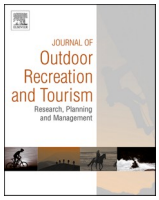
Journal of Outdoor Recreation and Tourism 52 (2025) 100964

Contents lists available at ScienceDirect

Journal of Outdoor Recreation and Tourism

journal homepage: www.elsevier.com/locate/jort



Research Article

Inclusive pathways to understand differential forest recreation participation among ethnoracial minorities in the United States

Ian E. Munanura [a,*], Jeffrey D. Kline [b]

[a] Department of Forest Ecosystems and Society, College of Forestry, Oregon State University, Corvallis, OR, USA
[b] USDA Forest Service, Pacific Northwest Research Station, Corvallis, OR, USA

ARTICLE INFO

Keywords:
Public forests
Barriers and constraints
Cognitive appraisal
Intention
And forest recreation behavior

ABSTRACT

Public forests offer a variety of outdoor recreation activities that enhance participants' well-being, yet participation remains low among ethnic minorities in the United States. These groups face multiple barriers, including limited information, transportation and financial constraints, safety concerns, fear of discrimination, and wildlife-related anxieties, which are often shaped by broader structural and cultural contexts. While understanding of these barriers is improving, gaps persist in conceptualizing the cognitive, social, and structural factors that influence forest recreation behavior. This review synthesizes literature on outdoor recreation constraints, emphasizing barriers unique to ethnic minorities and overlooked social influences. Drawing from the Theory of Planned Behavior, Social Cognitive Theory, Cognitive Appraisal Theory, Theory of Outdoor Recreation Constraints, and Social Complexity Theory, we propose an inclusive, process-oriented conceptual model. The framework identifies socio-psychological factors shaping forest recreation behavior, providing a foundation for future empirical studies and informing equitable, diverse, and inclusive public forest recreation policies.

1. Introduction

Access to nature and forest recreation is increasingly recognized for its crucial health and well-being benefits. Public land management agencies in North America, including the USDA Forest Service, strive to provide safe, high-quality recreational opportunities in U.S. National Forests, acknowledging the health benefits these natural spaces offer through physical activity and exposure to nature (Cerveny et al., 2023). Established in 1905, U.S. National Forests now attract over 41 million visitors annually, contributing significantly to public health (Kline et al., 2011; National Visitor Use Monitoring, 2023). However, traditionally marginalized groups—including Black and Latino, Asian, Native Hawaiian or Pacific Islander, and Native American communities—are significantly underrepresented among national forest visitors, indicating a gap in access to the health and well-being benefits these environments provide (e.g., Flores et al., 2018). This issue is not unique to forest recreation; research continues to document the underrepresentation of ethnic minorities in outdoor recreation spaces as a systemic issue (Rutter et al., 2021; Stodolska et al., 2020). For example, Rutter et al. (2021) illustrate that the bird-watching community overwhelmingly underrepresents ethnic minorities.

The underrepresentation of ethnic minorities in outdoor recreation is particularly concerning given the increasing diversity of the U.S. population; racial and ethnic minorities now comprise approximately 39 % of the population, with mixed-race, Asian, and Hispanic populations growing rapidly (U.S. Census Bureau, 2020; Colby & Ortman, 2014, pp. 1–13). Despite accounting for about 36 % of residents within 50 miles of national forests, those from ethnic minority backgrounds represent only 5 % of forest visitors, underscoring a significant disparity in recreation access (Flores et al., 2018). Limited access to these health-promoting environments is problematic, especially as chronic health conditions, such as heart disease, disproportionately affect certain minority groups (CDC, 2022; Graham, 2015).

In response, President Biden's 2021 Executive Order 13985 mandated that federal agencies reduce barriers for minorities and underserved communities, aiming to enhance equitable access to federal resources (White House, 2021). Aligned with this directive, the USDA Forest Service developed an Equity Action Plan to address outdoor recreation access for ethnoracial minorities and vulnerable groups (Forest Service, 2022, p. 47). The plan emphasized research to identify barriers to forest visitation and strategies for fostering more inclusive access, reflecting Wagar's (1964) assertion that equitable access to

* Corresponding author.
E-mail address: ian.munanura@oregonstate.edu (I.E. Munanura).

https://doi.org/10.1016/j.jort.2025.100964
Received 21 November 2024; Received in revised form 16 September 2025; Accepted 21 September 2025
Available online 25 September 2025

outdoor recreation is a fundamental American value.

In summary, ethnoracial minorities face significant barriers to forest recreation, including limited information, transportation challenges, financial constraints, safety concerns, fear of discrimination, and anxieties about wildlife encounters (Bustam et al., 2011; Johnson & Cordell, 2001; Parker & Green, 2016; Schwartz & Corkery, 2011; Stodolska et al., 2020). Although research has advanced understanding of these constraints, critical questions remain: Which factors most strongly shape minority participation in public forests? How do these barriers arise and interact? And what broader social conditions perpetuate these disparities? Addressing these issues requires a socio-psychological framework that situates individual experiences within structural and cultural contexts.

In this paper, we review outdoor recreation barriers from ethnoracial minority perspectives and integrates the Theory of Planned Behavior with complementary insights from Social Cognitive Theory, Cognitive Appraisal Theory, the Theory of Outdoor Recreation Constraints, Social Complexity Theory, Marginality Theory, Ethnicity Theory, and Racial Discrimination Theory. Our aim is to propose a comprehensive framework for understanding forest recreation decision-making among ethnoracial minorities in the United States, thereby fostering more nuanced scholarship and advancing equitable recreation policy and practice.

2. A review of outdoor recreation barriers for ethnoracial minorities

Outdoor recreation research has long documented barriers that constrain participation, including transportation costs, time limitations, lack of information, and safety concerns (Jackson & Scott, 2005; Metcalf et al., 2013; Rushing et al., 2019; Shores et al., 2007). Early studies highlighted time pressures, financial constraints, crowding, and lack of companionship, particularly for marginalized groups such as low-income families, the elderly, and single parents (Searle & Jackson, 1985; Washburne, 1978).

Over the past three decades, scholarship has increasingly focused on the barriers faced by ethnoracial minorities, revealing them to be more complex and multifaceted than those experienced by the general population (Bustam et al., 2011; Flores et al., 2018; Stodolska et al., 2020). Individual perceptions of constraints are shaped by situational, structural, social, and cultural contexts (Little, 2007). Socioeconomic inequities and unequal access to public services further exacerbate these barriers for minority populations. Studies that fail to account for these complexities risk propagating what More (2002) describes as elitism in recreation research and policy, privileging dominant groups at the expense of low-income and minority communities. Indeed, outdoor recreation policies in North America often reflect the interests of socially advantaged groups (More, 2002). For minority populations, time pressures, financial limitations, safety concerns, language barriers, and transportation challenges are especially pronounced (Ghimire et al., 2014), reflecting broader patterns of social inequality rooted in U.S. history (More, 2002).

Empirical studies document how these barriers manifest across groups. Financial and time constraints, along with transportation costs, are particularly restrictive for immigrant groups, African Americans, and Hispanics (Bustam et al., 2011; Metcalf et al., 2013). In forest recreation, permit fees, long travel distances, and competing activity preferences further limit participation (Parker & Green, 2016; Rutter et al., 2021). Information gaps also play a role, with many African American, Asian, and Hispanic communities reporting limited awareness of recreation opportunities (Parker & Green, 2016; Stodolska et al., 2020). Language barriers disproportionately affect newly arrived Asian and Latina immigrants (Stodolska et al., 2020), while undocumented Hispanic immigrants may avoid outdoor spaces due to fear of encounters with government authorities (Rushing et al., 2019; Stodolska et al., 2020). Perceptions of racial discrimination further deter participation among Black, Asian, and Muslim individuals, who may fear harassment or profiling in outdoor settings (Metcalf et al., 2013; Parker & Green, 2016; Stodolska et al., 2020). Anticipated discrimination, based on past experiences with other visitors or unequal treatment by staff, also shapes recreation preferences (Blahna & Black, 1993; Shores et al., 2007). Additionally, fear of wildlife, especially snakes, bears, and insects, is more commonly reported among Black individuals (Johnson et al., 2001; Shores et al., 2007).

Overall, ethnoracial minorities encounter a combination of structural, socioeconomic, and cultural barriers that compound the costs of participation. High fees, transportation challenges, and equipment expenses disproportionately affect socioeconomically underserved communities (Parker & Green, 2016; Shores et al., 2007; Stodolska et al., 2020). For some individuals or communities, these socioeconomic disadvantages are historically linked to racial discrimination (Rushing et al., 2019; Schwartz & Corkery, 2011; Shinew et al., 2006). Cultural norms further shape recreation practices, as preferences vary across and within minority groups (Metcalf et al., 2013). For example, Hispanics often favor group-based recreation, highlighting distinct cultural orientations toward leisure (Flores & Sanchez, 2020).

Collectively, this body of research demonstrates that outdoor recreation barriers for ethnoracial minorities extend beyond individual circumstances to reflect the intersection of structural inequality, systemic discrimination, and cultural difference. Addressing these complexities requires an integrated, theory-driven framework capable of explaining how constraints emerge and influence forest recreation behavior. Accordingly, this review draws on the Theory of Planned Behavior, Social Cognitive Theory, Cognitive Appraisal Theory, the Theory of Outdoor Recreation Constraints, Social Complexity Theory, Marginality Theory, Ethnicity Theory, and Racial Discrimination Theory to identify and integrate factors likely to shape forest recreation participation among ethnoracial minorities.

