

# What Drives Straightlining, Respondent or Grid Characteristics?

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# Acknowledgements

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- In this presentation we make use of two data sources
  - LISS (Longitudinal Internet Studies for the Social sciences) panel administered by CentERdata (Tilburg University, The Netherlands). The LISS panel data were collected by CentERdata (Tilburg University, The Netherlands) through its MESS project funded by the Netherlands Organization for Scientific Research. More information about the LISS panel can be found at: [www.lissdata.nl](http://www.lissdata.nl).
  - German Internet Panel waves 1-22. A study description can be found in Blom et al. (2015). The German Internet Panel is funded by the German Research Foundation through the Collaborative Research Center 884 "Political Economy of Reforms" (SFB 884).
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# Straightlining

- Non-differentiation in grid questions: *Rs* select same response option on all items instead of carefully answering each item individually

Please indicate how much you agree or disagree with the following statements:

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
Qualtrics is awesome	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chocolate is the best	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Oxygen is important	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Crime doesn't pay	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like my friends	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Getting bitten by a shark would be fun	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I dislike my friends	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Source: Vannette (2015). Straightlining: What is it? How can it hurt you? And how to protect against it.  
<https://www.qualtrics.com/blog/straightlining-what-is-it-how-can-it-hurt-you-and-how-to-protect-against-it/>

# What Does Straightlining Mean?

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- One of most used indicators for satisficing and data quality in surveys
  - Motivation + Cognitive ability + Task difficulty (Krosnick, 1991)
- Is it really always satisficing?
  - Plausible vs. implausible straightlining (Schonlau & Toepoel, 2015)
  - Straightlining in middle vs. at extreme points
  - “Near straightlining” & item nonresponse in grids

# Straightlining as a Motivational Issue

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- Highly associated with response time (Cole et al., 2012; Greszki et al, 2014; Revilla & Ochoa, 2015; Zhang & Conrad, 2014)
  - Speeding and straightlining arise from common origins (Zhang, 2013)
- Stronger amongst those reluctant to participate in survey (Cole et al., 2012; Kaminska et al., 2010)
- More common in later sections of survey (Cole et al., 2012) and after several waves (Schonlau & Toepoel, 2015)

# Characteristics of Straightliners

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- Straightliners more likely to be male (Cole et al., 2012; Schonlau & Toepoel, 2015)
- Straightlining decreases with age and higher education (Schonlau & Toepoel, 2015)

# Grid Characteristics as Proxy for Task Difficulty

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- Straightlining more common for items using vague quantifiers (Cole et al., 2012)
- Splitting grids reduces incidence of straightlining (Couper et al., 2014)

# Research Questions

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- What grid characteristics are related with straightlining?
- What are the effects of grid characteristics on straightlining, compared to the effect of  $R$  characteristics?



# What Grid Characteristics Are Related to Straightlining?

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- LISS panel
  - Probability sample of Dutch individuals (monthly Web surveys)
  - 10 core studies in 2012 (waves 5 & 6)
  - Total of 45 grids
- GIP
  - Probability sample of German individuals (bi-monthly Web surveys)
  - 22 waves between Sep 2012 and March 2016
  - Total of 52 grids
- Definition of grids
  - At least 3 response options (e.g., excluding Yes/No-grids)
  - At least 5 items

# What Grid Characteristics Are Related to Straightlining?

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- DV: Percent of straightliners in a grid
  - Most strict definition of SL: forming one line across all items in grid regardless of length of grid
- IVs:
  - Plausibility of SL: plausible vs. not plausible
  - Grid position in survey
  - No. of items in grid
  - No. of scale points
  - Scale labeling: fully labeled vs. not fully labeled (LISS only)

