significant determinant of inconsistency levels. A second step in the analysis reveals that cognitive skills are a statistically significant explanation for inconsistency levels for men, but not for women. Our results suggest that researchers should conduct a comprehensive pre-test when aiming at using abstract risk-elicitation methods among low-numeracy subjects in the field.	
Keywords	risk measurement, risk attitude, Raven's Progressive Matrices, binary lottery, South-East Asia
JEL Code	Field Experiments **C930**

Introduction	***100 – 250 words***
The vast majority of the global poor reside in rural areas, tending to operate as smallholder farmers. The risk involved in economic decision making is extraordinary for poor small farm managers, as investments can be pivotal for the economic survival of the entire household (World Bank, 2022, 2018). However, individuals that are risk averse to the extent that they refuse to invest into new technologies will be less able to cope with shocks, and hence, might end up in chronic poverty (Mosley & Verschoor, 2005). Thus, risk attitude analysis is a crucial step in contributing to combating poverty, as supporting custom-fit policy interventions can be derived. Critical to this analysis is having a reliable instrument to elicit individual risk attitudes. While there are many measurement tools available, researchers often rely on the HL-task (Holt & Laury, 2002)- a very precise, yet complex binary lottery - even when measuring risk attitudes among low-numeracy subjects despite high inconsistency rates (Verschoor et al., 2016). While there are attempts for explaining high inconsistency rates (e.g. Dave et al., 2010; He et al., 2018), reasons are still opaque. This is the starting point of our study: We hypothesize that cognitive skills - measured through the RPM test - are a negative and statistically significant determinant of inconsistency levels in the HL-task for low-numeracy subject pools. Our results can aid researchers in identifying ex-ante weather as a complex lottery is a suitable instrument for the given study group.	
Methodology	***100 – 250 words***

To investigate our hypothesis, we undertake a regression analysis and include inconsistency levels of risk attitude measurement – captured using the HL-task - and cognitive skills – captured using the RPM-test (Raven, 1938). Furthermore, other characteristics of the individual - such as age, education, and gender - had to be controlled for in the regression model to exclude them as confounding influences in the analysis of the effect of cognitive skills on inconsistencies. While doing so, the initially unwanted variation in sociodemographic characteristics also facilitated an exploratory search of associations. We investigated all interaction terms, with only one, namely gender and cognitive skills, being statistically significant. Thus, the results from our initial regression led to a second hypothesis, namely that the statistical significance of the effect of cognitive skills on inconsistency levels in the HL-task differs by gender.

Results	***100 – 250 words***

In synthesis, our field study from Cambodia reveals that cognitive skills statistically significantly explain the inconsistencies in the HL-task at the 1\% level. If an individual scores more puzzles in the RPM-test, they decrease their likelihood of inconsistency in the HL-task by approximately 5 percentage points. Our results therefore strongly suggest that - as hypothesized in literature - inconsistencies are a signal for the task at hand being too complex for the participant to fully engage in it, at least among low-literacy subjects. Furthermore, our analysis suggests cognitive skills are a relatively more reliable indicator for inconsistent choice behaviour of men.

Discussion and Conclusion	***100 – 250 words***

When attempting to measure risk attitudes in the field, researchers need to face the trade-off between complex and simple methods. A complex task - such as the HL-task - might reveal finer information, however the participants might not understand it and therefore the information is less meaningful. Our study suggests that the reason for inconsistencies is the lack of understanding, even though we can only confirm that for men. Therefore, if applied in the field, researchers should consider incorporating the RPM-test into their pre-test endeavours to understand potential suitability of the HL-task for the respective sample. This might be one way to use a complex lottery - thus reaping the benefits of rich information - while giving the participant the chance to actually cognitively engage in the lottery.

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