Using verbal and paralinguistic behaviors to identify mapping difficulties in responses to self-reported health questions

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Introduction

- Self-reported health (SRH) question
  - "How would you rate your health: excellent, very good, good, fair, or poor?"
- Independent predictor of mortality
  - (Idler and Benyamini, 1997)
- Research focuses on
  - Factors that explain variation in responses to SRH
  - Variation in health status among those with same answer to SRH

What influences self-reported health

- Investigate which of the covariates are more strongly associated with the respondent's answer to SRH
  - (Benyamini, Leventhal, Leventhal 1999, 2000, 2003)
- Followup with open or closed probes to examine how respondents arrive at their answers to the SRH item
  - (Groves, Fultz, and Martin 1992; Krause and Jay 1994)
- Are features of the interaction that takes place between the interviewer and respondent during administration and answering of SRH associated with dimensions of health?

Examples of features of the interaction

- Response time

- Number of exchanges

- Interruption by R

- R requesting clarification

- Followup by the interviewer

- Number of words R uses

- Mitigators – qualify, express uncertainty or doubt

- (Bassili & Scott 1996; Draisma & Dijkstra 2004; Dykema, Lepkowski, & Blixt 1997; Ehlen, Schober, and Conrad 2005; Mathiowetz 1998, 1999; Schaeffer & Dykema 2004; Schaeffer, Dykema, Garbarski 2008)
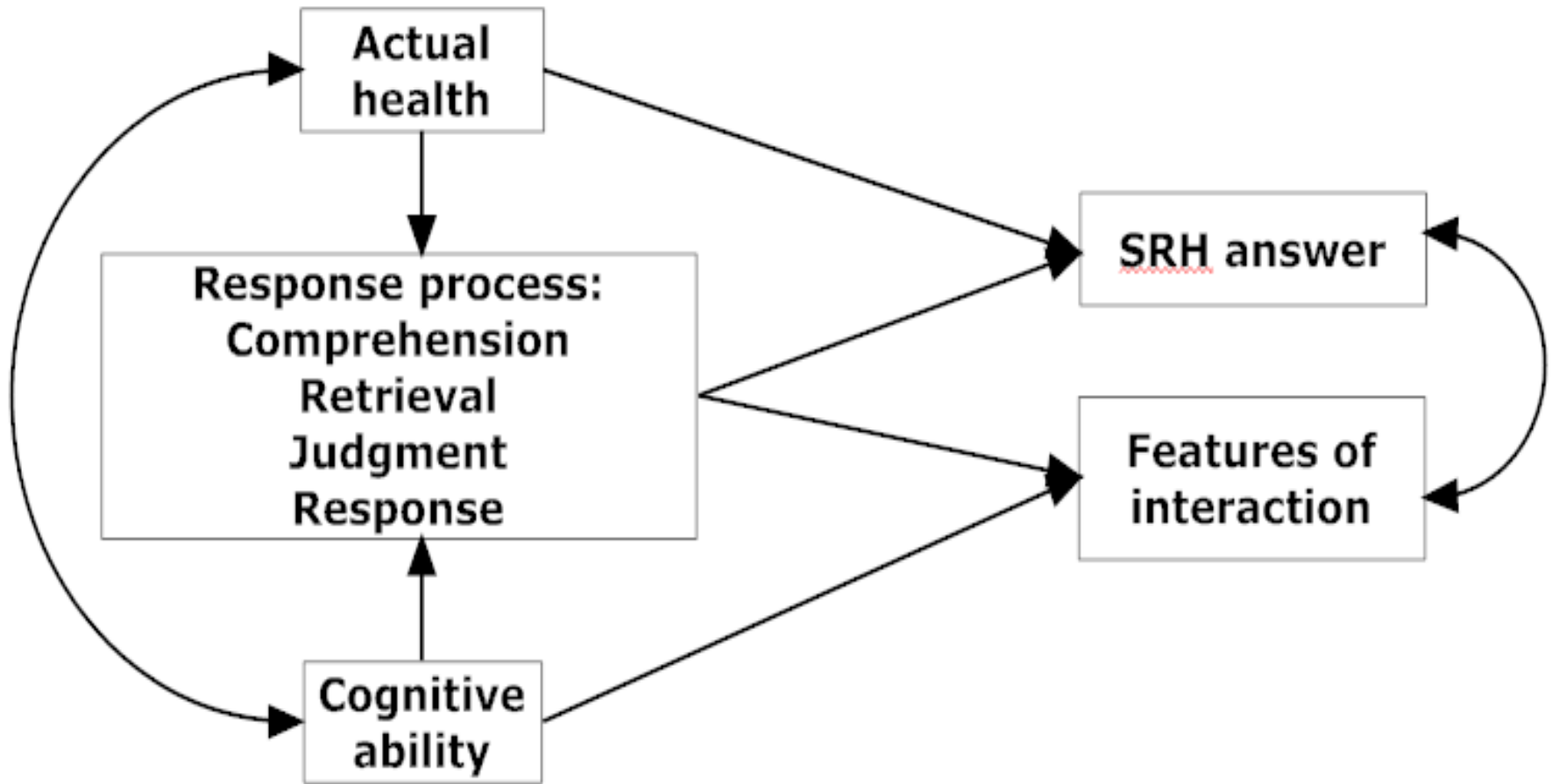
Features of the interaction