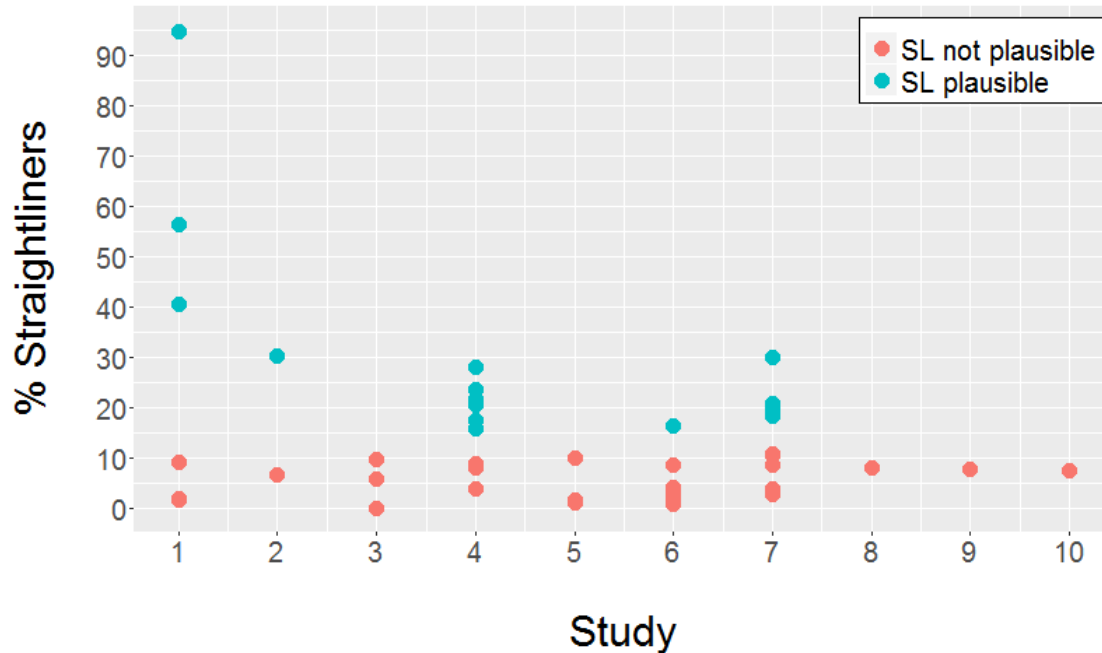
# What Grid Characteristics Are Related to Straightlining?

	LISS		GIP	
	Coefficient estimate	(s.e.)	Coefficient estimate	(s.e.)
Intercept	12.00*	4.63	6.94**	2.27
<i>Main effects</i>				
Plausibility (Not plausible)	234.38***	23.31	69.94***	9.80
Grid position	-0.06	0.22	0.02	0.30
Number of items	-0.29	0.28	-0.58	0.30
Number of scale points	-0.52	0.80	-0.01	0.10
Scale labeling (End labeled)	-4.26	2.44		
<i>Interaction effects with Plausibility</i>				
Grid position	-11.75***	1.38	1.67*	0.73
Number of item	-0.90	0.81	-3.75***	0.89
Number of scale points	-22.78***	2.52	-4.84***	0.64
Scale labeling (End labeled)	-34.17***	8.83		
R <sup>2</sup>	0.90		0.82	
Adjusted R <sup>2</sup>	0.88		0.79	
F-statistic (df)	36.25*** (9)		28.97*** (7)	
N	45		52	

Estimates from an OLS regression of straightliners (in %). Reference categories in parentheses. \*...p<0.05, \*\*...p<0.01, \*\*\*p<0.001

