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Investigating novice cooks' behaviour change: Avoiding cross-contamination

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ABSTRACT

Campylobacteriosis rates are on the rise, and many cases originate from the consumption of inadequately prepared poultry dishes. Thus, it is important to sensitise consumers to unsafe poultry preparation and inform them about measures to prevent foodborne illness, such as avoiding cross-contamination. This paper's main aim was to expand current insights into the mechanisms of behaviour improvements in the area of safe poultry preparation. Utilising the Health Action Process Approach (HAPA) as a theoretical framework, it explored which variables were most predictive for self-reported cross-contamination avoidance after triggering active behaviour change in a sample of novice cooks. The presented data were derived from a longitudinal intervention study. Path model analysis was used to test the HAPA's applicability for this particular behaviour.

The central finding is that the volitional HAPA variables did predict follow-up behaviour, above and beyond previous behaviour, in a sample where active behaviour change was implemented and possible. The present findings offer directions for future preventive measures and risk communications. The results point to the importance of strengthening consumers' self-efficacy and raising their awareness of difficult food preparation situations where planning is essential. Furthermore, the findings give weight to the applicability of the HAPA in different health behaviour contexts.

1. Introduction and theoretical background

Foodborne illness due to the bacteria *Campylobacter* is on the rise in most European countries (European Centre for Disease Prevention and Control, 2013). *Campylobacter* is commonly found in chickens' intestines and during slaughtering and processing, chicken carcasses and poultry meat can be contaminated with *Campylobacter* (Bell & Kyriakides, 2009). Human contact with *Campylobacter* bacteria, via consumption of insufficiently cooked poultry or other cross-contaminated foods, can lead to foodborne illness in humans (Klein & Reich, 2011). In order to reduce the burden of diseases caused by *Campylobacter*, it is necessary to involve poultry consumers in preventive efforts. Consumers should be informed about safe poultry preparation, which comprises a number of simple measures (e.g., cooking poultry thoroughly, avoiding cross-contamination of ready-to-eat foods via hands and kitchen utensils), and should be motivated to implement these measures (Luber, 2009; Sampers et al., 2012; Taché & Carpentier, 2014). However, there is a shortage of empirical evaluations of different food safety interventions in the current literature (Milton & Mullan, 2010). The present paper is part of a project, which examined an informational intervention to increase safe poultry preparation in a sample of novice cooks. The previously published results (Bearth, Cousin, & Siegrist, 2013) indicate that the intervention successfully increased people's awareness of foodborne pathogens and their avoidance of cross-contamination. This paper's main goal was to investigate the underlying behaviour change mechanism after the intervention, within the theoretical framework of the Health Action Process Approach (Schwarzer et al., 2003).

1.1. The Health Action Process Approach and food safety behaviour

In health psychology, several models and approaches are used to investigate human behaviour and its predictors: for example the Health Belief Model (HBM; Becker, 1974), the Theory of Planned Behaviour (TPB; Ajzen, 1985) or the Health Action Process Approach (HAPA; Schwarzer et al., 2003). All three models mentioned above had been used to investigate food safety behaviour in the past. However, studies found that the model variables of the HBM and TPB did not predict food safety behaviour adequately (McArthur, Holbert, & Forsythe, 2006; Mullan & Wong, 2009). In

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both models, behaviour is predicted directly by intention. However, a meta-analysis by Sheeran (2002) found that intention was a poor predictor of behaviour in most studies investigating behaviour: the so-called 'intention-behaviour gap'. The HAPA meets this concern by including additional variables for the prediction of behaviour. Thus, the HAPA served as theoretical background in this study. The HAPA (Fig. 1) distinguishes between two different behaviour change phases: a motivational and a volitional phase. In the motivational phase, an intention to change behaviour is developed and predicted by motivational self-efficacy, outcome expectancies, estimated severity of consequences, and risk awareness. In the volitional phase, this intention is activated through planning and volitional self-efficacy, incorporating coping and recovery aspects of behaviour change (Schwarzer, 2008). The HAPA has been applied to a variety of health behaviours (such as physical activity, seat belt use, smoking cessation, dental flossing or preventive medical check-ups) and has been shown to be a valuable approach for explaining behaviour changes (Radtke, Scholz, Keller, & Hornung, 2012; Scholz, Nagy, Göhner, Luszczynska, & Kliegel, 2009; Schwarzer, 2008).

