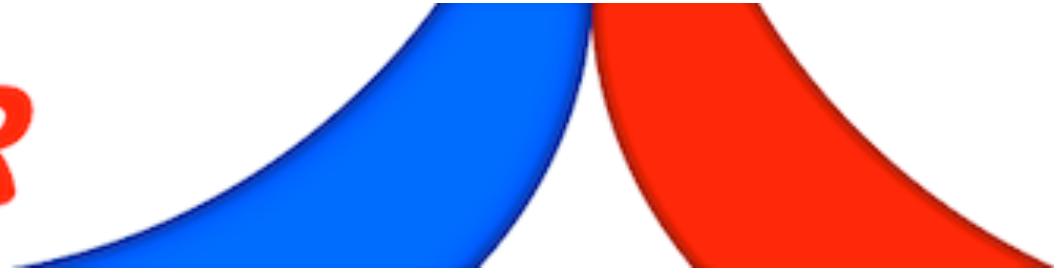


#NewMR



A Presentation from The NewMR “Advances in Quantitative Research” Event

19 September, 2012



Common Method Variance – A threat to Quality of data

Mavi Glinoga PhD, Monash University



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Common Method Variance



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Content

1. What is Common Method Variance?
2. Sources of Common Method Variance
3. What to do to alleviate CMV



What is Common Method Variance?

“A systematic error variance or amount of spurious covariance shared amongst variables because of common method used in collecting data” (Buckley et al 1990; Malhotra et al 2006).

Consequence:

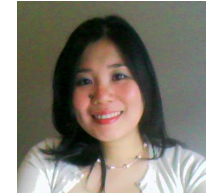
CMV can deflate/inflate the empirical estimates of true relationships between constructs (Fiske 1982)

- lead to inappropriate rejection of theory/hypothesis
- threatens the validity of measures



Why should we care about CMV?

- We care about correlation accuracies
- It is a significant problem that accounts for up to 27% of variation observed in social science research (Lindell and Whitney 2001).
- Identifying the degree of CMV is important because it declares the validity of observed relationships (Podsakoff et al 2003; Malhotra, Kim et al 2006).



Example

Hypothesis: Higher ***Enjoyment*** in work training (eg. NewMR webinar), leads to ***Workplace Loyalty***





Major Sources of CMV?

- Social desirability (Ganster et al 1983)
- Ambiguous wording (Hufnagle and Conca 1994)
- Scale length (Harrison et al 1996)

Sources of CMV?



Source Categories	Explanation	Type of Bias
Common Rater Effects	Arises when the questionnaire brings forth changes in the respondent's mood and cognitive processing (Podsakoff et al 2003; Lindell & Whitney 2001)	<i>Acquiescence bias</i> <i>-Agreeing to everything</i> <i>-Extreme responses</i>
Item demand characteristics , Item context effects and Measurement context effects	-Context induced mood -Social desirability	<i>Response style bias</i> <i>- Over-reporting socially desirable behaviours, and under reporting socially undesirable behaviours</i>



Measurement Instrument

1. Check for the sensitivity of Questions
 - Sensitive questions can lead to systematic misreporting because of social desirability

2. Questionnaire length and order of questions
 - The longer the questionnaire, the more issue of social desirability (Holtgraves 2004)



Mode of Administration

1. Paper

- Check for visual design effects
- Limit visual stimulus



Mode of Administration

2. Online

- Online – screensize, configuration, compatibility with operation system and hardware used by respondent (Dillman 2007)
- Previous research shows that answers to online survey questions are affected by design choices – eg. ordering of questions (Dillman 2007; Couper et al 2001), layout (Winter 2002; Christian 2003; Toepel et al 2006)
- Grouping related items on a single screen is likely to lead respondents to view the items as related entities. Thus, increasing the correlation among them (Strack, Schwarz and Wanke 1991; Schwarz and Sudman 1996; Tourangeau et al 2004; Dillman 2007)
- Correlations are higher for items that appear together on a screen than among items separated across several screens (Couper, Traugott and Lamias 2001; Tourangeau et al 2004; Peytchev et al 2006)

2 scales in one screen – not recommended especially if constructs are hypothesised to be correlated



How much do you enjoy work training?

Please indicate how much you agree to the following statement on your sense of enjoyment with work training

	Completely disagree	Barely agree	Slightly Agree	Moderately Agree	Agree	Highly Agree	Completely Agree
I feel energised when I participate in training sessions at work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel motivated when we have training at work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Work training is fun	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel happy during training activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How do you feel about your workplace?

Please indicate how much you agree to the following statement on how you feel about your workplace

	Completely disagree	Barely agree	Slightly Agree	Moderately Agree	Agree	Highly Agree	Completely Agree
I am committed to my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I love the company I work for	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I always work for the success of the company I work for	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I want to stay in this workplace forever	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

1 scale – recommended



How much do you enjoy work training?

Please indicate how much you agree to the following statement on your sense of enjoyment with work training

	Completely disagree	Barely agree	Slightly Agree	Moderately Agree	Agree	Highly Agree	Completely Agree
I feel energised when I participate in training sessions at work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel motivated when we have training at work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Work training is fun	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel happy during training activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Correlation comparisons

Hypothesis: Higher *Enjoyment* in work training (eg. NewMR webinar), leads to *Workplace Loyalty*

	Correlation Coefficient
2 Scales in 1 screen	0.76**
1 construct in 1 screen	0.55***

***p < 0.001

** p < 0.01



Mode of Administration

3. Telephone interviews

- Socio-cultural impact of interviewers
- Mode effect
 - Respondents at home vs somewhere else (mobile respondents)
 - Consider dual-frame methodology
- Respondent familiarity with interviewers or company (longitudinal studies)



Statistically Testing for CMV

- Harman's Common Factor
- Partial correlation procedure
- Marker Variable Technique

Thank you



Mavi Glinoga

Q & A



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Thank you



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