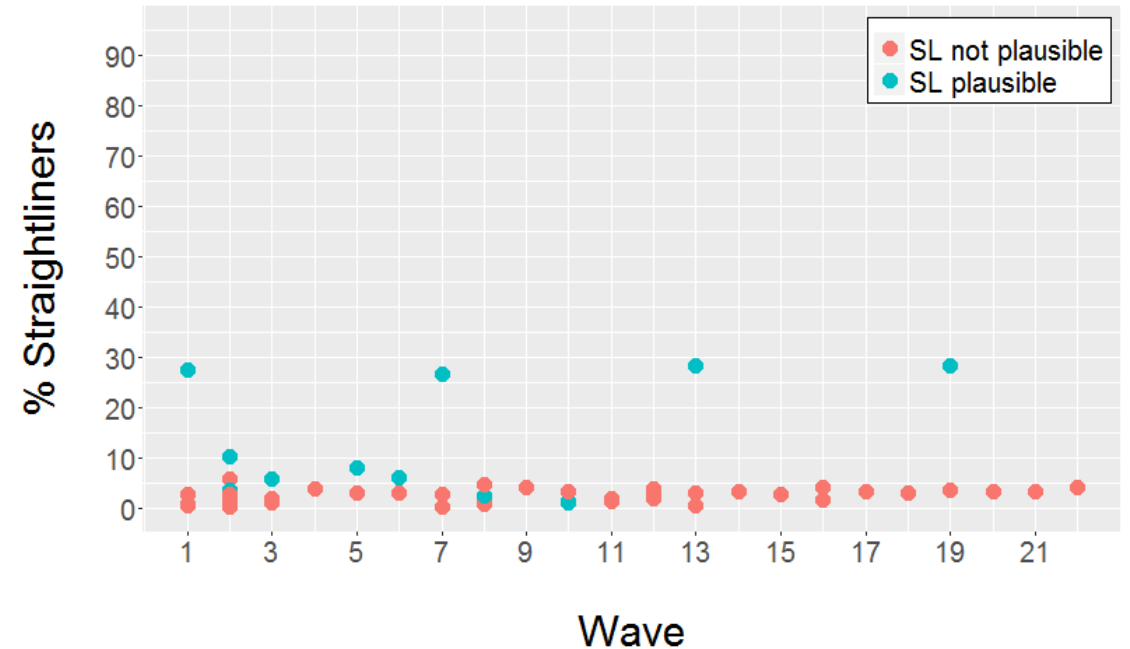
# Plausibility of SL

## LISS



- Grids where SL plausible:
  - 75% of SL occurs on extreme points
- Grids where SL is not plausible:
  - 70% of SL occurs on mid point

## GIP



- Grids where SL plausible:
  - 42% of SL occurs on extreme points
- Grids where SL is not plausible:
  - 88% of SL occurs on mid point

