



## Conceptualizing and measuring recreation safety climate



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### ABSTRACT

Recreation safety is a central part of recreational activities. Establishing a recreation safety climate (RSC) can facilitate the measurement of safety practices at a place of recreation. The emphasis of this study is to conceptualize RSC and develop a set of tools to measure the degree of recreationist perception of the safety level in a recreation place. The study starts with in-depth interviews and content analysis to produce the initial questionnaire items. Exploratory factor analysis and confirmatory factor analysis are then applied to build reliable and valid measurement tools. The study results identified eight constructs to RSC: management commitment to safety, perception of recreation safety rules, fit between recreational environment and safety, safety training for recreationists, responsible managers, emergency facilities, caring, and altruistic safety behavior. Also identified were 27 measurement items to help recreation managers apply safety management practices.

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### 1. Introduction

Recreational hazard is a recurrent theme. T. Bentley et al. (2001) note that hiking and skiing are activities most prone to accidents in New Zealand, with foreign visitors accounting for 20% to 22% of accidents and deaths, respectively. Hall and McArthur (1991) show that 70% of recreationists engaged in rafting activities in Australia suffer injuries. Statistics compiled by the Water Sports Industry Association (2015) on recreational boating injuries in the U.S. count 610 deaths and 2678 injuries in 2014, showing an upward trend. In Taiwan, there were 675 drowning cases in 2013, with 35% of the cases resulting from water sports, scuba diving, slipping, and fishing (The Red Cross Society of the Republic of China, 2014). It is thus clear that recreation activities involve risk and that finding ways to reduce this risk is an important issue for effective recreation safety management.

Prior assessments of the safety of a place have largely used safety climate to measure individual perception of the safety of a place (Cooper and Phillips, 1994; Neal et al., 2000). These studies conceptualize the safety climate from the perspective of organizational behavior, meaning the perception of the value and importance of safety-related policies, procedures and practices among organization or group members (Griffin and Neal, 2000; Zohar, 2000). This has been regarded as a key yardstick in assessing work safety in organizations (Beus et al., 2010). In recent years, this concept has also been applied in viewing the degree of safety climate

perception in public places (such as traffic safety climate) (Gehlert et al., 2014; Mader and Zick, 2014). Yet it is rarely applied to safety management in recreation activities.

Safety is the most basic premise for participation in recreation activities (Barton, 2007; T.A. Bentley et al., 2001; Dougherty, 1998). If recreation safety can be measured in advance through tools for perception of safety climate, recreationists could clearly perceive the safety practices of a place and avoid danger. Most previous recreation studies, however, have focused on the relation between recreation benefits and recreation behavior (Crilley et al., 2012; Dorwart et al., 2009; Rosenberger et al., 2012). Even studies on recreation safety are limited to the measurement of risk by individual perception in assessing the degree of recreation risk. This provides insight into the probability of facing potential related risks (Lin et al., 2012; Reisinger and Mavondo, 2005; Rittichainuwat and Chakraborty, 2009), but it sheds no light on understanding the overall perception of the safety engagement in a recreation place. The lack of recreation safety climate (RSC) establishment has therefore become a major gap in recreation studies.

Government and recreation management units give considerable attention to recreation safety. Yet this attention appears to be limited to concept advocacy or policy controls. Lacking overall RSC constructs and measures, it is not possible to weigh the degree of safety climate perception at recreation places and prevent accidents from occurring. The purpose of RSC is to establish “a tool to measure increased perception of safety climate in a place of recreation.” The focus of this measurement tool is on shared perception, not on measuring individual states or specific recreation activities.

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There are two main functions. The first is to help recreationists to assess whether the recreational activity is suitable for the environment. The first is to help recreationists to assess whether participating the recreational activity is suitable for the environment. The second is as a reference for recreation management units in determining the need to improve or enhance safety measures. RSC thus serves both a diagnostic and preventive function. The result of the RSC measurement is a relative safety concept. This study therefore uses qualitative research to survey the dimensions of RSC. We then use the scale development method proposed by Churchill (1979) to establish a scale for measuring RSC. The development of this scale can contribute tangibly to subsequent academic studies on recreation safety and behavior. It can also serve as a practical tool for safety management by recreation management units.

## 2. Literature review

### 2.1. Recreation safety

In recreational activities, safety and risk should be considered 'two side of the same coin'. The focus of safety is on preventing and reducing the occurrence of and harm from accidents (Hosaka, 2011; Hudson, 2007). With risk, the focus is on assessing the probability that harm will occur. Understanding the probability of risk is admittedly important. However, sound safety can prevent harm from occurring in the first place. Dougherty (1998) shows that recreation safety is a prevention mechanism consciously taken to reduce danger. This prevention mechanism requires the adoption of appropriate measures by recreationists and managers to ensure safety. Recreationists need to closely watch safety matters pertaining to their equipment and behavior, whereas managers need to provide facilities and venues compliant with safety standards, as well as employ safety management mechanism to reduce recreation risk.

