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# Understanding carers' intentions for their child to walk to school: Further application of the Theory of Reasoned Action<sup>1</sup>

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## Introduction

One quarter of Australian children are overweight or obese (ABS, 2010), putting them at increased risk of physical and psychological health problems (Reilly *et al.*, 2003). Overweight and obesity in childhood tends to persist into adulthood and is associated with premature death and morbidity (Reilly & Kelly, 2011). Increases in Australian children's weight have coincided with declines in active transportation, such as walking, to school (Salmon *et al.*, 2005). Investigating the factors which influence walking to school is therefore important, particularly since walking to school is a low cost and effective means of reducing excess weight (Rosenberg *et al.*, 2006) that can be easily integrated into daily routine (Brophy *et al.*, 2011). While research in this area has expanded (e.g., Brophy *et al.*, 2011; Giles-Corti *et al.*, 2010), it is largely atheoretical (exceptions Napier *et al.*, 2011). This is an important gap from a social marketing perspective given the use of theory lies at the foundation of the framework (NSMC, 2006) and a continued lack of theory use is observed (Luca & Suggs, 2013). The aim of this paper is to empirically examine a widely adopted theory, the deconstructed Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975), to understand the relative importance of attitude and subjective norms in determining intentions to increase walk to school behaviour.

## Hypotheses

The TRA successfully predicts behaviour across a number of contexts (Sheppard *et al.*, 1988) and can be used in social marketing interventions to prevent childhood obesity (Waters *et al.*, 2010). The TRA assumes behaviours such as modes of transport to school are volitional and are under the control of individuals who are influenced by significant others. The TRA is a cognitive model which involves a linear progression from attitudes to action via behavioural intentions (Fishbein & Ajzen, 1975). Attitude comprises both cognitive (i.e., belief-based) and affective (i.e., emotion-based) components (Verplanken *et al.*, 1998), both of which explain behavioural intentions (e.g., Lawton *et al.*, 2009). The literature (e.g. Cialdini *et al.*, 1990) also supports accounting for descriptive norms (whether significant others are perceived to perform the behaviour) in addition to the injunctive norms (whether important others approve of the behaviour (e.g., Ravis & Sheeran, 2003)). Following the structure of the TRA, it is hypothesised:

H<sub>1</sub>: Cognitive and affective attitude will have a positive effect on intention to increase walk to school behaviour.

H<sub>2</sub>: Descriptive and injunctive norms will have a positive effect on intention to increase walk to school behaviour.

## Method

An online survey was used to collect data from 512 Victorian carers (e.g., parents), who are responsible for getting their child to school, given parental control over children's transportation to school (Carver *et al.*, 2010). The link to the online survey was disseminated through multiple channels, including VicHealth's *Walk to School* website, Facebook and Twitter. The survey comprised previously validated scales (Appendix 1) and was pre-tested via an informal expert review with seven social marketing researchers. After data cleaning, including listwise deletion of cases with missing values and the removal of six multivariate outliers, a final sample size of 432 was achieved. Given the data was missing completely at random (Little's MCAR test >.05) listwise deletion of missing data was used since it does not introduce any bias into the parameter estimates (Allison, 2003). The sample comprised mostly employed (61.8%) mothers (86.3%) aged between 35 to 44 years old (55.4%). Fifty percent of the sample reported their child walked to/from school at least once a week, with approximately 20% walking to or from school five days a week. Structural equations modelling (SEM) was conducted to analyse the data using the two-stage approach by

Anderson and Gerbing (1991). ML Bootstrap estimation, with 500 samples and 90% bias-corrected confidence intervals, was applied given multivariate non-normality of the data in accordance with the recommendation of Byrne (2001).

### Results

Path estimates ( $\Lambda < .70$ ,  $p > .05$ ), standardised residuals ( $\pm 1.96$ ) and squared multiple correlations ( $R^2 < .50$ ) were used to identify areas of measurement model strain and three items were removed from the initial model (Appendix 1). The revised measurement model demonstrated good fit to the data:  $\chi^2$  (80,  $n = 432$ ) = 153.596, Bollen-Stine  $p < .05$ ;  $\chi^2/df = 1.920$ ; CFI = .991; TLI = .988; RMSEA = .046; and SRMR = .0363. The measures in this revised model exhibited internal consistency reliability ( $\hat{\alpha} > .70$ ), as well as convergent (CR  $> .70$  and AVEs  $> .50$ ) and discriminant validity ( $R^2$  between constructs  $<$  AVEs) (Appendix 2). With regards to the structural model, while the  $\chi^2$  was significant [ $\chi^2$  (80,  $n = 432$ ) = 153.596, Bollen-Stine  $p < .05$ ], it fits the data closely [ $\chi^2/df = 1.920$ ; CFI = .991; TLI = .988; RMSEA = .046; and SRMR = .0363]. The  $R^2$  for Intention is .167. The standardised regression weights are provided in Table 1.