A recent study (Mullan, Wong, & O'Moore, 2010) investigated the structure of the HAPA in the context of general hygienic food handling with a sample of young psychology students. The authors found that intention had the strongest effect on self-reported behaviour, whereas the volitional variables (planning, coping and recovery self-efficacy) were not linked to self-reported behaviour. In terms of implications for future research, the authors (Mullan et al., 2010) recommended investigating the HAPA with a sample pursuing active behaviour change, as this was not the case for the majority of their participants. A well-documented phenomenon in health psychology is the above-mentioned 'intention-behaviour gap', which describes the fact that formed intentions do not necessarily translate into actual behaviour change (Sheeran, 2002). For people already exhibiting the health behaviour in question, such as the participants in Mullan et al.'s study (2010), intention and their actual behaviour are likely highly correlated and no behaviour change is necessary. The concept behind the volitional variables of the HAPA is to provide a possibility to overcome this intention-behaviour gap (Schwarzer, 2008). It is probable that volitional variables play a more critical role for participants actually undergoing active behaviour change. Mullan et al. (2010) further stressed the importance of investigating a specific behaviour instead of general food safety behaviour and the need to inform participants about the correct actions to avoid cross-contamination.

The overall goal of this study was to add to existent research on behaviour change and safe food handling, by investigating the mechanisms of behaviour change after a successful intervention within the HAPA. Due to its importance for the prevention of *Campylobacter* infections, the health behaviour under examination in the HAPA was "Avoidance of cross-contamination/Maintenance of high standards of hygiene". Thus, the following research questions were considered: (a) Do the volitional variables, self-efficacy and planning, explain additional variance in behaviour apart from previous behaviour and intention in a sample of novice cooks, and (b) is the HAPA an adequate theoretical framework for the investigation of the health behaviour "Avoidance of cross-contamination/Maintenance of high standards of hygiene"? Subsequently, the study's method and sample are presented.

2. Method

2.1. Study design and sample

Young people exhibit the highest incidence rates of *Campylobacter* infections, which is likely linked to their lack of cooking experience (Baumgartner, Felleisen, & Gut, 2012; Byrd-Bredbenner, Maurer, Wheatley, Cottone, & Clancy, 2007). First-year university students were deemed a suitable sample, as they are likely to be novice cooks, who are new at preparing food self-sufficiently. This study is part of a project, which had the overall goal to apply an intervention with a sample of first-year students ($N = 289$). The study comprised three measurement points (t1 – t3) and three conditions (two experimental groups EG1 and EG2 and a control group CG). At t1, all participants received the same invitation to an online baseline questionnaire and were randomly assigned to one of the three groups ($n_{EG1} = 151$, $n_{EG2} = 140$, $n_{CG} = 202$). At t2, both experimental groups ($n_{EG1} = 91$, $n_{EG2} = 113$) received a brochure, which was created based on recommendations in the literature, as well as previous qualitative interviews (Jacob, Mathiasen, & Powell, 2010). The brochure provided information on meat pathogens and summarised the most important measures against foodborne illness. Moreover, the first experimental group received a cue in the form of a postcard with pictograms, which aimed to remind them of the most important food safety measures when cooking poultry. The second experimental group received two differently coloured

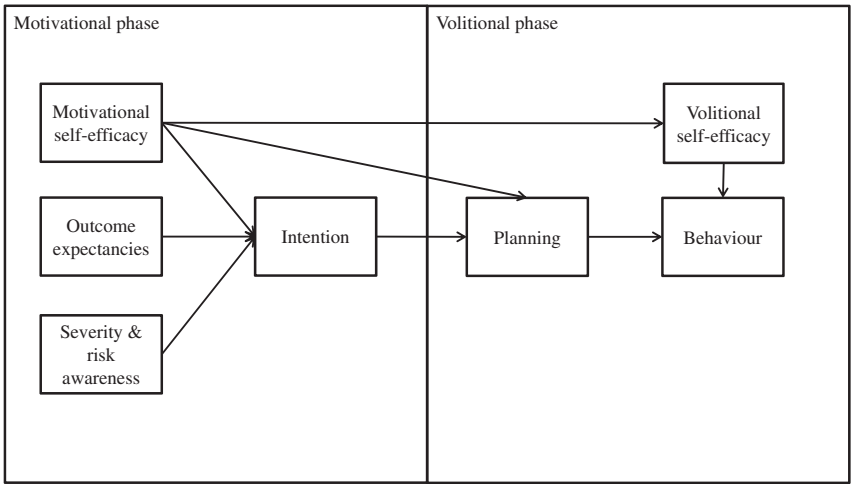

Fig. 1. HAPA model.
Source: adapted from Schwarzer et al. (2003).