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Environmentally responsible behavior of nature-based tourists: A review

Tsung Hung Lee [1*], Fen-Hauh Jan [2], Chung-Cheng Yang [3]

[1] *Graduate School of Leisure and Exercise Studies, National Yunlin University of Science & Technology, Taiwan*

[2] *Department of Tourism and Hospitality, Transworld University, Taiwan; Graduate Institute of Management, National Yunlin University of Science & Technology, Taiwan*

[3] *Department of Accounting, National Yunlin University of Science & Technology, Taiwan*

Abstract

This study assesses the conceptualization of environmentally responsible behavior and methods for measuring such behavior based on a review of previous studies. Four major scales for the extent to which an individual's behavior is responsible behavior are discussed. Various theoretical backgrounds and cultures provide diverse conceptualizations of environmentally responsible behavior. Both general and site-specific environmentally responsible behavior has been identified in the past studies. This study also discusses the precedents of environmentally responsible behavior and with a general overview; it provides insight into improving future research on this subject.

Keywords: Conceptualization, Environmentally responsible behavior, Environmental attitude, Nature-based tourist, Place attachment

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[*] Corresponding author. *E-mail address:* thlee@yuntech.edu.tw

1. Introduction

Global warming issues have been extensively discussed in recent years. The Intergovernmental Panel on Climate Change (IPCC) suggested that global warming and the rising sea temperature has caused the overall mass balance of Greenland and Antarctica to become approximately -205 and -100 GT per year, respectively, resulting in a 0.08 mm/year global sea level rise (IPCC, 2010). Moreover the IPCC has estimated that the global mean temperature will increase by 1.8°C to 4.0°C by the end of the twenty-first century (IPCC, 2010). Numerous scholars have focused on evaluating impact (Dawson et al., 2010; Dwyer et al., 2010), reducing impact (Scott et al., 2010; Worachananant et al., 2008), and increasing environmentally responsible behavior (ERB; Miller et al., 2010). They have attempted to assess how human activities have caused serious problems, and present solutions from diverse perspectives.

Tourism has been identified as having a critical environmental impact. The effects are related to the emissions of greenhouse gases that are associated with travel, accommodation, and recreational activities (Dwyer et al., 2010; Gössling and Schumacher, 2010). According to a survey by the United Nations World Tourism Organization, emission from tourism accounts for approximately 5% of global greenhouse gas emissions. These emissions will increase by 150% from 2005 to 2035 (UNWTO-UNEP-WMO, 2008). Moreover, the intentional and unintentional behaviors of tourists have caused environmental damage in many tourism destinations, such as by disturbing the ecosystem of tourism destination (Alessa et al., 2003; Ballantyne et al., 2011a,b; Chang, 2010; Chen, 2011; Kim et al., 2011; Pickering and Mount, 2010; Törn et al., 2009) and pollution (Logar, 2010; Teh and Cabanban, 2007). Tourism causes not only global warming but also the environmental or ecological degradation of a destination (Dawson et al., 2010). Consequently, reducing the impact of tourism on the environment and educating tourists in ERB have become important issues.

To mitigate environmental impacts, several studies of ERB have focused on promoting individual ERBs in different areas, such as environmental education (Ballantyne et al., 2005; Powell et al., 2011), environmental consumer behavior (Gatersleben et al., 2002; Luchs et al., 2010; Mainieri et al., 1997), recreation activities (Chen, 2011; Cottrell, 2003; Tarrant and Green, 1999; Thapa, 2010), and green hotel choice (Han et al., 2010; Park and Boo, 2010). Numerous studies have engaged in developing a scale for measuring general ERB (Kaiser, 1998; Kaiser and Wilson, 2004; Lee et al., in press; Smith-Sebasto and D'costa, 1995; Stern et al., 1999) with the ultimate goal of measuring an individual's ERB. Site-specific ERB has been measured in only one dimension (Alessa et al., 2003; Chang, 2010). Recently, Lee et al. (in press) have conceptualized and measured ERB from the perspective of community-based tourists.

Numerous gaps exist in the studies of the ERBs of nature-based tourist's ERB. First, the evolution of the concept of the nature-based tourist's ERB would help to provide a holistic perspective of the nature-based tourist's ERB. Second, self-report questionnaires raise the issue of the social desirability of the response and may not represent a tourist's actual behavior. However, the difference between self-reported and actual behavior has rarely been examined in the context of tourism. Finally, factors that affect a nature-based tourist's ERB must be elucidated to mitigate environmental impact and climate change. Consequently, in this

study, a longitudinal analysis of nature-based tourist's ERB is conduct to help researchers by allowing for a more sophisticated assessment of the current state of research.