**Table 1.** Standardised Regression Weights of the Structural Model

Predictors	$\gamma$	SE	Bias-Corrected 90% CI
Cognitive Attitude	-.158*	.073	[-.272, -.042], $p = .031$
Emotional Attitude	.133*	.071	[.015, .248], $p = .049$
Descriptive Norms	.027	.053	[-.058, .117], $p = .596$
Injunctive Norms	.395*	.051	[.311, .4721], $p = .004$

\*  $p < .05$ , two-tailed.

### Discussion and Conclusion

In this setting, injunctive norms were the most powerful predictor of carers' intentions to increase the number of times their child walks to/from school. While meta-analyses suggest that subjective norms often exert limited influence on intentions (White *et al.*, 2009) and that descriptive norms are more powerful predictors than injunctive norms (Rivis & Sheeran, 2003), the relative impact of attitude and subjective norms is known to vary across contexts (Fishbein and Azjen, 1975). Both cognitive and affective attitude influenced walk to school intentions, consistent with the health literature (Lawton *et al.*, 2009). Interestingly, however, cognitive attitude exhibited a negative association with intentions. This result suggests that the more positive carers' beliefs are about walking to school, the less likely they are to intend to increase the number of times their child walks to school. This presents an opportunity for further research to investigate this counterintuitive association.

The current study suggests the need to leverage injunctive norms, the strongest predictor of walking intentions in this study to stimulate volitional behaviour. In targeting parents, social marketers need to draw attention to the fact that important others, such as friends and family, approve of children walking to school. It could also be beneficial to emphasise the positive emotions, such as enjoyment, that can be derived from walking to school. More generally, this paper contributes to the social marketing theory and practice by highlighting the need for caution in employing theoretical frameworks in the development of social marketing interventions without first establishing or empirically examining their applicability, and the manner in which they operate, within the behavioural domain of interest. It should be noted, however, that this research did not assess the beliefs underpinning attitude and subjective norms, nor did it examine the influence of perceived behavioural control on walking intentions. Future research is recommended employing alternate methods to improve our understanding of walking behaviours and to extend the downstream focus of this paper.

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## Appendices

### Appendix 1. Survey Items and their Sources

Construct	Items
Intention (adapted from Rundle-Thiele <i>et al.</i> , 2012)	1. I intend to increase the number of times the child walks to/from school during the next week. 2. I will increase the number of times the child walks to/from school during the next week. 3. I plan to increase the number of times the child walks to/from school during the next week. <i>[-3 to 3 anchored at Extremely unlikely and Extremely likely]</i>
Injunctive Norms (adapted from Perugini & Conner, 2000)	1. People who are important to me think the child should/should not walk to/from school. <i>[-3 to 3 anchored at Should not and Should]</i> 2. People who are important to me would disapprove/approve of the child walking to/from school. <i>[-3 to 3 anchored at Disapprove and Approve]</i> 3. People who are important to me want the child to walk to/from school. <i>[-3 to 3 anchored at Strongly disagree and Strongly agree]</i>
Descriptive Norms (adapted from Rhodes & Courneya, 2003)	Please choose the most appropriate response for each statement: <i>[-3 to 3 anchored at Strongly disagree and Strongly agree]</i> <input type="checkbox"/> Many of my friends' children walk to/from school <input type="checkbox"/> Many of my family members' children walk to/from school* <input type="checkbox"/> Many of the children in the neighbourhood walk to/from school <input type="checkbox"/> Many children at the child's school walk to/from school
Cognitive Attitude (adapted from Norman & Conner, 2006; Scott <i>et al.</i> , 2007)	Walking to/from school is <i>[-3 to 3 anchored at]:</i> Unhealthy   Healthy* Unimportant   Important* Harmful   Beneficial Bad   Good Worthless   Valuable
Affective Attitude (adapted from Norman & Conner, 2006)	Walking to/from school is <i>[-3 to 3 anchored at]:</i> Boring   Exciting Unpleasant   Pleasant Unenjoyable   Enjoyable

*Note.* \*Not included in revised measurement model.

### Appendix 2. Assessment of Reliability and Validity of the Revised Measurement Model

Latent Factors	$\alpha$	CR	AVE	DesNorm	Att <sub>Cog</sub>	Att <sub>Emo</sub>	InjNorm
<b>DesNorm</b>	.787	0.791	0.558				
<b>Att<sub>Cog</sub></b>	.968	0.969	0.912	0.008			
<b>Att<sub>Emo</sub></b>	.939	0.942	0.844	0.005	0.613		
<b>InjNorm</b>	.883	0.887	0.725	0.116	0.059	0.051	
<b>Intent</b>	.995	0.996	0.987	0.024	0.002	0.010	0.157

*Note.*  $\alpha$  = Cronbach's Alpha coefficient; CR = composite reliability coefficient; AVE = average variance extracted.

DesNorm = Descriptive Norms; InjNorm = Injunctive Norms; Att<sub>Emo</sub> = Emotional Attitude; Att<sub>Cog</sub> = Cognitive Attitude; Intent = Intention.