- Past research has found that paralinguistic behaviors are sometimes correlated with:

  - Response errors: inaccuracy, unreliability

  - Task difficulty

  - Cognitive ability

  - (Draisma and Dijkstra 2004; Dykema, Lepkowski and Blixt 1997; Holbrook, Cho, and Johnson 2006; Knauper, Belli, Hill, and Herzog 1997; Schaeffer and Dykema 2004; Schaeffer, Dykema, Garbarski 2008)

Conceptual model

Aims of current research project

- Aim 1: Are features of the interaction during administration of SRH associated with SRH answers?

- Aim 2: Does a health inconsistency index predict certain features of the interaction?

- Aim 3: Are features of the interaction associated with a health inconsistency index among respondents with the same SRH answer?

Data: The Wisconsin Longitudinal Study

- 1/3 random sample of WI high school class of 1957
- Telephone interviews digitally recorded in 2004 and 2005
  - Full sample includes 100 interviewers and 5 respondents from each interviewer stratified by high school IQ (N=355)
- Coding system used to obtain measures uses structure of Sequence Viewer (Dijkstra)
  - "Event" is the unit of interaction that is coded
  - Up to nine Code Variables are coded for each event

Features of interaction during SRH

- Any R tokens [vs. none]
  - "uh", "well"
  - Term or phrase with a neutral connotation that appears to respond to a prior utterance
- Any R uncertainty indicators [vs. none]
  - Reports/considerations: "my mental health is ok, my physical health is not"
  - Inadequate answers:
    - Range: "good to very good"
    - Hypothetical response options: "pretty good"
  - Mitigators: "I think," "I guess," "just," "maybe," "about," "put," "I'd say"

Features of interaction during SRH

- Response time (natural log, tenths of seconds)
  - Time from end of INT's reading of the item until the first complete codable answer from R
- Any pre-emptive INT behaviors [vs. none]
  - Indicate problems R has in answering item

Features of interaction during SRH

- Non-paradigmatic sequence [vs. paradigmatic]
  - Paradigmatic sequence (Schaeffer & Maynard 1996)
  - INT asks question, R picks response category (with or without a preceding pause), sequence ends
- More than one exchange [vs. one exchange]
  - An exchange level is one interviewer-respondent sequence of talk.
  - 2 exchanges:
    - INT Question
    - R Answer
    - INT Followup
    - R Answer

Health inconsistency index

- Dichotomized
  - HUI-functioning: mean or less, greater than mean
  - Reported health conditions: 0 or 1, 2 or more
- Health consistency (=0):
  - High functioning/low # conditions
- Health inconsistency (=1):
  - High functioning/high # health conditions
  - Low functioning/low # health conditions
  - Low functioning/high # health conditions

Aims of current research project

- **Aim 1: Are features of the interaction during administration of SRH associated with SRH answers?**

- Aim 2: Does a health inconsistency index predict certain features of the interaction?