3. Theories framing the outdoor recreation behavior

3.1. Theory of planned behavior

According to Ajzen and Driver (1992), "actions of appreciable personal or social significance" such as outdoor recreation represent human behavior. As a concept of human behavior, forest recreation is effectively explained by social psychological theories, particularly the Theory of Planned Behavior (Ajzen, 1985; Iso-Ahola, 1980). The Theory of Planned Behavior (TPB) is widely used to predict and understand human behavior. It posits that behavioral intention is the strongest predictor of actual behavior, influenced by three key determinants: attitude, subjective norm, and perceived behavioral control (Ajzen, 1991; Conner, 2020). Behavioral intention reflects the motivation to act. Attitudes are personal evaluations of behavior; subjective norms refer to the perceived social pressure to engage in or refrain from the behavior; and perceived behavioral control indicates the perceived ease or difficulty of performing the behavior, serving as a proxy for actual control.

Intentions are also indirectly shaped by behavioral, normative, and control beliefs. A person's behavioral beliefs represent expected outcomes of behavior and are linked to attitudes (Conner & Armitage, 1998). Control factors encompass elements that can either facilitate or hinder performance (Conner & Armitage, 1998). Normative beliefs capture perceptions regarding preferences of important people in one's life about whether to engage in outdoor recreation (Conner & Armitage, 1998). Control factors include internal aspects, such as intrapersonal constraints (e.g., lack of information and skills necessary for engaging in recreational activities), as well as external factors, including interpersonal and structural constraints (e.g., lack of companions and available recreation opportunities) (Conner & Armitage, 1998).

In outdoor recreation studies, TPB is widely used to explain outdoor recreation behavior and its determinants (Shrestha et al., 2012). As illustrated in Fig. 1, the intention to recreate in forests is closely linked to the behavior of recreating in these environments; thus, this intention is a

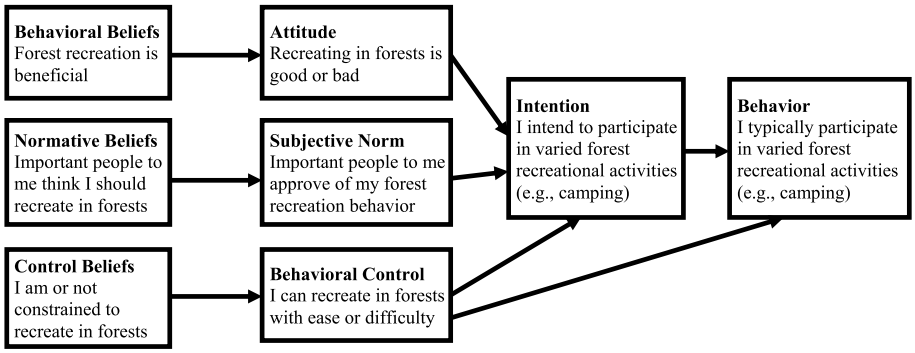


Fig. 1. The theory of planned behavior perspective of forest recreation.

crucial factor in understanding forest recreation behavior. According to TPB, the intention to recreate in public forests is influenced by attitudes toward public forest recreation and perceived social pressure to participate in such activities (Ajzen & Driver, 1992). Both attitudes and social pressure (i.e., social norms) represent a motivational process that predicts the intention and behavior of recreating in public forests. Additionally, non-motivational factors, such as perceived control over the ability to recreate in forests, also play a role in both the intention and behavior of forest recreation (Ajzen, 1991).

3.1.1. Critical reflections on TBP and approaches of improvement

Despite its extensive application, the TPB is criticized for its limited predictive validity, particularly in recreational contexts (Ajzen, 2011). Two key critiques are relevant to this paper. First, Perceived Behavioral Control remains conceptually ambiguous (Trafimow et al., 2002), with studies revealing operational challenges, especially regarding measurement reliability (Sparks et al., 1997; Terry & O'Leary, 1995). Some argue that Perceived Behavioral Control should reflect only external constraints (Terry & O'Leary, 1995), while others support Ajzen's (1991) assertion that it encompasses both internal (e.g., skills, knowledge) and external constraining factors (e.g., financial, legal barriers) that affect behavior (Ajzen, 2020). While control beliefs in TPB are conceptualized to reflect perceived constraints to engage in a given behavior, which are influenced by past experiences (Ajzen, 1991), most TPB models in outdoor recreation studies rarely integrate recreational constraints (e.g., Shrestha & Burns, 2016; Stodolska & Alexandris, 2004). To address this gap, we incorporate Bandura's Social Cognitive Theory (SCT), proposing an alternative perspective on Perceived Behavioral Control that may better elucidate its role in explaining forest recreation behavior.

Second, TPB posits that attitudes toward forest recreation stem from beliefs about recreation's benefits or costs, with favorable attitudes developing when positive outcomes are anticipated (Ajzen, 1991). However, Cognitive Appraisal Theory (CAT) suggests that cost-benefit judgments are just one component of an event's appraisal process that encompasses primary and secondary appraisals, alongside underlying psychosocial factors (Lazarus & Folkman, 1984). Primary appraisals evaluate whether recreation is relevant and beneficial to one's well-being or potentially threatening, while secondary appraisals assess the resources available for managing any perceived stress related to recreation. These appraisals are shaped by interactions between the person and the environment, which the TPB's focus on a simplistic cost-benefit analysis does not fully address. Millham and Kellogg (1980) suggests that integrating the TPB with complementary theories could remedy these limitations. Therefore, we draw on CAT to enhance understanding of the motivational processes underlying the TPB, advocating for a more comprehensive perspective on outdoor recreation behavior. Additionally, we incorporate social complexity theory to investigate how lived experiences may affect forest recreation behavior.

3.2. Theories improving TPB's framing of outdoor recreation behavior

3.2.1. Social cognitive theory

Integrating SCT with TPB helps to reframe the concepts of behavioral beliefs and perceived behavioral control in TPB to address one of the gaps in the TPB introduced earlier. SCT focuses on self-efficacy, outcome expectations, and personal goal-setting(Bandura, 1986). It asserts that individuals are active agents who influence their behavior and life circumstances, rather than being passive recipients of environmental factors (Bandura, 1986; 2006). Effective functioning relies on predicting the effects of actions and regulating behavior accordingly. This involves self-awareness, reflection, and adaptive self-regulation, with self-efficacy playing a critical role. Self-efficacy refers to belief in one's ability to successfully execute behaviors (Stajkovic & Sergent, 2019), impacting motivation, effort, persistence, and achievement (Bandura, 1992; Schunk & Usher, 2012).

Both SCT and the TPB models incorporate behavioral outcome expectations. In TPB, these expectations align with behavioral beliefs about the consequences of behavior, shaping attitudes (Ajzen, 1991). Outcome expectations in SCT refer to the anticipated material, social, or individual benefits of forest recreation behavior (Lawler et al., 1973). Arguably, people engage in forest recreation, such as hiking or camping, to fulfill personal goals and gain psychological, sociocultural, economic, and environmental benefits (Driver, 1992; Manning, 1999, 2007). This perspective aligns with the expectancy theorist's argument that individuals participate in outdoor recreation activities in specific settings to achieve known, expected, and valued psychological outcomes and benefits (Manning, 2007). For instance, people seek to hike or camp in remote forest areas to obtain a solitude experience that they expect will enhance their psychological well-being. According to Driver (1992), forest recreation benefits are diverse and encompass psychological benefits (e.g., mental well-being, improved quality of life perception, personal growth, and satisfaction), sociocultural benefits (e.g., community identity and satisfaction), economic benefits (e.g., increased productivity), and environmental benefits (e.g., fostering environmental stewardship and preservation). According to social cognitive theory (Bandura, 1986), as illustrated in Fig. 2, such forest recreation outcome expectations potentially have a direct influence on recreation intention and behavior, as well as on the formation of both favorable and unfavorable attitudes toward recreation, as originally conceptualized in the theory of planned behavior.

The TPB and SCT models also consider self-efficacy as a factor shaping behavioral intentions. In SCT, self-efficacy reflects judgments about an individual's capacity to mobilize resources to attain desired outcomes (Dzewaltowski et al., 1990), while the TPB aligns this concept with perceived behavioral controls (Ajzen, 1991). However, studies suggest that self-efficacy and perceived control are distinct, with self-efficacy exerting a more substantial influence on behavior (Sparks et al., 1997; Terry & O'Leary, 1995). While self-efficacy accounts for how certain, confident, and likely an individual is to participate in forest

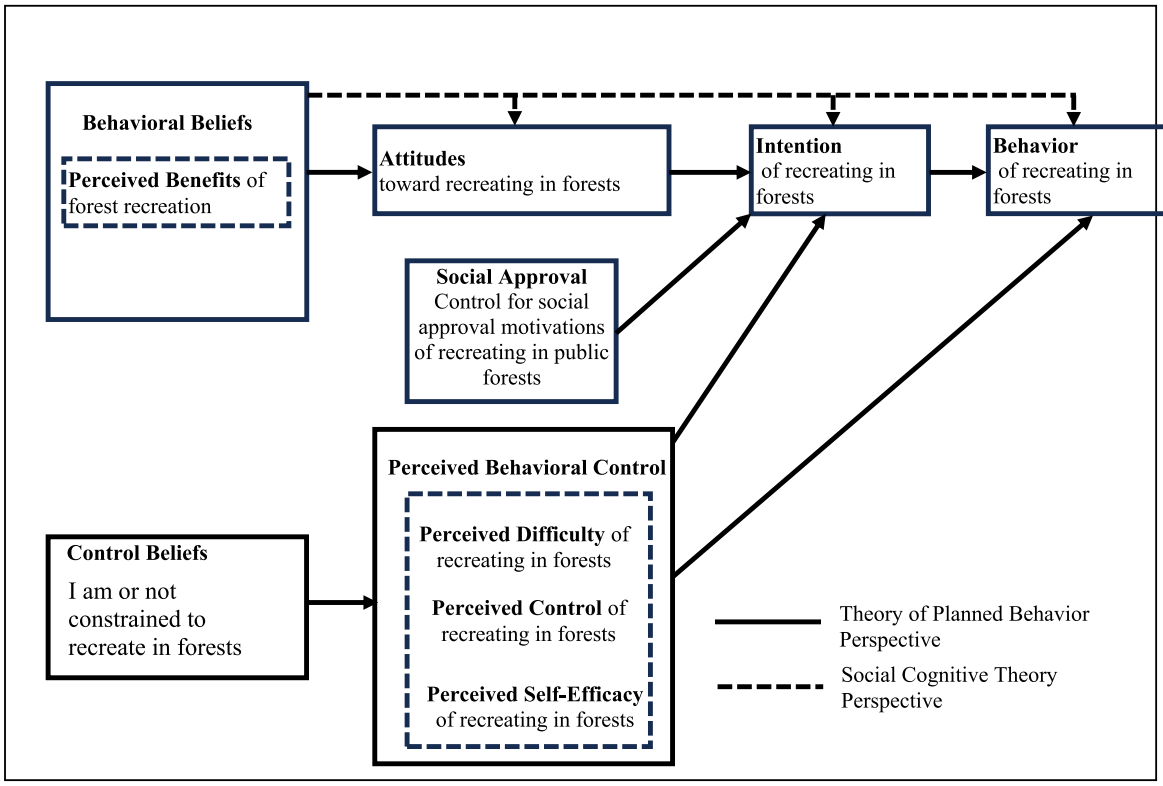


Fig. 2. Integrating the theory of planned behavior and the social cognitive theory.

