Social Cognitive Antecedents of Fruit and Vegetable Consumption in Truck Drivers: A Sequential Mediation Analysis

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ABSTRACT

Objective: To examine a mechanism by which social cognitive factors may predict fruit and vegetable consumption in long-haul truck drivers.

Methods: Dietary self-efficacy, positive outcome expectancies, and intentions were assessed in 148 Australian truck drivers, and 1 week later they reported their fruit and vegetable consumption. A theory-guided sequential mediation model was specified that postulated self-efficacy and intention as mediators between outcome expectancies and behavior.

Results: The hypothesized model was confirmed. A direct effect of outcome expectancies was no longer present when mediators were included, and all indirect effects were significant, including the 2-mediator chain ($\beta = .15$; $P < .05$; 95% confidence interval, 0.05–0.32). Truck drivers who expected benefits from dietary change, felt confident about being capable to do so, and formed an intention were likely to report larger amounts of fruit and vegetable intake.

Conclusions and Implications: The results suggest that the role of outcome expectancies and self-efficacy are important to consider for understanding and predicting healthy eating intentions in truck drivers.

Key Words: self-efficacy, outcome expectancies, social cognitive theory, intention, fruit, vegetable (*J Nutr Educ Behav*. 2015;47:379-384.)

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INTRODUCTION

According to evidence from the National Health and Medical Research Council, Australians lack nutrient-rich, healthy foods such as fruit and vegetables in their diets.[1] It has been reported that 92% of Australian adults are not consuming the recommended servings of vegetables and only 52% are eating a sufficient amount of fruit.[2] Diet profoundly affects health; a healthy or unhealthy diet has many benefits or costs, respectively, for an individual as well as society.[1] Consumption of sufficient amounts of fruit and vegetables, for example, is associated with lower risk of some cancers as well as lower risk of cardiovascular disease.[3,4] In addition, reports indicate that high body mass, stemming from individuals' behavior choices such as consuming unhealthy diets, contributed 7.5% of the total Australian burden of disease in 2003,[5] with the total annual direct costs of overweight and obesity in Australia in 2005 estimated at $21 billion, Australian dollars.[6]

Consuming at least 2 and 5 serving equivalents of fruit and vegetables, respectively, each day is recommended to prevent chronic diseases and maintain good health.[1,7] Although this dietary behavior is widely promoted, breaking unhealthy habits is a difficult self-regulatory task.[8] The process of acquiring sufficient, regular fruit and vegetable intake involves intentional factors that go beyond mere knowledge about nutritional facts. The formation of an intention is instrumental for initiating and maintaining healthy dietary behaviors because it sets a self-regulation process in motion that facilitates later goal-relevant activities.[9] The current study takes a longitudinal social cognitive perspective[10] to further the understanding of psychological mechanisms that underlie healthy eating habits. In particular, these mechanisms are investigated in a cohort of long-haul truck drivers.

The National Health and Medical Research Council[1] recognizes that certain groups are at higher risk of consuming

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an unhealthy diet. In particular, men are at higher risk of unhealthy eating; factors such as education, employment, lifestyle, and availability and access to nutritious foods contribute to individuals' risk of consuming poor diets.[1,11,12] Long-haul truck drivers are one such group that encompasses many of these risk factors and, to date, has received limited attention in the health literature. Long-haul truck drivers are ill-defined in the literature; different characteristics are used to define this population. In Australia, long-haul truck drivers may be defined as people who drive a ≥12-ton truck, who drive in excess of 200 km in 1 work period, and for whom the work period is predominantly spent driving.[13] Long-haul truck drivers are predominately male, have lower levels of education, and work in an environment that may affect their food choices.[14] For example, while working, many long-haul truck drivers can stop only at truck stops because of their vehicle size and parking laws. It is suggested that truck stops offer limited healthy food options such as fruit and vegetables, while offering a large selection of discretionary foods.[15] Therefore, accessibility may be a barrier to healthy eating for this target group. In addition, long-haul truck drivers work long hours with strict time regulations; thus, little time is allowed for meals, which may encourage unhealthy snacking behaviors.[14]