2. Conceptualization of ERB

Scholars have adopted various terms to describe behavior that protects the environment. ERB has been defined as any action, individual or group that is directed toward the remediation of environmental issues/problems (Sivek and Hungerford, 1990). Axelrod and Lehman (1993) also defined environmentally concerned behavior as actions that support environmental preservation and/or conservation. Kaiser (1998) introduced ecological behavior based on the concept that was proposed by Axelrod and Lehman. Kollmuss and Agyeman (2002) defined pro-environmental behavior as that exhibited by an individual who engages in actions to minimize any negative impact on the natural and built world. Stern (2000) specified the environmental significance of behavior as the extent to which it changes the availability of material or energy from the environment or alters the structure and dynamics of ecosystems or the biosphere. Similarly, Meijers and Stapel (2011) proposed that an individual who seriously considers future consequences of his actions is more likely to behave sustainably and make sustainable choices. In this study, a tourist who exhibits ERB is defined as one who takes action to mitigate a negative environmental impact at home, work, or a tourism destination (Lee et al., in press).

Corporations are interested in wide range of ERBs. In particular, corporate social responsibility (CSR) and green marketing have attracted considerable interest (Vaaland et al., 2008). CSR activities can strengthen relationships between firms and stakeholders (Zhang, 2010). Green consumption has been widely discussed in relation to diverse consumer behaviors (Alwitt and Pitts, 1996; Kilbourne and Pickett, 2008; Mainieri et al., 1997; Ogle et al., 2004). Many studies have examined how to improve tourists' ERBs through recreational activities (Ballantyne et al., 2008; Duerden and Witt, 2010; Klöckner and Blöbaum, 2010; Lee and Moscardo, 2005; Luo and Deng, 2008). ERB is energetically debated in a wide range of tourism-related fields.

Many scholars have measured an individual's ERB on one dimension (Alessa et al., 2003; Beaumont, 2001; Becken, 2007; Chang, 2010; Chao and Lam, 2011; Han et al., 2010; Kim and Han, 2010; Lee, 2007; Park and Boo, 2010). Measurement items have been developed to help measure an individual's ERB at home, in the workplace, and at particular sites. However, few studies of the conceptualization of ERB have been performed. Table 1 presents the measures of the ERB by systematic approaches (Kaiser, 1998; Lee et al., in press; Smith-Sebasto and D'costa, 1995; Stern et al., 1999). Based on the concept of locus of control, Smith-Sebasto and D'costa (1995) developed a 28-item Likert scale with six constructs of education action, civil action, financial action, physical action, legal action, and persuasive action. In environmental education, the locus of control is important to increasing a student's ERB. The scale of Smith-Sebasto and D'costa gives environmental managers a guideline for assessing students' ERBs. However, the purpose of the scale was educational and use depends on student respondents. Kaiser (1998) developed a means of measuring ecological behavior, based on the findings of Fejer and Stroschein (1991), using a 40-item Rasch scale. The main contribution of Kaiser's scale was as a research instrument for identifying ecological behaviors.

However, his sample comprised members of a Swiss drivers' association, which may not fully represent the individual's general ERB. Moreover, Kaiser's scale was unidimensional and his conceptualization of ecological behavior remained undetermined.

Kaiser and Wilson (2004) defined ecological behavior as pro-social behavior, ecological garbage removal, water and power conservation, ecologically aware consumer behavior, garbage inhibition, voluntarily participating in nature protection activities, and the use of an ecological automobile. Based on value-brief-norm (VBN) theory, Stern et al. (1999) developed a means of measuring environmentally significant behavior. Their 17-item scale included three constructs (consumer behavior, environmental citizenship, and willingness to sacrifice). Stern et al.'s scale gives an attitude-behavior relationship, based on VBN theory. However, the framework of Stern et al. fails to include various environmental behaviors, such as those associated with education action, persuasive action, and legal action. The scales of Kaiser, Smith-Sebasto and D'costa, and Stern et al. were used herein to measure an individual's general ERB. None of these researchers elucidates a clear conceptualization of a tourist's site-specific ERB. Accordingly, Lee et al. (in press) developed a scale that is based on a tourist's ERB and the first conceptualization of site-specific ERB. Lee et al. stated that a tourist's ERBs include civil action, financial action, physical action, persuasive action, sustainable behavior, pro-environmental behavior, and environmentally friendly behavior. Their 24-item scale was the first conceptualization of a tourist's ERB. Unfortunately, all ERB scales depend on self-report questionnaires, which raised the issue of social desirability. Chao and Lam (2011) and Kaiser (1998) claimed that general ERB is not significantly affected by social desirability. However, the relationship between site-specific ERB and social desirability has never been examined. Accordingly, future study may focus on this issue.