recreation, perceived difficulty accounts for the ease or difficulty of that participation, and perceived control accounts for how people or events are likely to interfere with that participation. Some have also argued that perceived control may be an antecedent of self-efficacy (e.g., Wood & Bandura, 1989).

While TPB views Perceived Behavioral Control as encompassing both internal (e.g., skills) and external (e.g., time) factors, Wood and Bandura (1989) propose characterizing control according to its personal and external dimensions. This alternative characterization addresses conceptual and measurement issues that have occasionally arisen with Perceived Behavioral Control within the TPB (e.g., Sparks et al., 1997; Terry & O'Leary, 1995). Specifically, Perceived Behavioral Control relates to the extent of influence individuals exert over their behavior, whereas perceived difficulty pertains to how straightforward or complex a specific behavior is to execute. Research indicates that both factors can independently affect behavior, with perceived difficulty often exerting more effect (Trafimow et al., 2002).

As illustrated in Fig. 2, underlying PBC factors of self-efficacy, perceived difficulty, and perceived control are beliefs regarding internal and external constraints that limit behavior (Trafimow et al., 2002). In outdoor recreation, these constraints encompass intrapersonal, interpersonal, and structural factors (Crawford & Godbey, 1987). Intrapersonal constraints indicate internal challenges, while interpersonal and structural constraints denote external factors hindering forest recreation.

3.2.2. *Cognitive appraisal theory*

Integrating the CAT with TPB broadens the understanding of the "perceived benefits of forest recreation" concept shown to influence attitudes in Fig. 2 above by framing it as an appraisal process encompassing multiple factors. According to Lazarus and Folkman (1984), CAT is an evaluation process that determines the importance of an event, such as forest recreation, to one's well-being. CAT suggests that a person's behavior is influenced by their feelings about that behavior and the emotional experiences (Lazarus, 1991; Watson & Spence, 2007). Emotional experience is a mental state resulting from assessing behavioral relevance (Lazarus, 1991). Lazarus (1982) indicates that emotional experience stems from a complex cognitive appraisal of events' significance for well-being. For instance, a positive emotional response to forest recreation arises from the consideration of its benefits or harms to a person's health. Therefore, the process of evaluating events and the resulting behaviors is known as the cognitive appraisal process (Lazarus, 1991; Watson & Spence, 2007). CAT outlines two levels of cognitive appraisal: primary and secondary (Lazarus & Folkman, 1984). Smith and Lazarus (1990) state that primary appraisal assesses how an experience affects one's well-being and involves the initial consideration of what is at stake (Lazarus, 1991). Secondary appraisal pertains to how a person chooses to manage their feelings based on the nature and intensity of emotions arising from the primary appraisal (Smith & Lazarus, 1990). A positive emotional response to forest recreation encourages individuals to pursue it to maintain its benefits (Watson & Spence, 2007). Thus, secondary appraisal serves as an adaptive behavioral response aimed at preserving the well-being benefits of forest recreation while mitigating potential harms (Watson & Spence, 2007).

In CAT, as shown in Fig. 3, the primary appraisal of an event leads to three possible responses: irrelevant (i.e., there is nothing to be gained or lost in forest recreation), positive (i.e., forest recreation is beneficial), or stressful (i.e., forest recreation is potentially harmful). Each potential response produces a corresponding attitude toward forest recreation (Lazarus, 2001). Secondary appraisal involves evaluating one's ability to cope with potential stressors, such as threats or risks encountered during recreation (Lazarus & Folkman, 1984). Incorporating such stressors allows for addressing recreation participants' safety concerns or fears about discrimination. In this process, individuals consider available options to mitigate risks, which plays a central role in determining whether they pursue recreational activities despite potential threats.

Lazarus and Smith (1988) describe primary appraisal as considering two conditions: motivational relevance (i.e., whether forest recreation aligns with an individual's well-being goals) and motivational congruence (i.e., whether the activity is likely to meet expectations based on

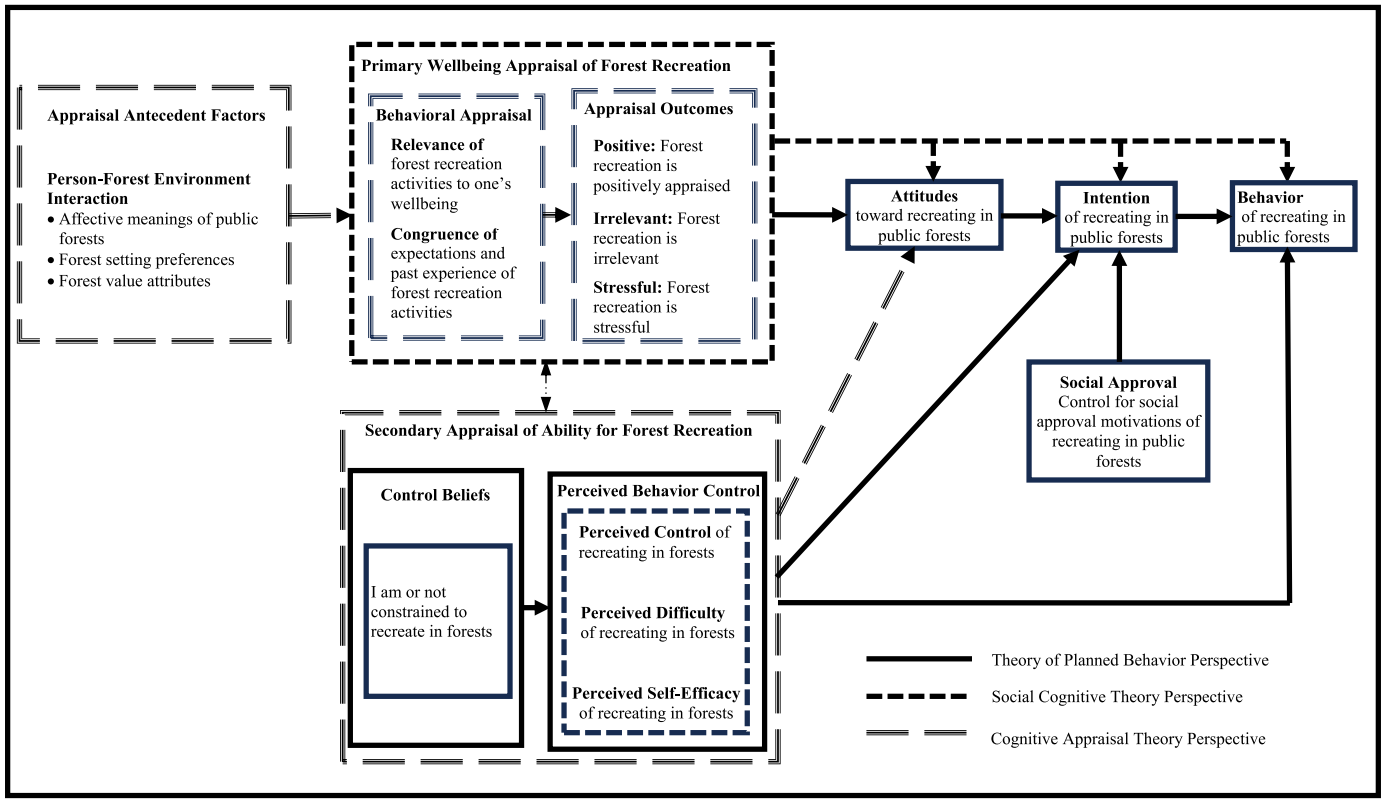


Fig. 3. Integrating the theory of planned behavior with the social cognitive theory, and cognitive appraisal theory.

past experiences). If forest recreation is deemed beneficial and past experiences align with expectations, individuals are likely to develop positive attitudes and intend to participate. Conversely, if past experiences do not meet personal goals, a stressful appraisal occurs, potentially leading to negative emotions such as fear or anxiety, which can discourage participation. It is worth noting that some participants may find particular stressors, such as challenging terrain, enjoyable if they appreciate the excitement of overcoming obstacles (Lazarus, 1991). Perspectives on what constitutes a stressor are likely to vary depending on the past experiences and preferences of the recreation participant performing the appraisal.