### 2.2. Safety climate

A seminal paper on safety climate defined its subject as "shared employee perceptions about the relative importance of safe conduct in their occupational behavior" (Zohar, 1980, p. 96). It denotes the meaning employees attach to policies, procedures, and practices they experience and the behaviors being expected and rewarded (Reichers and Schneider, 1990; Schneider, 1975). According to Zohar and Hofmann (2012), safety climate perceptions differ from other organizational perceptions in that their purpose is to uncover the (implicit) order in the organizational environment as a means to better adapt or adjust to that environment. The purpose of measuring the safety climate is thus to clearly understand employees' overall perception of safety matters in their field of work, and to reflect the value placed by the organization on safety management.

Dimensions of safety climate are the major features or levels of safety climate (Glendon and Stanton, 2000). Several attempts have been made to construct the dimensions of safety climate. Seo et al. (2004) reviewed 16 studies published in refereed journals on the development of safety climate scales from 1980 to 2003. Among the nine emergent themes in safety climate identified, the following five constructs appear to constitute the core of a generic safety climate concept less affected by site specificities: management commitment to safety, supervisor safety support, co worker safety support, employee participation in safety-related decision making and activities, and safety competence level of employees.

In 2000, the Occupational Safety and Health Council (OSHC) began initiated a survey to measure the safety climate in Hong

Kong's construction and catering industries. A seven-factor structure defining the constructs of the safety climate was extracted: commitment and concern for occupational safety and health by organization and management, safety resources and their effectiveness, risk-taking behavior and perception of workplace risk, perception of safety rules and procedures, personal involvement in safety and health, safe working attitude and coworker influence, and safety promotion and communication (OSHC, 2008). Yeung and Chan (2012) later used the OSHC safety climate scale to measure safety perception among senior home employees.

In recent years, safety climate concepts have gained wider adoption in the public sector. This is seen, for example, in community road (Luria et al., 2014) and traffic safety climates (Gehlert et al., 2014; Girasek, 2013; Mader and Zick, 2014). Gehlert et al. (2014) measured the safety climate attitude of 1680 road users. The factor analysis and research results revealed a three-factor structure of traffic safety climate representing external affective demands, internal requirements, and functionality. Clearly safety climate is one of the conceptual tools applied to help users clearly understand the actual situation safety situation in their domain. It can also serve as a basis for administrators in safety management.

### 2.3. Recreation safety climate

Maslow (1954) believed that people have five basic needs: physiological, safety, belonging and love, esteem, and self-actualization. These needs are hierarchical: the lower level needs must be met before turning to the higher level needs. However, in satisfying higher level needs, the lower level needs remain and each level is interdependent. This also applies to the demands of recreation activities. Participants need to satisfy recreation safety needs before pursuing the higher level needs of sense of belonging and self-realization in recreation. Choosing a safe place and behavior is the most basic level and important factor in recreation demands.

Recreation activities are complexes formed of people, activities and places. In satisfying the need for recreation safety, people must consider the interaction among three constituents: recreationist, recreation activity, and recreation place. The interaction between the recreationist and activity is built on the person's demonstration of their knowledge, skill, equipment and experience in the activity. It also involves the person's engagement in their personal safety. Between recreationist and place, in terms of personal knowledge of the environmental qualities and facility condition of a place, the greater a person's familiarity with a place, the greater the safety of the individual when engaged in an activity. The interaction between activity and place is subject to environmental and resource conditions and is affected by the goodness of fit between the activity and place. The level of safety improves with the fit of the resource safety conditions of the place to the activity. The recreation manager plays the role of satisfying the safety needs for interaction among "recreationist, activity and place," as reflected in safety rules, safety facilities, safety environment and management responsibilities (Chen et al., 1997). This study therefore integrates the content of safety climate according to the stated recreation activity characteristics and defines RSC as "the shared perception of recreationists of the engagement in safety matters in a recreation environment when involved in an activity." This mainly indicates the degree of effort that a management unit invests in safety as perceived by a recreationist at a particular time, including: cognition of recreation safety values, safety attitude, and safety measures. The conceptual framework is described in Fig. 1.

Fig. 1 shows that the safety climates of recreation activities and places have regulatory and environmental dimensions. In terms of norms, a recreation manager must comply with related safety policies and laws and formulate safety rules for recreation activities so

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