Given these risk factors, it is not surprising that the literature has indicated truck drivers to be an unhealthy population, especially regarding their diet.[14,15] Research in the US suggests that truck drivers have a severe weight problem that is linked to diet, negatively affecting health.[15] There are many negative effects of unhealthy eating that can have implications for the safety of the truck driver and other road users: for example, traffic accidents occurring owing to health complications.[15,16] Thus, there is a need for research to examine social cognitive factors that may predict fruit and vegetable consumption in long-haul truck drivers. Such an understanding can inform policies and programs to curb unhealthy eating and improve healthy eating for Australia's truck drivers.[17] Because of empirical evidence supporting the use of Social Cognitive Theory (SCT)[10] in predicting people's fruit and vegetable consumption,[18] the researchers thought it warranted to adopt the SCT theoretical perspective for the current study. In particular, the SCT components of self-efficacy and outcome expectancies have been found to be most effective in improving and changing people's health behavior.[19]

Dietary Self-Efficacy and Outcome Expectancies

Self-efficacy portrays individuals' beliefs in their capabilities to perform a specific action required to attain a desired outcome.[20] It reflects optimistic self-beliefs when overcoming temptations or adopting a novel course of action. Different challenges could emerge during the course of dietary behavior change, and dietary self-efficacy beliefs may be required to master these tasks successfully. Self-efficacy has been found to be associated with and actually change people's consumption of fruit and vegetables, and individuals with high levels of dietary self-efficacy consume more fruit and vegetables than do others.[21-24] In addition, self-efficacy to eat more fruit and vegetables as well as outcome expectancies in terms of fruit and vegetable intake predicted a 24-hour recall of actual fruit and vegetable consumption.[25]

In line with SCT,[10] outcome expectancies are beliefs about the consequences of one's action. Whereas perceived self-efficacy refers to personal action control or agency, outcome expectancies pertain to the perception of possible consequences of one's actions. People would not set goals for themselves if they thought that the pursuit of such goals would have more disadvantages than advantages. Thus, outcome expectancies are seen as important determinants in the initial formation of intentions but they may be less important in the later phases of behavior change.[19]

Also in line with SCT,[10] the researchers examined the role of self-efficacy and outcome expectancies in predicting dietary intentions and behaviors as reflected by the consumption of fruit and vegetables in long-haul truck drivers. Self-efficacy and outcome expectancies are well-established joint predictors of intentions (which Bandura[10] mostly called proximal goals), and intentions are assumed to be predictors of behavior. The current authors propose that dietary self-efficacy is developed after people have evidenced some benefits of changing their diets, and therefore, a sequential process may be operating starting with positive outcome expectancies, which leads to more or less optimistic self-beliefs before an intention is formed to actually make changes in one's diet.[19] The aim of the current analysis was to examine such a hypothesized chain in long-haul truck drivers.

METHODS

Participants

Participants were men who drove a ≥ 12-ton truck, for whom work time was predominately spent driving, with at least 200 km traveled in 1 work period.[13,26] Participants were recruited through face-to-face contact at truck events (eg, OztruckinTV Car and Truck Show and Shine) or online using social networking Web sites (eg, Facebook, Trans-Help Online Roadhouse). A total of 148 participants, aged 19–78 years (mean age, 44.8 years; SD, 11.8 years) were recruited at the Wave 1 main survey. Of these 148 participants, 74 (50% response rate) completed the Wave 2 follow-up survey. The follow-up survey was conducted over the phone with those who consented to participate in Wave 2. For those who consented to the follow-up, attempts to phone the participants were made daily (unless a specific time and day to call was provided) until the follow-up was completed or after 10 days from the initial follow-up attempt. The researchers offered an incentive to enter into a prize draw to win 1 of 3 double movie pass vouchers, to help retain participants. Participants resided across all states of Australia, with Queensland (n = 69; 47%) being most represented. Body mass index (BMI) (mean, 31.4; SD, 7.8; range, 16.8–77.8) was calculated as an indicator of participants' total body fat. The majority of participants (n = 121; 82%) were deemed