According to CAT, individual-level and environmental factors jointly influence cognitive appraisals of recreational activities (Lazarus, 1991). In outdoor recreation, Virden and Walker (1999) conceptualize such interactional influence of person-environment as meanings and setting preferences individuals attach to outdoor recreation. These authors argue that people attach *meanings to recreational areas* and have *recreational setting preferences* shaped by their sociocultural backgrounds. Additionally, public forests are associated with *value attributes* related to an individually held values that liked to one's sociocultural backgrounds (Anderson et al., 2018). We explore these concepts as crucial determinants of the primary appraisal of forest recreation experience.

a) ***Personal Meaning of Public Forests:*** As Lazarus and Smith (1988) suggested in the transactional approach, personal meaning is essential to understanding the relationship between an individual's values and the forest environment. Virden and Walker (1999) explored this concept within outdoor recreation, noting that individuals' affective associations with public forests and setting preferences are shaped by cultural and social backgrounds. People from similar socio-cultural backgrounds often share common interpretations of forest environments, perceiving them as safe or threatening based on cultural influences. Positive or negative affective meanings impact how individuals appraise forests for recreation (Ruddell et al., 1989). For example, cultural histories, such as slavery for Black Americans or the Indian Removal Act for Native Americans, may lead to more negative associations with forests for these groups (Johnson et al., 2001). Thus, socio-cultural meanings and personal experiences can shape recreational behaviors and preferences, as reflected in differences between Black and White Americans in backcountry recreation (e.g., Flores et al., 2018).

b) ***Forest Setting Preferences*:** The goal-directed approach explains variations in people's preferences for recreational environments, including forests (Virden & Walker, 1999). This approach suggests that differences in recreation choices arise from individuals' specific goals, such as the desire to recreate in primitive versus developed settings. For example, individuals who prefer unmodified, remote, and primitive natural areas may be more drawn to the backcountry forest recreation experience (Manning, 2007). In contrast, those seeking more developed recreational settings may favor sites with easy access and certain facilities (Harshaw & Sheppard, 2013). Virden and Walker (1999) demonstrate that a stronger preference for backcountry environments is more likely to lead to backcountry recreational activities. Studies have also revealed nuanced preferences for outdoor settings based on race, gender, and age. For instance, due to fear expectancy, some groups, such as African Americans and women, may prefer more managed and developed environments for recreation (Johnson et al., 2001; Shores et al., 2007).

c) ***Forest Value Attributes:*** Forest value attributes represent individuals' beliefs about what they consider important in a particular forest environment (Anderson et al., 2018). According to Tindall (2003), forest values underlie an individual's attitudes toward forests. They are beliefs about what is desirable and appropriate. These include health, recreation, aesthetic, cultural, economic, science, education, and equity (Tindall, 2003). Arguably, such values are determined by sociodemographic conditions (Tindall, 2003). Unlike core personal values, forest values are context-specific and relate to

various forest qualities, such as their natural, productive, or cultural aspects (Brown & Reed, 2000). These personally held values often influence motivations and preferences regarding outdoor recreation. For example, some individuals value forests for timber, while others appreciate them for aesthetics and recreation (Tarrant et al., 2003). Such value attributes significantly shape recreation choices and behaviors regarding where to recreate and what activities to pursue. Anderson and colleagues (2018) suggest that the importance people assign to forests (i.e., forest value attributes) can depend on core values that shape their behavior.

3.2.3. *Theory of Outdoor Recreation Constraints*

Within the context of outdoor recreation behavior, TPB provides for a belief that one is or isn't constrained to pursue a recreation behavior which influences their perceived control of the behavior as illustrated in Figs. 1–3. However, according to the Theory of Outdoor Recreation Constraints (TORC), such beliefs of constraints are more nuanced (Crawford & Godbey, 1987). The Outdoor recreation constraints theory provides a framework for understanding such complexity potentially influencing outdoor recreation preferences and participation behavior (Metcalf et al., 2013, 2015).

Studies show, as illustrated in Fig. 4, that outdoor recreation constraints encompasses many factors ranging from costs, time and knowledge (Rushing et al., 2019). Over the past three decades, the understanding of outdoor recreation constraints has evolved. Crawford and Godbey (1987) conceptually illustrated and proposed a hierarchical model of "constraints," categorizing them into intrapersonal, interpersonal, and structural. Intrapersonal constraints include psychological barriers such as fear and lack of interest (Metcalf et al., 2013; White, 2008). Interpersonal constraints relate to social factors such as family obligations or lack of companionship, while structural constraints involve external barriers such as limited transportation, high costs, and inadequate facilities (Metcalf et al., 2013). Crawford and Godbey (1987) suggested that these constraints collectively influence outdoor recreation preferences and pursuit of recreation opportunities. As illustrated in Fig. 4, such constraints shape ones perceived control of outdoor recreation behavior and indirectly influence intent and pursuit of outdoor recreation behavior.

Subsequent empirical studies have validated Crawford and Godbey's conceptual model of recreation constraints. For example, transportation remains a significant barrier, particularly for urban residents without access to cars or public transit options (Shores et al., 2007). Work and family responsibilities often limit leisure time, restricting the hours available for recreation (Jackson & Scott, 2005). Financial constraints disproportionately affect low-income families, limiting their access to green spaces and recreational resources. A lack of information, especially among immigrants or those unfamiliar with local recreation areas, also inhibits participation (Rushing et al., 2019). Safety concerns, including risks from wildlife as well as experiences with prejudice or harassment, deter participation in recreational activities among individuals in underserved communities (Parker & Green, 2016).

Crawford and Godbey's conceptual model provides a foundational understanding of individual-level constraints affecting outdoor recreation participation. However, it is criticized for not sufficiently addressing broader social factors that create recreational barriers (Stodolska et al., 2020; Walker & Virden, 2005). Walker and Virden (2005) emphasize the importance of a sociological perspective in revealing underlying social effects, enhancing our comprehension of inter- and intra-personal constraints limiting access to outdoor recreation benefits. They argue that culture, race, and socio-demographics contribute significantly to these constraints. Additionally, Chick and Doug (2005) illustrate how cultural differences influence not only interpersonal and structural constraints but also intrapersonal ones. Stodolska, Berdychevsky, and Shinew (2019) further assert that the cultural

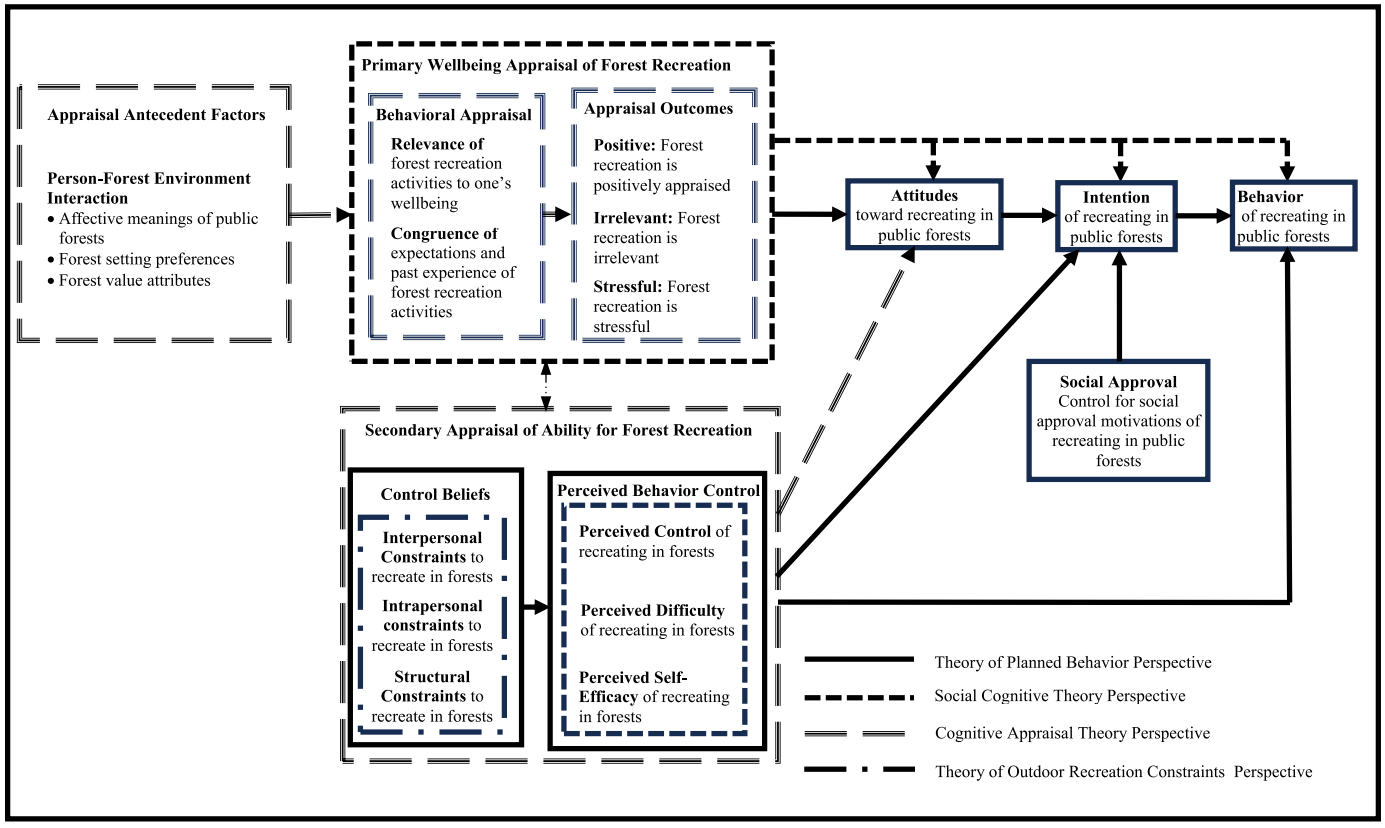


Fig. 4. Integrating the theory of planned behavior with insights from social cognitive theory, cognitive appraisal theory, and the theory of outdoor recreation constraints.

characteristics derived from norms and values are key determinants of outdoor recreation behavior, particularly in minorities. Jackson (2005) highlights that life circumstances play a crucial role in studying constraints, impacting these limitations significantly.