- Aim 3: Are features of the interaction associated with a health inconsistency index among respondents with the same SRH answer?

Aim 1: Features of the interaction and SRH answers

	Proportion	Odds Ratio	95% CI
R token	0.32	0.71**	0.56 - 0.90
R uncertainty indicator	0.33	0.76*	0.60 - 0.96
Pre-emptive INT behavior	0.07	0.77	0.50 - 1.19
Non-paradigmatic	0.52	0.72**	0.57 - 0.90
More than one exchange	0.32	0.82	0.65 - 1.04
	Mean	**Coefficient**	**95% CI**
Response time	1.73 (2.42)	-0.34***	-0.47 - -0.22

Aims of current research project

- Aim 1: Are features of the interaction during administration of SRH associated with SRH answers?

- **Aim 2: Does a health inconsistency index predict certain features of the interaction?**

- Aim 3: Are features of the interaction associated with a health inconsistency index among respondents with the same SRH answer?

Aim 2: Features of the interaction and health inconsistencies

	Bivariate		Controlling for SRH, IQ	
	OR	95% CI	OR	95% CI
R token	1.94**	1.23 - 3.07	1.66*	1.02 - 2.73
R uncertainty indicator	1.86**	1.19 - 2.93	1.66*	1.02 - 2.70
Pre-emptive INT behavior	3.89**	1.41 - 10.74	3.78*	1.31 - 10.97
Non-paradigmatic	2.34***	1.53 - 3.59	2.09**	1.32 - 3.31
More than one exchange	1.99**	0.65 - 1.04	1.89*	1.16 - 3.08
	Coef	95% CI	Coef	95% CI
Response time	0.47***	0.23 - 0.72	0.27*	0.01 - 0.53

Aims of current research project

- Aim 1: Are features of the interaction during administration of SRH associated with SRH answers?

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- **Aim 3: Are features of the interaction associated with a health inconsistency index among respondents with the same SRH answer?**

Aim 3: Features of the interaction and health inconsistencies within SRH answers

	Excellent	Very Good	Good	Fair/ Poor
	(N=102)	(N=125)	(N=95)	(N=33)
R token	0.20*	0.20*	0.01	-0.27
R uncertainty indicator	0.23*	0.06	0.08	-0.06
Pre-emptive INT behavior	0.25*	0.10	0.08	0.16
Non-paradigmatic	0.26**	0.25**	0.02	-0.17
More than one exchange	0.20*	0.21*	-0.04	-0.17
Response time	0.25*	0.11	-0.01	-0.09

Summary

- Features of the interaction are associated with SRH

- Features of the interaction are associated with health inconsistency index, controlling for SRH answer and cognitive ability

- Among Rs with "excellent" or "very good" SRH, some of the features of the interaction are associated with health inconsistency index

Conclusion

- Inconsistent health information reflected in features of the interaction

- Features of the interaction may be useful indicators of health status when limited data on health are collected

Thank you!