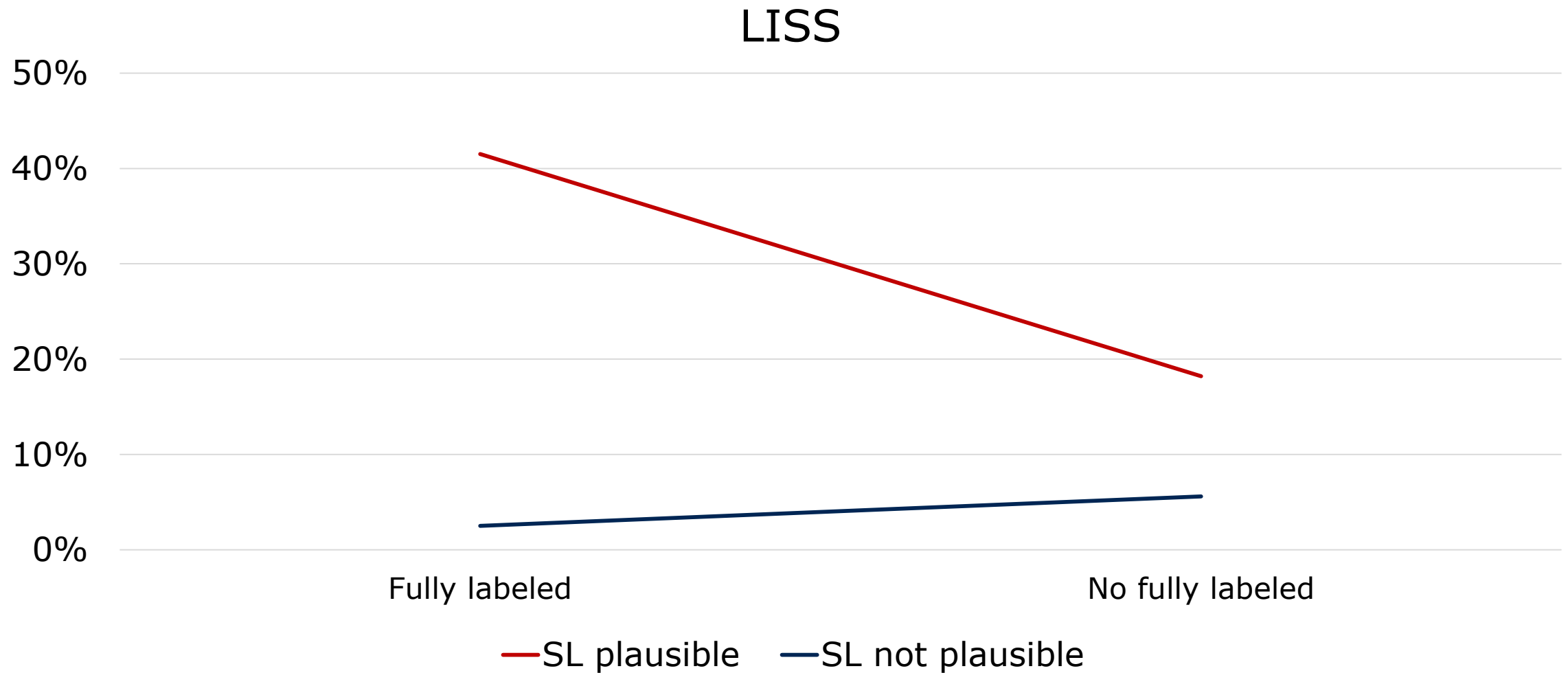
# Interactions

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		Correlation of SL with		
		Grid position	No. of items	No. of scale points
LISS	SL Plausible	-0.28		-0.55
	SL Not plausible	0.04		-0.20
GIP	SL Plausible	-0.38	-0.74	-0.29
	SL Not plausible	-0.10	0.34	-0.73

# Interactions

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# Effects of Grid Characteristics vs. *R* Characteristics on Straightlining

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- Cross-classified random effects model
  - glmer function from lme4 package in R
- Data from grids where SL is not plausible
  - LISS: 22 grids in 'Personality' and 'Politics & Values' surveys
  - GIP: 39 grids from 22 waves
- DV: Indicator of whether or not *R* straightlined in a grid
- Random effects
  - Respondents (LISS: N=5,819; GIP: N=4,541)
  - Grids
- Fixed effects
  - Grid position in survey
  - No. of items in grid
  - No. of scale points
  - Scale labeling (LISS)
  - Time of recruitment
  - Age
  - Gender
  - Marital status
  - Immigration/Citizenship
  - Education
  - Response speed (LISS)

# Effects of Grid Characteristics vs. *R* Characteristics on Straightlining

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- Variance explained by grids (LISS: 11%; GIP: 3%)
  - Likelihood of SL increases with relative position of grid in survey (LISS)
  - Likelihood of SL decreases with number of items in a grid (LISS & GIP)
  - Likelihood of SL increases (LISS)/decreases (GIP) with number of response options
- Variance is explained by *Rs* (LISS: 54%; GIP: 49%)
  - Early recruits more likely to SL (LISS & GIP)
  - Likelihood of SL higher for young and least educated (LISS & GIP)
  - 1<sup>st</sup> generation non-western immigrants/Non-German citizens more likely to straightline
- Adding response speed in LISS
  - Highly correlated with SL
  - Does not change main effects of other characteristics



# Conclusions

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- Differences in SL between grids where SL is plausible and where SL is not plausible
- When not plausible, straightlining stems from both  $R$  and grid characteristics
  - Lack motivation (grid position & speeding)
  - Cognitive capacity (age vs. education)
  - Task difficulty (grid length vs. grid width)
- Limitations
  - Observational data
  - Limited variability in grid characteristics
- Future research
  - More waves and other panels
  - Interaction effects

# Thank You!

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