While individual factors operate at the micro-level, macro-level socioeconomic, sociocultural, and structural conditions affect outdoor recreation behavior directly and indirectly (Walker & Virden, 2005). Socioeconomic disparities, historical discrimination, and a lack of social inclusion severely hinder recreation participation among economically disadvantaged groups (e.g., Ghimire et al., 2014; Little, 2007). Ghimire et al. (2014) emphasize that factors such as ethnoracial identity, income, and education shape group perceptions regarding the accessibility of outdoor recreation. Nonetheless, the influence of socio-cultural factors on outdoor recreation participation remains underexplored in the recreation research literature (Winter, Crano, Basáñez, & Lamb, 2019; Schwartz & Corkery, 2011; Shinew et al., 2006). We draw insights from theories of social complexity, ethnicity, marginality, racial discrimination among others to explore social influences on outdoor recreation behavior among ethnoracial minorities in the United States.

4. Theories framing social factors underlying outdoor recreation behavior

4.1. Social complexity theory

Outdoor recreation behaviors are embedded in complex sociocultural systems rather than isolated individual choices. SCT emphasizes that forest recreation is shaped by intersecting factors such as race, socioeconomic status, identity, and demographic characteristics, which interact in dynamic and non-linear ways (Lazarus & Folkman, 1984; Tindall, 2003). For ethnoracial minorities, this interplay often compounds barriers including racial discrimination, economic disparities, cultural exclusion, and safety concerns, limiting participation in outdoor spaces (Bustam et al., 2011; Shores et al., 2007; Schwartz & Corkery, 2011). Black and Hispanic communities, for example, frequently experience racial bias, underrepresentation, and heightened concerns about safety, all of which discourage engagement in forest recreation (Bustam et al., 2011; Shores et al., 2007).

Demographic factors further intensify these socially complex dynamics. Age, gender, immigration status, religion, and residential location all shape the ways individuals perceive and access forest recreation opportunities. Older adults may face mobility and health-related constraints, women often navigate family obligations and safety concerns, and rural residents encounter structural barriers due to limited facilities (Ghimire et al., 2014; Johnson & Cordell, 2001; Shores et al., 2007). Likewise, country of origin and religious affiliation influence recreation preferences and engagement (Manning, 2007). Viewed through the lens of SCT, these demographic influences are not separate from broader social inequalities but intersect with them, creating layered constraints that differentially affect ethnoracial minorities. Recognizing this complexity is essential for designing policies and management strategies that promote equitable and inclusive access to forest recreation.

4.2. Ethnicity Theory

Outdoor recreation studies, drawing from Ethnicity Theory perspective, have emphasized the role of subcultural identity (i.e., race and ethnicity) in recreation behavior (Washburne, 1978; Bustam et al., 2011). Marginality theory posits that ethnic group membership determines individuals' values, norms, and behaviors related to outdoor recreation. This framework is shaped by culturally rooted preferences, socialization processes, and community influences (Floyd, 1998; Washburne, 1978). Ethnicity theory helps us understand how cultural traditions and ethnic identity influence participation rates, activity choices, and perceptions of natural spaces. For instance, Washburne (1978) and subsequent studies (e.g., Bustam et al., 2011; Flores et al., 2018) found that African American and Hispanic populations in the United States were less likely to engage in wilderness-based recreation compared to White populations. This disparity often arises from culturally shaped leisure norms, limited exposure to wilderness activities, and historical experiences of exclusion. Johnson, Bowker, and Cordell (2001) demonstrated that Asian and Latino populations exhibited distinct recreation preferences, favoring social and family-oriented outdoor settings, contrasting with the more individualistic and solitude-seeking recreation styles of White participants.

Moreover, patterns of recreational differences among various racial groups are shaped by complex factors such as multiracial identities, socioeconomic status, and other demographic characteristics (Shinew et al., 2006; Bustam et al., 2011). To fully grasp the social dynamics influencing forest recreation behavior, it is essential to move beyond monolithic views of subcultural identities. Considering mixed-race identities, U.S.-born versus non-U.S.-born status, immigration background, and degrees of acculturation provides a nuanced perspective on outdoor recreation choices among different groups (Shinew et al., 2006; Manning, 1999). For example, distinctions within Black American communities, such as African immigrants compared to descendants of enslaved Africans in the U.S., can offer valuable insights into how varied identities shape recreational experiences (Manning, 1999).

4.3. Marginality theory

The literature, supported by Marginality theory, associates outdoor recreation behavior with an individual's socioeconomic condition (Washburne, 1978; Manning, 2007). Marginality theory is a sociological framework that explains how individuals or groups are excluded from full participation in societal institutions due to structural inequalities related to historical, economic, and political experiences (Del Pilar & Udasco, 2004; Kabeer, 2000). It posits that marginalization arises from limited access to resources and opportunities, where decision-making power is systematically controlled by dominant social structures, leading to disparities in socioeconomic outcomes in education, jobs, housing, and healthcare (Del Pilar & Udasco, 2004; Kabeer, 2000). Consequently, marginality theory underscores the significance of institutional discrimination and socioeconomic deprivation.

Marginality theory-oriented studies demonstrate that disparities in outdoor recreation participation among racial and ethnic groups primarily arise from structural and socio-economic barriers, such as limited access to resources, transportation, income, and information (Washburne, 1978; Bustam et al., 2011; Stodolska et al., 2020). These studies illustrate that lower participation rates among marginalized populations do not necessarily reflect cultural differences but instead stem from limited opportunities shaped by historical and institutional exclusion. For instance, Floyd (1999) found that African American respondents were significantly less likely to engage in wildland recreation due to lower household incomes and decreased proximity to recreation areas. Similarly, other research indicates that perceived discrimination and historical exclusion have contributed to reduced park visitation rates among Black Americans (Johnson et al., 2001; Washburne, 1978; Winter et al., 2019). These studies suggest that systemic inequities—such as segregated housing patterns and economic disadvantage—restrict outdoor recreation access for minority populations, making marginality theory crucial for understanding and addressing disparities in forest recreation. However, research also shows that socioeconomic variables alone provide only limited explanatory power regarding overall recreation behavior or participation (Manning, 1999).

Examining financial and social capital alongside socioeconomic variables such as income and education could provide a more comprehensive understanding of how socioeconomic conditions shape recreational behavior. Financial capital, which includes wealth measures like homeownership and investments, may more accurately capture an individual's financial capacity to engage in recreational activities than income alone (Aneshensel, 1992; Bento & Brown, 2021). Similarly,

social capital—encompassing the networks of an individual's interpersonal relationships—can enhance forest recreation opportunities for that individual by providing social support and avenues for engagement through which recreation might occur (Chen et al., 2014; Wang et al., 2014). Financial and social capital could help explain differences in forest recreation preferences, choices, and experiences across socioeconomic groups.

However, outdoor recreation research has largely overlooked the influence of early-life socioeconomic factors on adult recreation motivations and behaviors. Adverse childhood environments, especially those linked to low socioeconomic status, can impact cognitive, social, and behavioral development, thus shaping outdoor recreation choices later in life (Bradley & Corwyn, 2002; Manning, 2007). Key early-life factors, including family income, parental education, neighborhood safety, and childhood exposure to outdoor recreation, can also play a significant role in lifelong recreational interests and constraints (Ewart et al., 2005; Harper & McCluskey, 2002).

These formative conditions can influence adult recreational behavior, with individuals from socioeconomically diverse neighborhoods being more likely to engage in outdoor activities than those from predominantly working-class areas (Manning, 2007). For ethnoracial minorities, systemic discrimination often exacerbates socioeconomic disparities, limiting resources and increasing stress, which further constrains access to and participation in recreation (Schwartz & Corkery, 2011; Stodolska et al., 2020; Winter et al., 2019).

4.4. *Racial Discrimination Theory*

Racial Discrimination Theory complements marginality and ethnicity theories by explaining disparities in outdoor recreation participation among ethnoracial minorities (Manning, 2007; Schwartz & Corkery, 2011). Racism acts as a significant barrier to recreation, generating stress that affects participation across multiple minority groups (Chapman-Hilliard et al., 2020; Utsey, Chae, et al., 2002). It constitutes a race-based system of advantages and disadvantages perpetuated through prejudice and reinforced by laws, regulations, and institutional practices (Bailey et al., 2021).

Racism manifests in personal, cultural, and institutional forms, each shaping outdoor recreation experiences. **Personal racism** occurs when individuals face discriminatory treatment by others, consciously or unconsciously (Reynolds et al., 2010). **Cultural racism** arises when an entire racial group collectively experiences discrimination, and **institutional racism** reflects systemic inequities embedded in social institutions such as housing, employment, healthcare, and education (Reynolds et al., 2010; Clark et al., 1999). These forms of racism contribute to stress and discomfort, fostering a sense of exclusion from outdoor spaces. Some groups, such as African Americans, navigate a heightened state of vigilance, consciously or subconsciously evaluating life situations through the lens of discrimination (Bailey et al., 2021; Outlaw, 1993; Reynolds et al., 2010).

Empirical studies demonstrate how these dynamics affect forest recreation. Black Americans often avoid outdoor recreation due to safety concerns related to discrimination (Shores et al., 2007), while Hispanic individuals report feeling unwelcome in certain natural areas (Blahna & Black, 1993; Shores et al., 2007). Minority women may also avoid outdoor environments due to safety concerns (Henderson & Bialeschki, 1993). Undocumented Hispanic immigrants risk deportation if they encounter immigration authorities, and Muslim immigrants may fear religious profiling, particularly during heightened political scrutiny (Stodolska et al., 2020). Perceptions and experiences of racism shape appraisals of forest recreation, influencing both the perceived value of participation and beliefs in one's ability to navigate threats or barriers. These social conditions also affect meanings and recreation preferences attributed to forests (Ewart et al., 2005; Manning, 2007; Virden & Walker, 1999).