Code Variables (9): (Brief) Description

- Actor: who is speaking
  - e.g. R or INT
- Location: where in the instrument is the interaction occurring
  - e.g. in the instructions or during the task
- Event Type: what is general nature or kind of talk
  - e.g. is actor asking a question or requesting information
- Specification: for some event types; includes more detailed information about the nature or kind of talk
  - e.g. what kind of question is the actor asking
- Adequacy: how adequately does INT read/R answer item
- Laugh Tokens: does the coding event contain a laugh token
- Continuation: is utterance continued across multiple coding events
- Overlap: does the coding event contain overlapping speech
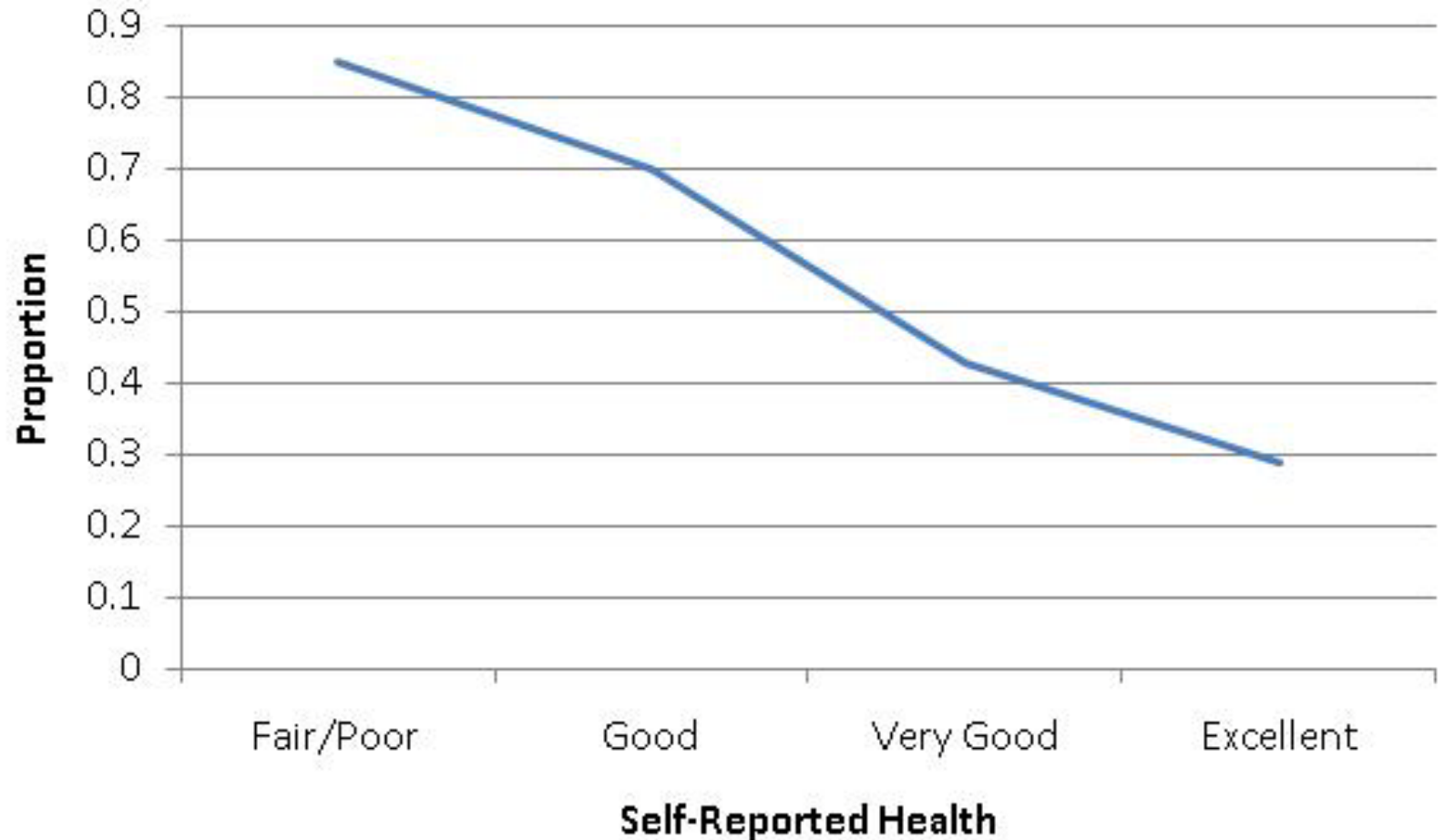- Repair: does the coding event contains a repair