Figure 1 compares constructs that are used in evaluating ERBs. Kaiser (1998), Lee et al. (in press), Smith-Sebasto and and D'costa (1995), and Stern et al. (1999) all included the constructs of financial action and civil action in ERB, who found that the support of individuals for environmental protection by monetary and non-monetary means is very important to Western and Eastern nations. Lee et al. and Smith-Sebasto and D'costa indicated that an individual who makes an effort to protect/conserve the natural environment helps to mitigate environmental impact. Lee et al. and Smith-Sebasto and D'costa claimed that persuasive action involves one individual's motivating another to engage in environmental protection, which is an effective way to make more people pay attention to environmental issues and reduce environmental degradation. Lee et al. (in press) proposed the consideration of sustainable behavior, pro-environmental behavior, and environmentally friendly behavior to measure a tourist's ERB at a tourism destination. These three behaviors include reducing the tourist's environmentally detrimental behaviors, protecting the local environment, refraining from disturbing the ecosystem, and respecting local culture (Lee et al., in press). With respect to education, Smith-Sebasto and D'costa included education action and legal action in general ERB. They suggested that ERB should also included cultivating environmental knowledge and reporting violations of environmental laws. Lee et al. did not include the construct of legal action because Asian people may be unwilling to report another's damaging behavior. This fact shows that cultural factors may influence individual ERB (Lee et al., in press).

3. Precedents for ERB

Based on the theory of reasoned action (TRA; Fishbein and Ajzen, 1975) and the theory of planned behavior (TPB; Ajzen, 1991), attitude significantly affects an individual's behavior. According to TRA/TPB, attitude is an important precedent variable of behavior. Attitude toward a behavior, subjective norms with respect to a behavior, and perceived control over a behavior are used to predict behavioral intentions, and these intentions can explain the variance of the behaviors.

The attitude-behavior model as a theoretical basis for studying the relationship between environmental attitude and ERB has received considerable attention in the context of tourism (Han et al., 2011; Han et al., 2010; Hsu and Huang, 2012; Kim and Han, 2010; Lee, 2007; Quintal et al., 2010) and environmental education (Kaiser et al., 1999; Milfont and Duckitt, 2010). Previous studies have suggested that environmental attitude is a crucial factors in determining an individual's environmental behavior, and much attention has since been drawn to the attitude-behavior model (Beaumont, 2001; Brown et al., 2010; Chao and Lam, 2011; Chen, 2011; Collado et al., 2013; Cottrell, 2003; Duerden and Witt, 2010; Kim et al., 2011; Kim and Han, 2010; Han et al., 2010; Hines et al., 1987; Lee, 2007; Lee and Moscardo, 2005; Orams, 1997; Park and Boo, 2010; Scott and Willits, 1994; Tarrant and Green, 1999; Thapa, 2010; Vaske and Donnelly, 1999). Based on TPB/TRA, environmental attitude positively affects an individual's ERB (Cottrell, 2003; Duerden and Witt, 2010; Fielding et al., 2008; Han et al., 2010; Kim et al., 2011; Kim and Han, 2010; Vaske and Donnelly, 1999).

However, several studies have suggested the addition of another precedent variable is required to explain the attitude-behavior relationship (Collado et al., 2013; Cottrell, 2003; Kim and Han, 2010; Han et al., 2010; Han et al., 2010), such as recreation experience (Ballantyne et al., 2011a, b; Beaumont, 2001; Collado et al., 2013; Duerden and Witt, 2010; Orams, 1997), place attachment (Halpenny, 2010; Hinds and Sparks, 2008; Kaltenborn, 1998; Lee, 2011; Stedman, 2002; Tsaur and Sun, 2009; Vaske and Kobrin, 2001), and conservation commitment (Cottrell, 2003; Davis et al., 2009; Davis et al., 2011; Goldman et al., 2006; Guillou and Moser, 2006; Hines et al., 1986/87; Lee, 2011).