5. A Proposed Inclusive Conceptual Framework

This paper advances a conceptual framework to explain minority participation in public forests by addressing three central questions introduced earlier: (1) What factors most strongly influence participation? (2) How do barriers to participation emerge? (3) What social conditions contribute to disparities? As illustrated in Fig. 6, the framework integrates the TPB, SCT, CAT, (TORC), and complementary sociological theories to address these questions.

From TPB, the framework posits that forest recreation is shaped by an individual's intention to participate and perceived behavioral control. SCT broadens this by distinguishing three dimensions of perceived control: (a) perceived control (feeling capable of recreating in forests), (b) perceived difficulty (perceived ease or challenge of participation), and (c) self-efficacy (confidence in one's ability to recreate). TORC suggests these dimensions are influenced by intrapersonal constraints (internal barriers), interpersonal constraints (social influences), and structural constraints (environmental or institutional barriers).

Intention to recreate is driven by attitudes toward forests, social approval from significant others, and the three dimensions of perceived control. CAT complements TPB and SCT framing of Behavioral Beliefs concept. For example, TPB indicates that attitudes stem from a cost-benefit analysis of behavior (Ajzen, 1991). Similarly, SCT posits that a behavior is pursued for anticipated material, social and individual benefits (Lawler et al., 1973). In contrast, CAT frames attitudes and behavior as products of an appraisal process in which individuals evaluate the relevance of forest recreation to well-being and the congruence of past forest recreation experiences with wellbeing benefit expectations. Positive appraisals foster favorable attitudes, strong intentions, and higher participation. Negative appraisals, viewing forests as irrelevant or stressful, discourage participation. Yet, high perceived control and self-efficacy can promote adaptive strategies, such as recreating in groups or developed areas to mitigate stressors like fear of wild animals. Appraisals are thus shaped by interactions between people and forest environments, including the symbolic meanings of forests, available recreation settings, and values attached to forests.

Beyond individual-level factors, the framework incorporates SCT, Ethnicity Theory, Marginality Theory, and Racial Discrimination Theory to highlight social drivers of disparities in forest recreation. While basic sociodemographic characteristics (e.g., age, gender, residence) often show limited influence (Manning, 2007), socioeconomic conditions across the life course, such as childhood family income, parental education, and adult assets like homeownership, may exert stronger effects.

The framework also emphasizes subcultural identity and intragroup variation. Standard racial and ethnic categories (e.g., White, Hispanic, African American) often obscure differences within groups (Shinew et al., 2006). Variations in ancestral origins, generational status, and acculturation can produce distinct recreation attitudes and behaviors. For example, African American descendants of enslaved people may hold different views on forests compared to recent African immigrants. Moreover, racism at individual, cultural, and institutional levels can shape recreation appraisals, intentions, and behaviors. Discrimination has been shown to heighten stress appraisals (Bailey et al., 2021; Outlaw, 1993; Reynolds et al., 2010), with outdoor recreation studies linking fear of crime and safety concerns in backcountry settings to racialized experiences (Schwartz & Corkery, 2011; Shores et al., 2007).

Overall, the proposed framework situates forest recreation behavior at the intersection of psychological processes, social constraints, and broader structural conditions. It highlights the importance of appraisals, perceived control, and subcultural identity while recognizing the influence of socioeconomic history and systemic discrimination in shaping minority participation in forests.

6. Conclusion

This review highlights the variety of factors that can influence the

preferences, motivations, and experiences of participants in outdoor recreation. A greater understanding of the roles these factors play and how they might interact to shape forest recreation behavior among diverse groups can help researchers, policymakers, and public lands managers ensure that everyone, including those currently underrepresented in public forest recreation, has equitable access to its benefits. However, the complexity of the model suggested in Fig. 5 may not be feasible due to financial, logistical, and practical reasons. To facilitate inquiry, we propose a partial approach to empirically explore the conceptual utility of these theoretical orientations. For instance, empirical studies could examine the integration of the TPB and SCT to identify key determinants of forest recreation behavior while controlling for the social intervening factors outlined in Fig. 6. Subsequently, factors related to cognitive appraisal theory could be added to the model to determine crucial appraisal determinants of forest recreation behavior, also controlling for the suggested social intervening factors. These empirical studies will likely lead to a simplified conceptual model that reveals a range of individual and societal factors influencing forest recreation motivations, preferences, and behaviors applicable across diverse groups. Our approach to integrating multiple theoretical orientations, leading to the suggestion of a complex model, aims to initiate a discourse on inclusive research in outdoor recreation that is sufficiently grounded in the sociopsychological context.

Viewing barriers to outdoor recreation through a more holistic sociopsychological lens can improve our understanding of the demographic, socioeconomic, cultural, and psychological factors that likely influence outdoor recreation behavior. This comprehensive perspective is particularly crucial for grasping the unique challenges faced by ethnoracial minorities, whose participation is often shaped by complex social dynamics. We advocate for a more thorough public forest recreation behavior model that investigates how intersecting societal influences affect recreation motivations and constraints across subcultural groups. By embracing this inclusive approach, we can guide recreation programming that encourages broader participation and addresses the needs of diverse populations. Future research should examine differences within traditional racial and ethnic categories to enhance our understanding of forest recreation behaviors. Such a strategy will promote inclusive, equitable access to forest environments, ensuring that all demographic groups can enjoy forest recreational opportunities.

CRediT authorship contribution statement

Ian E. Munanura: Writing – original draft, Visualization, Funding acquisition, Conceptualization. **Jeffrey D. Kline:** Writing – review & editing.

Management implications

This review offers valuable insights for public land management agencies and policymakers seeking to enhance equitable access to forest recreation for ethnoracial minorities. Understanding the complexity of barriers and socio-psychological factors potentially influencing recreation participation is crucial for developing effective strategies. Key implications include.

- **Inclusive Policy Development:** Policies should address structural and psychological barriers, ensuring they cater to the diverse needs of underrepresented groups. This includes reducing financial barriers, improving transportation options, and enhancing safety measures.
- **Community Engagement:** Engaging with minority communities to understand their needs and concerns can lead to more tailored and

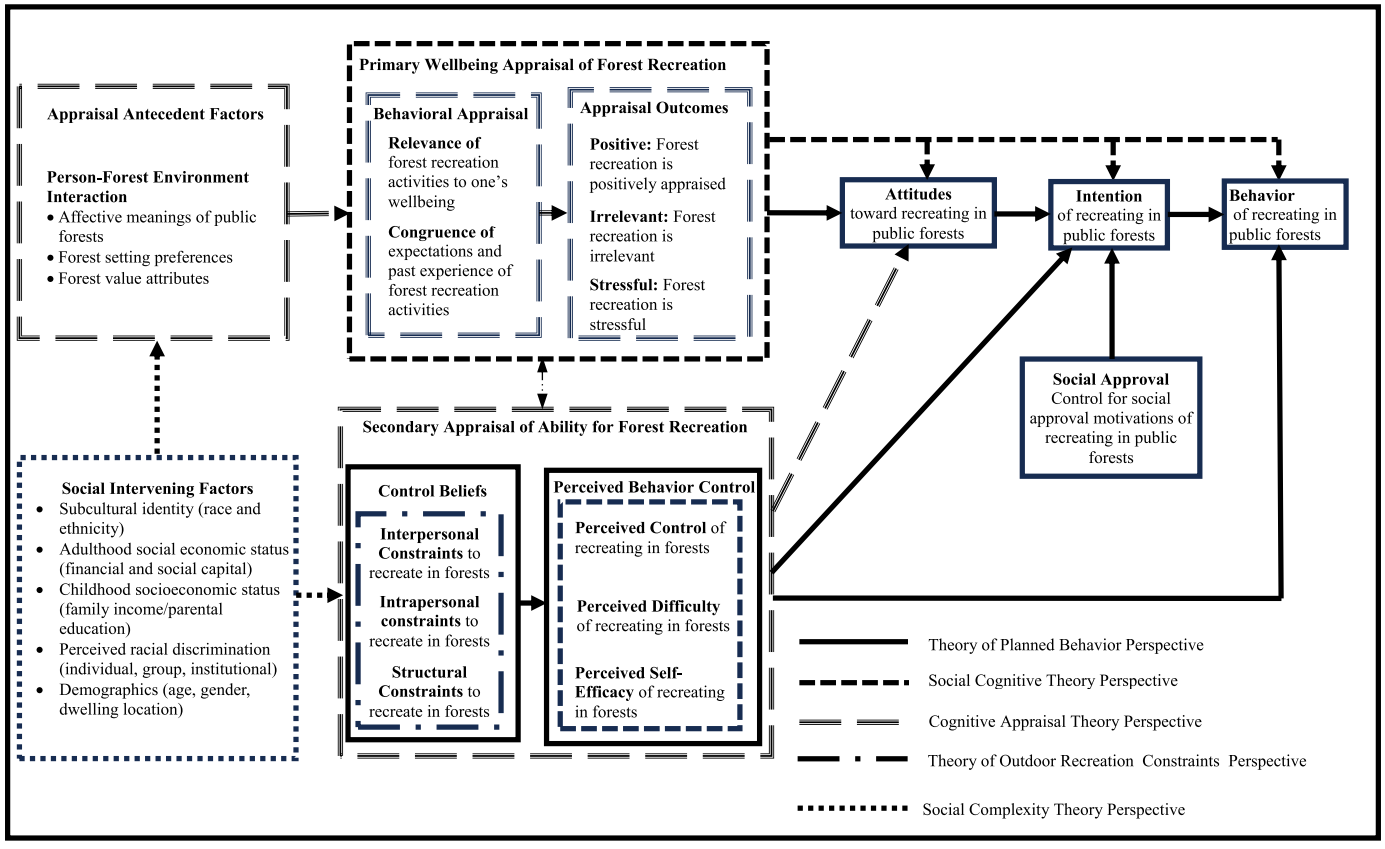


Fig. 5. Integrating the theory of planned behavior with social cognitive theory, cognitive appraisal theory, outdoor recreation constraints theory, and social theories (e.g., social complexity theory, marginality theory, ethnicity theory and racial discrimination theory).