Code Variable: Repair

- Examples--Specific

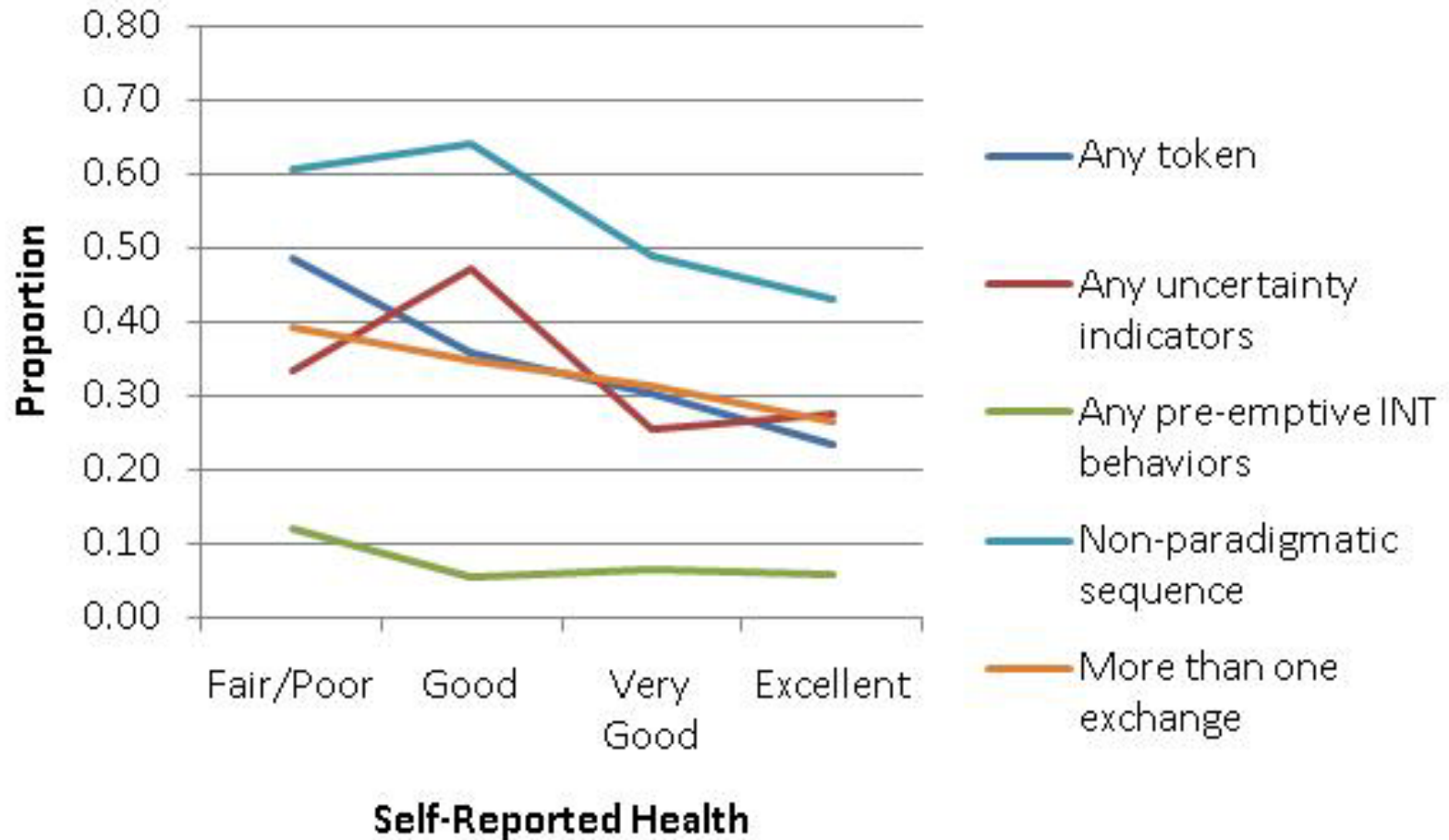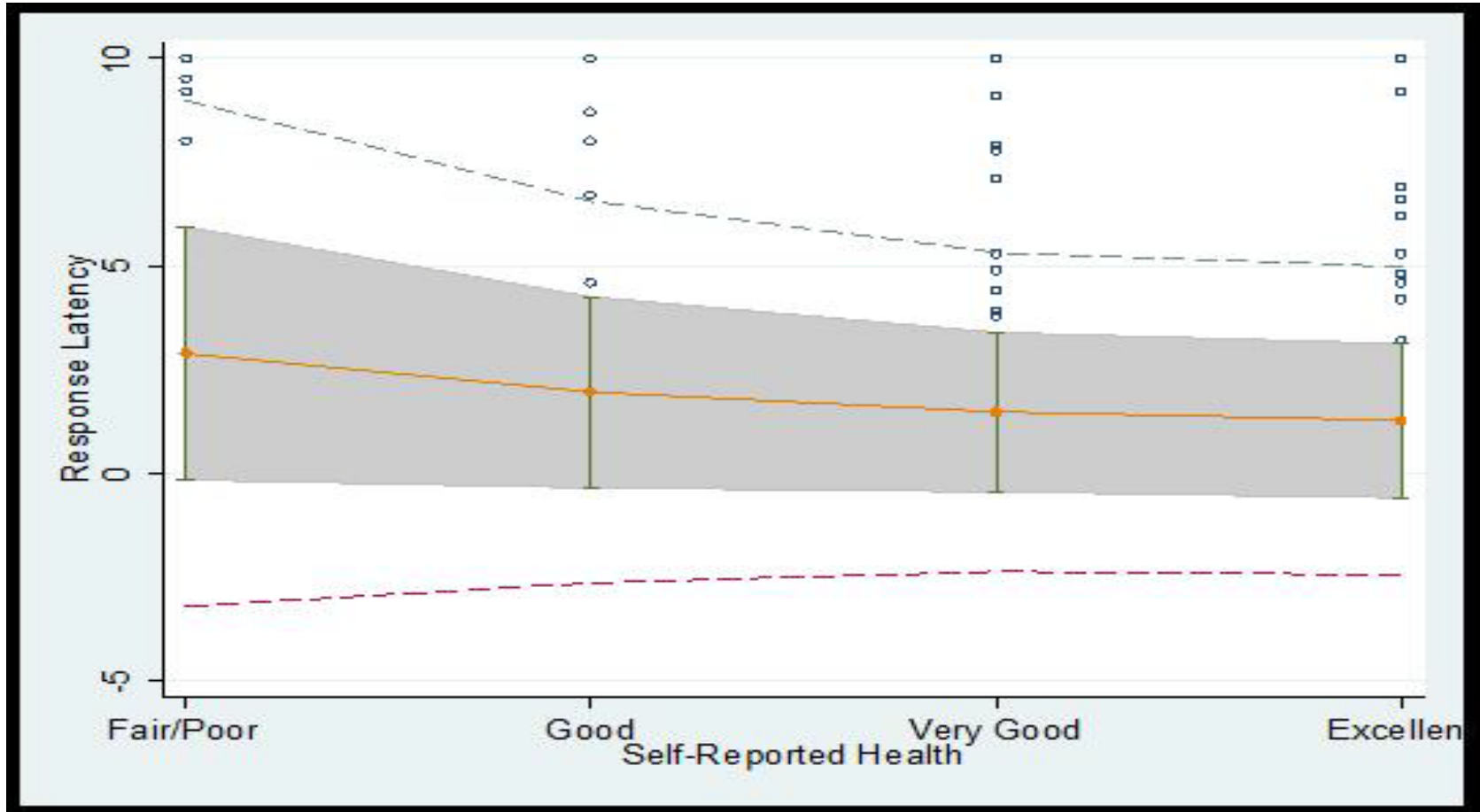| H	01	28	rtsdu-f-	R: I would have to s
			rtku-----	R: ah
			pt-------	()
			rtsdu-l-r	**R: I would say**
			rtscc----	R: very good

Aim 3: Mean (SD) number of conditions by SRH answer

Features of the interaction and SRH answers

Mean (SD) of response time by SRH answer

What information does interaction add?

- Does knowing about features of the interaction during administration of SRH add information beyond that provided by the answer to SRH?

- Example:

  - In general, would you say that your health is excellent, very good, good, fair or poor?

    - Respondent 1

    "excellent"

    - Respondent 2

    "I guess I'd say excellent"