Similarly, some scholars have introduced environmental sensitivity to represent environmental attitude. Environmental sensitivity represents an individual's empathy for the environment (Hungerford and Volk, 1990). Chawla (1998) suggested that environmental sensitivity refers to people's interest in learning about the environment, concern for the environment, and tendency to act to protect the environment. In environmental education, environmental sensitivity is one of major predictors of ERB (Sia et al., 1986).

Most previous studies that have discussed environmental sensitivity have focused on predicting ERB (Chen and Yeh, 2002; Hungerford and Volk, 1990; Sivek and Hungerford, 1990; Sia et al., 1986) and exploring and conceptualizing environmental sensitivity (Chawla, 1998; Metzger and McEwen, 1999). Environmental sensitivity has includes affective and cognitive dimensions (Metzger and McEwen, 1999). People should have environmental knowledge (cognitive) to develop an awareness of their surroundings and develop emotions toward the environment (Metzger and McEwen, 1999).

Chawla (1988) indicated that environmental sensitivity was formed by significant life experiences. These experiences are regarded as exchanges between the external and internal environments. The external environment includes the quality of one's physical settings and social mediators of the meanings of physical world. A person's internal environment comprised his/her needs, abilities, emotions, and interests (Chawla, 1988). These experiences develop empathic perspectives toward the environment (Chawla, 1988; Sia et al., 1986).

Promoting ERB is regarded as the ultimate goal of environmental education. Sia et al. (1986) and Chen and Yeh (2002) have suggested that sensitivity to the environment is the best predictor of ERB. Environmental sensitivity refers to a person's understanding of environmental problems, developed through various experiences, such as nature-based recreation activities (Hungerford and Volk, 1990; Tanner, 1980). Consequently, people with greater environmental sensitivity tend to engage in more ERB.

In the context of environmental protection, place attachment is a crucial predictor of people's ERBs (Halpenny, 2010; Hinds and Sparks, 2008; Kaltenborn, 1998; Lee, 2011; Stedman, 2002; Tsaur and Sun, 2009; Vaske and Kobrin, 2001). Previous studies have indicated that place attachment has a considerably positive impact on general ERB (Halpenny, 2010; Hinds and Sparks, 2008; Lee, 2011; Tsaur and Sun, 2009) and site-specific ERB (Halpenny, 2010). The studies cited herein have indicated that tourists develop place attachment when visiting natural destinations, such as national parks, protection-based destination, and wetlands. The formation of emotional and cognitive connections to these specific places causes tourists to improve their site-specific ERB (Halpenny, 2010) and general ERB (Hinds and Sparks, 2008; Lee, 2011; Tsaur and Sun, 2009). Vaske and Kobrin (2001) examined the relationship between place identity and place dependence. Place dependence has a direct impact on place identity, and place identity positively influences general ERB. Related place identity mediates the relationship between place dependence and general ERB. However, relatively few studies have been conducted to examine the relationship between place attachment and on-site specific ERB. Consequently, the relationship among place attachment, general ERB and on-site specific ERB warrants examination.

Experience means individual thoughts, emotions, feelings, knowledge, and skills, that are formed by participation in an activity (Tynan and McKechnie, 2009). Experience occurs when an individual searches for a product/service or when he/she consumes a product/service (Brakus et al., 2009; Nowak and Newton, 2008; Tynan and McKechnie, 2009; Yuan et al., 2008). Past-experience occurs thereafter (Tynan and McKechnie, 2009). Experience includes sensory impression, emotional affinity, behavior (Ballantyne et al., 2011b; Brakus et al., 2009; Tynan and McKechnie, 2009), intellectual sense (Brakus et al., 2009), thinking (Ballantyne et al., 2011b; Schmitt, 1999; Tynan and McKechnie, 2009), relation (Schmitt, 1999; Tynan and McKechnie, 2009), and reflective response (Ballantyne et al., 2011b).

Recreation experience has attracted considerable attention in the context of tourism, with a view to increasing the intimacy of a place (Trauer and Ryan, 2005), increasing tourists' satisfaction/loyalty to a destination (Bigné et al., 2005; Bigné et al., 2008; Hosany and Witham, 2010; and Chang, 2012), balancing recreational experience with environmental management (Markwell, 2001; Múgica and Vicente, 1995; Powell et al., 2009), developing a scale for measuring touristic experiences (Kim et al., 2012; Hosany and

Gilbert, 2010; Oh et al., 2007), and increasing tourists' ERBs (Ballantyne et al., 2009; Ballantyne et al., 2011a, b).