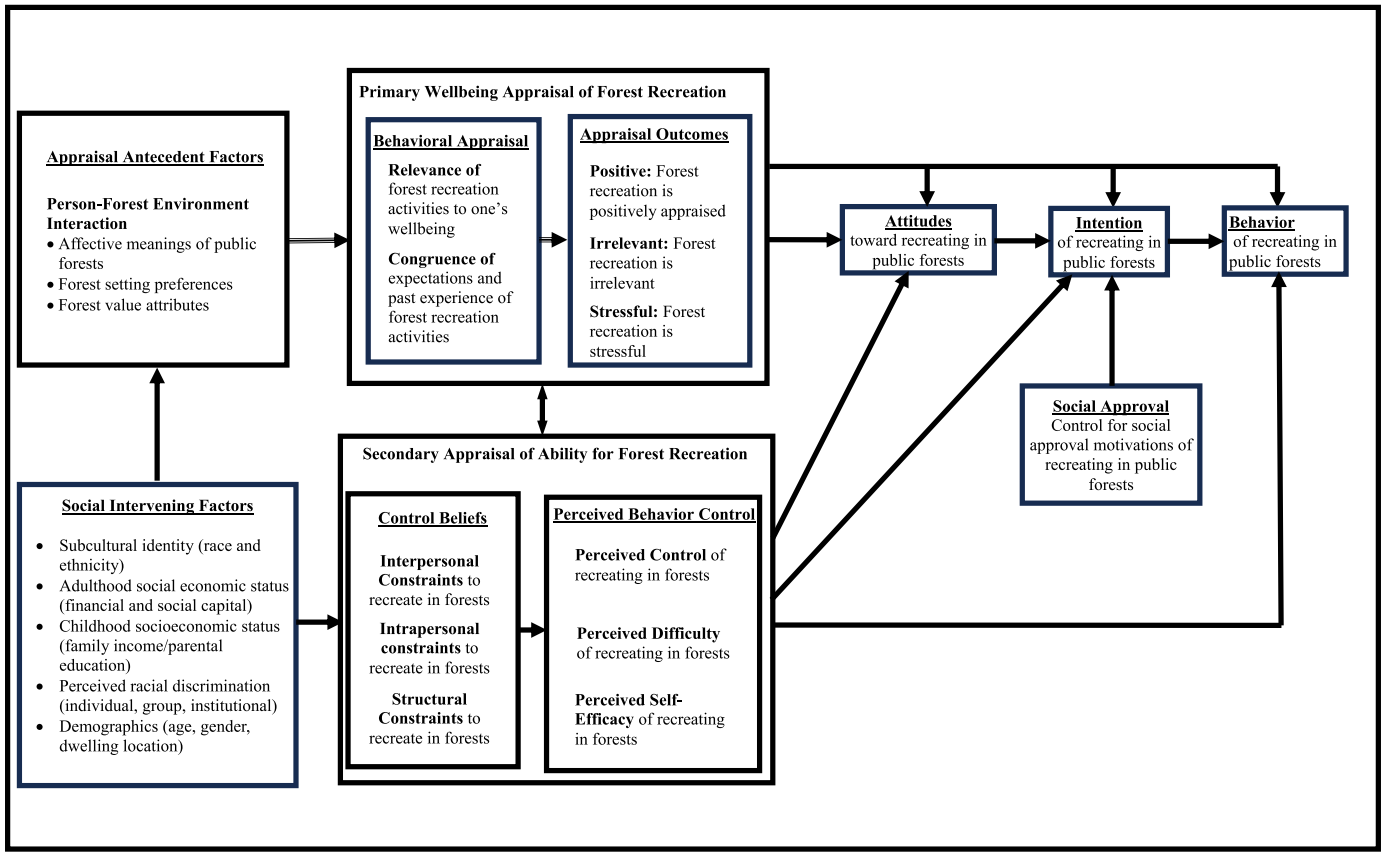


Fig. 6. Proposed inclusive conceptual framework for forest recreation behavior.

effective recreation programs. Collaborative approaches can enhance trust and participation.

- **Culturally Relevant Programming:** Offering programs that reflect diverse groups' cultural values and preferences can increase participation and enjoyment. This might include organizing group activities that align with community traditions and values.
- **Training and Awareness:** Training for park staff on cultural sensitivity and anti-discrimination practices can improve interactions with ethnoracial minority visitors, creating a more welcoming environment.
- Research and Monitoring: Empirical research to test the utility of the model suggested is essential. Gathering data on socio-psychological determinants of outdoor recreation can inform improvements in policy and practice.

By implementing these measures, public land management agencies can work towards ensuring that all demographic groups have equitable access to the health and wellbeing benefits provided by forest environments.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgement

This review was supported by the U.S. Forest Service under Grant #23-JV-11261956-012. The authors are grateful for the constructive feedback provided by the anonymous reviewers, whose insights greatly strengthened the quality of this article.

Data availability

No data was used for the research described in the article.

References

Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl, & J. Beckmann (Eds.), *Action-control: From cognition to behavior* (pp. 11–39). Heidelberg: Springer.
Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*(2), 179–211.
Ajzen, I. (2011). The theory of planned behaviour: Reactions and reflections. *Psychology & Health, 26*(9), 1113–1127.
Ajzen, I. (2020). The theory of planned behavior: Frequently asked questions. *Human Behavior and Emerging Technologies, 2*(4), 314–324.
Ajzen, I., & Driver, B. L. (1992). Application of the theory of planned behavior to leisure choice. *Journal of Leisure Research, 24*(3), 207–224.
Anderson, N., Ford, R. M., Bennett, L. T., Nitschke, C., & Williams, K. J. (2018). Core values underpin the attributes of forests that matter to people. *Forestry: An International Journal of Forest Research, 91*(5), 629–640.
Aneshensel, C. S. (1992). Social stress: Theory and research. *Annual Review of Sociology, 18*(1), 15–38.
Bailey, Z. D., Feldman, J. M., & Bassett, M. T. (2021). How structural racism works—racist policies as a root cause of US racial health inequities. In *New England Journal of Medicine* (Vol. 384, pp. 768–773). Mass Medical Soc, 8.
Bandura, A. (1986). *Social foundations of thought and action, 1986*(23–28), 2.
Bandura, A. (1992). Social cognitive theory of social referencing. In *Social referencing and the social construction of reality in infancy* (pp. 175–208). Boston, MA: Springer US.
Bento, A., & Brown, T. N. (2021). Belief in systemic racism and self-employment among working blacks. *Ethnic and Racial Studies, 44*(1), 21–38.
Blahna, D., & Black, K. (1993). Racism: A concern for recreation resource managers. *Managing Urban and High-Use Recreation Settings*, 111–118.
Bradley, R. H., & Corwyn, R. F. (2002). Socioeconomic status and child development. *Annual Review of Psychology, 53*(2002), 371–399.
Brown, G., & Reed, P. (2000). Validation of a forest values typology for use in national forest planning. *Forest Science, 46*(2), 240–247.
Bustam, T. D., Thapa, B., & Buta, N. (2011). Demographic differences within race/ethnicity group constraints to outdoor recreation participation. *Journal of Park and Recreation Administration, 29*(4).

Cerveny, L. K., McLain, R. J., Banis, D., & Helmer, M. (2023). National forest visitation preferences and avenues to participation for urban hispanic recreationists in the portland metropolitan area (USA). *Journal of Forestry, 121*(1), 64–83. https://doi.org/10.1093/jofore/fvac023

Chapman-Hilliard, C., Abdullah, T., Denton, E., Holman, A., & Awad, G. (2020). The index of race-related stress-brief: Further validation, cross-validation, and item response theory-based evidence. *Journal of Black Psychology, 46*(6–7), 550–580.

Chen, H., Wang, J., & Huang, J. (2014). Policy support, social capital, and farmers' adaptation to drought in China. *Global Environmental Change, 24*, 193–202.

Clark, R., Anderson, N. B., Clark, V. R., & Williams, D. R. (1999). Racism as a stressor for African Americans: A biopsychosocial model. *American Psychologist, 54*(10), 805.

Colby, S. L., & Ortman, J. M. (2014). *Projections of the size and Composition of the U.S. Population: 2014 to 2060*. Program.

Conner, M. (2020). Theory of planned behavior. *Handbook of Sport Psychology*, 1–18.

Conner, M., & Armitage, C. J. (1998). Extending the theory of planned behavior: A review and avenues for further research. *Journal of Applied Social Psychology, 28*(15), 1429–1464.

Crawford, D. W., & Godbey, G. (1987). Reconceptualizing barriers to family leisure. *Leisure Sciences, 9*(2), 119–127.

Del Pilar, J. A., & Udasco, J. O. (2004). Marginality theory: The lack of construct validity. *Hispanic Journal of Behavioral Sciences, 26*(1), 3–15.

Driver, B. L. (1992). The benefits of leisure. *Parks & Recreation, 27*(11), 16–75.

Dzewaltowski, D. A., Noble, J. M., & Shaw, J. M. (1990). Physical activity participation: Social cognitive theory versus the theories of reasoned action and planned behavior. *Journal of Sport and Exercise Psychology, 12*(4), 388–405.

Flores, D., Falco, G., Roberts, N. S., & Valenzuela, F. P. (2018). Recreation equity: Is the Forest Service serving its diverse publics? *Journal of Forestry, 116*(3), 266–272.

