



# The association between students' characteristics and their reading and following safety instructions



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## ABSTRACT

Previous studies have demonstrated that reading and following safety instructions, such as warning labels and product manuals, may serve as a defense against hazards and can prevent injuries. This paper examines the predictive value of four factors that might determine whether students read and follow safety instructions: students' safety norm, students' safety attitude, the sensation seeking trait and type A personality. Our investigation was carried out with 172 university students (mean age = 20.01, SD = 1.56) who participated in a paper-and-pencil survey. Regression analyses revealed that students' safety norm and attitude were positively related to reading and following safety instructions, while sensation seeking was inversely related. Type A personality had no predictive value. Our statistical findings further revealed that female students read and follow more safety instructions than male students. Based on these research results, recommendations are formulated.

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## 1. Introduction

A considerable amount of research has demonstrated that unintentional injuries are a public health problem around the world affecting all age populations, but especially adolescents and young adults like university and college students (Eaton et al., 2006, 2010; Zhou et al., 2013). There are several ways to prevent injuries. The hazard control hierarchy or so-called safety hierarchy is a theoretical framework defining priorities for addressing product or environmental hazards (Haddon, 1973; Laughery and Wogalter, 2014; Sanders and McCormick, 1993). According to this framework, the most preferable approach to deal with hazards is to eliminate them through alternative design, for example replacing a dangerous chemical product with a less dangerous one. Safe alternative designs are however not always possible, because of technological or economic reasons (Laughery and Wogalter, 2014). Hence, a second approach to deal with hazards is 'guarding', which refers to preventing contact between people and the hazard. Guarding can be physical, like a person's protective clothes, fences on roof gardens or highway barricades (Smith-Jackson and Hall, 2002), but can also be procedural, like the physician's prescription needed to buy medicines, or the requirement of pressing two switches,

instead of one, to start for instance a straw cutter (Laughery and Wogalter, 2014). However, similar to the alternative design approach, guarding is not always feasible. Therefore, a third line of defense against hazards also exists, and it can be referred to as 'warning'. As a communication, warnings are intended to provide information for the audience to whom it is directed (Laughery, 2006). This information should allow people to make informed decisions about how to use a product safely. One metric of success is whether the warning information is received and understood (Cox et al., 1997). Like the other approaches, warnings are sometimes limited in terms of effectiveness, for instance when people do not see or hear a warning. Still, two meta-analytic reviews, encompassing 48 studies (Argo and Main, 2004) and 15 studies (Cox et al., 1997), demonstrated the effectiveness of warnings. In other words, reading and following warnings can be considered as effective safety behaviors that can prevent people from ending up in unsafe circumstances possibly leading to injury.

Although several studies have attempted to identify the types of warnings that are effective, thus focusing on the physical attributes of effective warnings, the present study seeks to investigate what factors determine whether young adults (in this case university students) read and follow warnings and manuals, further referred to as 'safety instructions'. Given the potential consequences for individuals' harm if not following and reading safety instructions, an increased understanding of this topic is important, for example for public policy advocates. As also indicated by Hill and Finster

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(2010), (chemical) companies now understand (actually better than many colleges and universities) that employees behaving safely can be regarded as a sound financial practice of a company. Given the fact that unsafe behavior or risk-taking behaviors can limit adolescents' potential for achieving responsible adulthood (Zimmerman, 2010), it is not surprising that social science research has become increasingly interested in identifying potential predictors of (un)safe behaviors (Keeler and Kaiser, 2010; Musselwhite et al., 2014).

In this study, we want to examine the relative contribution of safety attitude, safety norm, sensation seeking, and type A personality to explain students' reading safety instructions and their following of safety instructions. Based on this evidence, it will be possible to formulate recommendations on how to increase students' safety behavior. In the following section, we summarize the reasons to include the above-mentioned possible predictors of reading and following safety instructions in our model and we formulate the research hypotheses.

## 2. Research hypotheses

In this study, as already mentioned, we investigate four students' characteristics in relation to reading and following safety instructions: (i) safety attitude, (ii) safety norm, (iii) sensation-seeking, and (iv) type A personality. We chose these four characteristics since each of them – separately – are likely to be related to safety behavior, albeit in contexts other than reading and following safety instructions. Furthermore, we extend previous studies on determinants of safety behavior by including the four characteristics simultaneously in our design and by examining their predictive value on students' behavior. As such, we can discern which of the four is the strongest predictor of students' reading and following safety instructions. Hereafter, the four hypotheses we investigated in our study, are formulated.