Recreational activities at a tourism destination have a significant negative impact on the environment at that destination. Advocating ERB by tourists is the most important means of mitigating this effect. The recreational experience of nature-based tourism has an educational role in the development of sustainable tourism. Millar and Millar (1996) investigated the effects of direct and indirect experience on forming customers' attitudes and behaviors. Direct experience was found to predict a customer's behavior better than indirect experience. Similarly, Duerden and Witt (2010) examined the effect of direct and indirect experience of the natural environment on the environmental attitudes and behaviors of students. Ballantyne et al. (2011b) suggested that experiences of nature-based tourists increases their sympathy for the natural environment and animals, result in an increase in knowledge of conservation, environmental awareness and ERB (Ballantyne et al., 2011a, b). Although their analytical results did not support the model they proposed, their findings did support the relationship between recreation experience and ERB (Ballantyne et al., 2011a, b). To examine the relationship between recreational experience and ERB, developing a reliable and valid scale of environmental behavior is very important.

4. Conclusion

Recent increases in concern about the effects of global warming and climate change have manifested in different areas. Tourism has been regarded as having a critical environmental impact. Accordingly, assessing tourists' ERB and educating them in how to protect the natural environment is very important. Previous studies have developed conceptualization of, and ways to measure, ERB based on various theoretical approaches. For the purposes of environmental education, Smith-Sebasto and D'costa (1995) stated that ERB includes civil action, education action, financial action, physical action, legal action, and persuasive action. Stern et al. (1999) identified environmentally significant behavior as either civil action or financial action. Kaiser (1998) proposed a definition of ecological behavior that included personal behavior but his model didn't consider education action, legal action, and persuasive action. Lee et al. (in press) introduced site-specific ERB, including sustainable behavior, pro-environmental behavior, and environmentally friendly behavior. For cultural factors, education action and legal action may not be relevant to tourists in Eastern nations (Lee et al., in press).

Despite this study's potential contribution to the literature and to research in sustainable tourism, it has several limitations. First, whereas social desirability has been examined in the content of general ERB (Chao and Lam, 2011; Kaiser, 1998), it has not been examined in context of tourism. An effective way to observe the effect of a tourist's behavior on a specific tourism destination is needed. Comparing the self-reported with actual behavior is helpful to determining the effect of social desirability on the measurement of a tourist's site-specific ERB. Next, the relationship between ERB and sustainable tourism has not yet been examined. Fostering a tourist's ERB at a nature-based destination mitigates environmental degradation; however it that

may not guarantee sustainable tourism. Consequently, factors that influence the development of sustainable tourism and how ERB influences the development of sustainable tourism should be examined.

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Table 1. The comparison of conceptualization of ERB

Author(s)	**Smith-Sebasto & D'costa (1995)**	**Kaiser (1998)**	**Stern et al. (1999)**	**Lee et al. (in press)**
Terminology	ERB	Ecological behavior	Environmentally significant behavior	ERB
Coverage	General ERB	General ERB	General ERB	General and Site-specific ERB
Dimension	Multi-dimension	Unidimension	Multi-dimension	Multi-dimension
Conceptualization	Education action	Prosocial behavior	Consumer behavior	Civil action
	Civil action	Ecological garbage removal	Willingness to sacrifice	Financial action
	Financial action	Water and power conservation	Environmental citizenship	Physical action
	Physical action	Ecologicallyaware consumer behavior		Persuasive action
	Legal action	Garbage inhibition		Sustainable behavior
	Persuasive action	Volunteering in nature		Pro-environmental behavior
		protection activities		Environmentally friendly behavior
		Ecological automobile use		
Respondent	U.S. university	Swiss drivers	U.S. citizen	Taiwanese community-tourists
	students			
Sample size	Pilot study: 828	445	420	Study 2: 490
	Step 5: 853			Study 3: 403 (Taimo), 343 (Sumagus)
Scale type	Likert type	Rasch scaling	Likert type	Likert type
Data collection	Students enrolled	N/A	Random sampling	Systematic random sampling
	in specific classes			
Survey period	N/A	November, 1994	June, 1994	Study 2: Sept ~ Dec, 2011
				Study 3: Jan~March, 2012
Statistical methods	Factor analysis,	Criterion-related validity	Multiple regression	EFA, CFA, Cross-validation
	Regression analysis	ANOVA		
Reliability	0.94	0.74	0.72,0.78, 0.77	Study 2: 0.90, 0.92 ,
Convergent validity	yes	Criterion-related validity	yes	AVE>0.5
Discriminant validity	yes	yes	ANOVA	intercorrelations<0.85
Cross-validation validity	no	no	no	Cross-validation

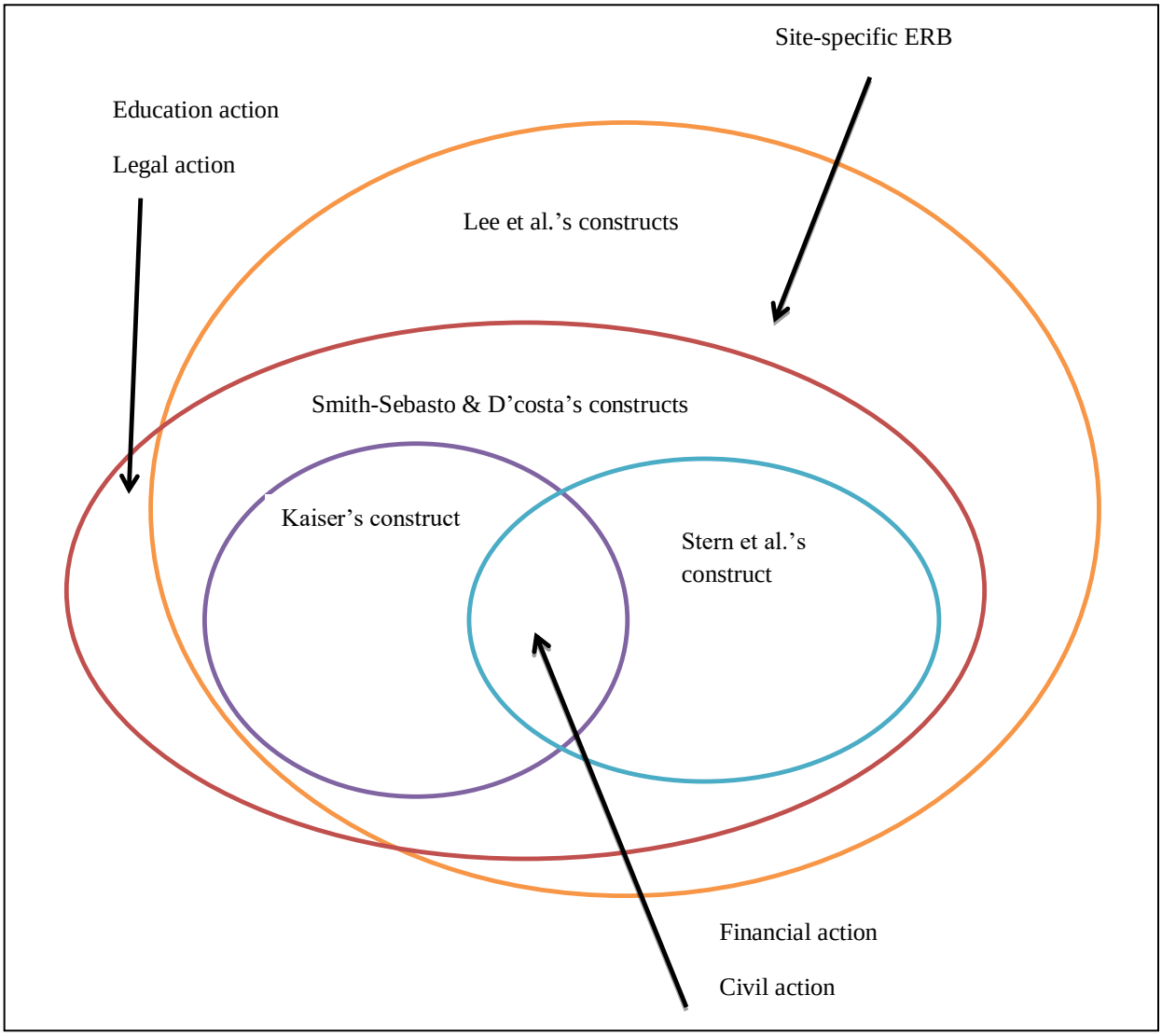

Figure 1. The comparison of constructs of these four studies