*Attitudes* can be defined as a psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor (Eagly and Chaiken, 1993). Most often this evaluation is captured in such attribute dimensions as 'good–bad', 'harmful–beneficial', 'irresponsible–responsible', or 'likable–dislikable' (Ajzen, 2001). As a general rule, the more favorable and positive the attitude (regarding a certain topic), the stronger may be the behavioral response. Attitude measures have been shown to be significantly associated with self-reported injuries (Clarke, 2006), such that respondents who hold more positive attitudes are more likely to engage in safety behavior (Tomás et al., 1999) and to remain injury-free (Donald and Canter, 1994). Therefore, we derive the following first hypothesis (H1):

**H1.** There is a positive association between students' safety attitude and their reading and following safety instructions.

Our model also includes information on students' *safety norm*. It is known that individuals, and young adults in particular, are sensitive to social pressure from important others, like peers in group contexts and parents. Social norms or the "perceptions and beliefs what is 'normal' behavior in the people close to us" has been identified as a key factor in modifying risk or unsafe behaviors among young adults, like road user safety behavior (Musselwhite et al., 2014; Warner and Aberg, 2008). Very often, individuals incorrectly perceive the behaviors of peers and other community members to be different from their own, when in fact they are not (Berkowitz, 2005; Forward, 2009). This phenomenon often occurs in relation to problem or risk behaviors of peers and in relation to other students' health-related and/or protection-related behaviors (Borsari and Carey, 2001; Prentice and Miller, 1993). Based on the literature, we can formulate the second hypothesis (H2) as follows:

**H2.** There is a positive association between students' safety norm and their reading and following safety instructions.

*Sensation-seeking* is generally defined as a trait identified by the tendency to seek varied, novel, and complex sensations and experiences, and the willingness to take risks to obtain those experiences (Zuckerman, 1994). Interestingly, sensation-seeking has been found to peak during the adolescent years (Zuckerman, 1994). Given that sensation-seeking in individuals has been found to be associated with unsafe behaviors, such as risky sexual behavior (Sheer and Cline, 1995), unsafe driving (Arnett et al., 1997; Dahlen and White, 2006), financial risk-taking (Zabel et al., 2009) and illicit stimulant use (Low and Gendaszek, 2002), we formulate the third hypothesis (H3):

**H3.** Students with higher levels of the sensation-seeking personality characteristic will read and follow less safety instructions.

People with a *type A personality* have been characterized in terms of high-achieving, competitive behavior, hostility, impatience, restlessness, time urgency as well as vigorous speech stylistics (Friedman and Rosenman, 1974; Wang et al., 2012). In contrast, people with type B personality by definition live at a lower stress level and – when faced with competition – do not mind losing. They exhibit the opposite traits of people with type A personality (Cooper and Payne, 1991). In early work was found that individuals with type A personality have higher risks of coronary heart disease (Friedman and Rosenman, 1974). There is however some evidence that they may also be more prone to accidents. In a study conducted by Cooper and Sutherland (1987) on the relationship between job stress, mental health and accidents among offshore workers in the oil and gas extraction industries, findings demonstrated that people with type A personality were more involved in an accident that resulted in an injury compared to people with a type B personality. Based on this, we expect that hypothesis 4 (H4) is true:

**H4.** There is a negative association between students' type A personality and the reading and following of safety instructions.

In summary, the purpose of the present study is to better understand which determinants predict students' reading and following safety instructions, in order to formulate recommendations on how this behavior may be influenced. We expect that safety attitude, safety norm, sensation-seeking and type A personality precede students' safety behavior, hence two data collections from the same individuals were conducted. As such, the four abovementioned predictors were administered twelve weeks before the dependent variable (that is, reading and following safety instructions).

## 3. Research methodology

### 3.1. Procedure and participants

Self-administered questionnaires, containing all variables involved in the research model of the present study, were completed by undergraduate bachelor university students in applied economic sciences and communication studies. The students were assured that their responses were anonymous and confidential, and that no information would be passed on to supervisors or fellow students. Provisions were made to guarantee the participants' privacy and confidentiality during the administration.

Two data collections from the same individuals were conducted. The first data collection started in February 2013 (at time 1 – indicated as "T1"). Of the original 219 students in the sample at T1, 172 (78%) students participated 12 weeks later, in May

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