Floyd, M. F. (1998). Getting beyond marginality and ethnicity: The challenge for race and ethnic studies in leisure research. *Journal of Leisure Research, 30*(1), 3–22.

Floyd, M. F. (1999). Race, ethnicity and use of the national park system. *Social Science Research Review, 1*, 1–24.

Forest Service. (2022). *Forest Service equity action plan*. Washington, DC: U.S. Department of Agriculture, Forest Service. https://www.fs.usda.gov/sites/default/files/Forest-Service-Equity-Action-Plan.pdf.

Ghimire, R., Green, G. T., Poudyal, N. C., & Cordell, H. K. (2014). An analysis of perceived. *Journal of Park and Recreation Administration, 32*(4), 52–67.

Graham, G. (2015). Disparities in cardiovascular disease risk in the United States. *Current Cardiology Reviews, 11*(3), 238–245.

Harper, L. V., & McCluskey, K. S. (2002). Caregiver and peer responses to children with language and motor disabilities in inclusive preschool programs. *Early Childhood Research Quarterly, 17*(2), 148–166.

Harshaw, H. W., & Sheppard, S. R. J. (2013). Using the recreation opportunity spectrum to evaluate the temporal impacts of timber harvesting on outdoor recreation settings. *Journal of Outdoor Recreation & Tourism, 1 –2*(1), 40–50.

Henderson, K. A., & Bialeschki, M. D. (1993). Negotiating constraints to women's physical recreation. Loisir et societe/Society and. *Leisure, 16*(2), 389–411.

Iso-Ahola, S. E. (1980). *The Social Psychology of Leisure and Recreation*. Dubuque, Iowa: William C. Brown.

Jackson, E. L., & Scott, D. (2005). *Constraints to leisure*. College, PA: Venture Publishing State.

Johnson, C. Y., Bowker, J. M., & Cordell, H. K. (2001). Outdoor recreation constraints: An examination of race, gender, and rural dwelling. *Journal of Rural Social Sciences, 17*(1), 6.

Johnson, C. Y., & Cordell, H. K. (2001). Outdoor recreation constraints : An examination of race , gender , and rural dwelling. *Southern Rural Sociology, 17*(1), 111–133.

Kabeer, N. (2000). Social exclusion, poverty and discrimination towards an analytical framework. *IDS Bulletin, 31*(4), 83–97.

Kline, J. D., Rosenberger, R. S., & White, E. M. (2011). A national Assessment of physical activity in US national forests. *Journal of Forestry, 109*(6), 343–351.

Lawler, E. E., III, & Suttle, J. L. (1973). Expectancy theory and job behavior. *Organizational Behavior & Human Performance, 9*(3), 482–503.

Lazarus, R. S. (1982). Thoughts on the relations between emotion and cognition. *American Psychologist, 37*(9), 1019.

Lazarus, R. S. (1991). Cognition and motivation in emotion. *American Psychologist, 46*(4), 352.

Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. Springer publishing company.

Little, D. E. (2007). Conceptions of leisure constraints negotiation: A response to the schneider and wilhelm stanis coping model. *Leisure Sciences, 29*(4), 403–408.

Manning, R. E. (1999). *Studies in outdoor recreation: Search and research for satisfaction* (3rd). Corvallis, OR: Oregon State University Press.

Manning, R. E. (2007). *Studies in outdoor recreation: Search and research for satisfaction* (3rd ed.). Oregon State University Press.

Metcalf, E. C., Burns, R. C., & Graefe, A. R. (2013). Understanding non-traditional forest recreation: The role of constraints and negotiation strategies among racial and ethnic minorities. *Journal of Outdoor Recreation and Tourism, 1*(2), 29–39. https://doi.org/10.1016/j.jort.2013.04.003

Metcalf, E. C., Graefe, A. R., Trauntvein, N. E., & Burns, R. C. (2015). Understanding hunting constraints and negotiation strategies: A typology of female hunters. *Human Dimensions of Wildlife, 20*(1), 30–46.

Millham, J., & Kellogg, R. W. (1980). Need for social approval: Impression management or self-deception? *Journal of Research in Personality, 14*(4), 445–457.

More, T. (2002). The parks are being loved to death" and other frauds and deceits in recreation management. *Journal of Leisure Research, 34*(1), 52.

National Visitor Use Monitoring. (2023). *National visitor use monitoring results*. Washington, DC: USDA Forest Service. https://apps.fs.usda.gov/nvum/results/R01-R02-R03-R04-R05-R06-R08-R09-R10.aspx/FY2020.

Outlaw, F. H. (1993). Stress and Coping: The influence of racisn the cognitive appraisal processing of African Americans. *Issues in Mental Health Nursing, 14*(4), 399–409.

Parker, S. E., & Green, G. T. (2016). A comparative study of recreation constraints to national forest use by ethnic and minority groups in North Georgia. *Journal of Forestry, 114*(4), 449–457. https://doi.org/10.5849/jof.13-079

Reynolds, A. L., Sneva, J. N., & Beehler, G. P. (2010). The influence of racism-related stress on the academic motivation of black and latino/a students. *Journal of College Student Development, 51*(2), 135–149. https://doi.org/10.1353/csd.0.0120

Ruddell, E. J., Gramann, J. H., Rudis, V. A., & Westphal, J. M. (1989). The psychological utility of visual penetration in near-view forest scenic-beauty models. *Environment and Behavior, 21*(4), 393–412.

Rushing, J. R., Needham, M. D., D'Antonio, A., & Metcalf, E. C. (2019). Barriers to attachment? Relationships among constraints, attachment, and visitation to urban parks. *Journal of Outdoor Recreation and Tourism, 27*, Article 100228.

Rutter, J. D., Dayer, A. A., Harshaw, H. W., Cole, N. W., Duberstein, J. N., Fulton, D. C., Raedeke, A. H., & Schuster, R. M. (2021). Racial, ethnic, and social patterns in the recreation specialization of birdwatchers: An analysis of United States eBird registrants. *Journal of Outdoor Recreation and Tourism, 35*, Article 100400.

Schunk, D. H., & Usher, E. L. (2012). *Social cognitive theory and motivation. The Oxford Handbook of Human Motivation, 2*, 11–26.

Schwartz, A., & Corkery, M. R. (2011). Barriers to participation among underrepresented populations in outdoor programs. *Recreational Sports Journal, 35*(2), 130–144.

Searle, M. S., & Jackson, E. L. (1985). Socioeconomic variations in perceived barriers to recreation participation among would-be participants. *Leisure Sciences, 7*(2), 227–249.

Shinew, K. J., Stodolska, M., Floyd, M., Hibbler, D., Allison, M., Johnson, C., & Santos, C. (2006). Race and ethnicity in leisure behavior: Where have we been and where do we need to go? *Leisure Sciences, 28*(4), 403–408. https://doi.org/10.1080/01490400600745902

Shores, K. A., Scott, D., & Floyd, M. F. (2007). Constraints to outdoor recreation: A multiple hierarchy stratification perspective. *Leisure Sciences, 29*(3), 227–246.

Shrestha, S. K., & Burns, R. C. (2016). Integrating constraints to the theory of planned behavior in predicting deer hunting participation. *Human Dimensions of Wildlife, 21*(5), 445–459.

Shrestha, S. K., Burns, R. C., Pierskalla, C. D., & Selin, S. (2012). Predicting deer hunting intentions using the theory of planned behavior: A survey of Oregon big game hunters. *Human Dimensions of Wildlife, 17*(2), 129–140.

Smith, C. A., & Lazarus, R. S. (1990). Emotion and adaptation. *Handbook of Personality: Theory and Research, 21*(1990), 609–637.

Sparks, P., Guthrie, C. A., & Shepherd, R. (1997). The dimensional structure of the perceived behavioral control construct. *Journal of Applied Social Psychology, 27*(5), 418–438.

Stajkovic, A., & Sergent, K. (2019). Social cognitive theory. *Management*, 9780199846740–0169.

Stodolska, M., & Alexandris, K. (2004). The role of recreational sport in the adaptation of first-generation immigrants in the United States. *Journal of Leisure Research, 36*(3), 379–413.

Stodolska, M., Berdychevsky, L., & Shinew, K. J. (2019). Gangs and deviant leisure. *Leisure Sciences, 41*(4), 278–293.

Stodolska, M., Shinew, K. J., & Camarillo, L. N. (2020). Constraints on recreation among people of color: Toward a new constraints model. *Leisure Sciences, 42*(5–6), 533–551.

Tarrant, M. A., Cordell, H. K., & Green, G. T. (2003). PVF: a scale to measure public values of forests. *Journal of Forestry, 101*(6), 24–30.

Terry, D. J., & O'Leary, J. E. (1995). The theory of planned behaviour: The effects of perceived behavioural control and self-efficacy. *British Journal of Social Psychology, 34*(2), 199–220.

Tindall, D. (2003). Social values and the contingent nature of public opinion and attitudes about forests. *The Forestry Chronicle, 2003*(79), 692–705.

Trafimow, D., Sheeran, P., Conner, M., & Finlay, K. A. (2002). Evidence that perceived behavioural control is a multidimensional construct: Perceived control and perceived difficulty. *British Journal of Social Psychology, 41*(1), 101–121.

Utsey, S. O., Chae, M. H., Brown, C. F., & Kelly, D. (2002). Effect of ethnic group membership on ethnic identity, race-related stress, and quality of life. *Cultural Diversity and Ethnic Minority Psychology, 8*(4), 366.

Utsey, S. O., Payne, Y. A., Jackson, E. S., & Jones, A. M. (2002). Race-related stress, quality of life indicators, and life satisfaction among elderly African Americans. *Cultural Diversity and Ethnic Minority Psychology, 8*(3), 224.

Virden, R. J., & Walker, G. J. (1999). Ethnic/racial and gender variations among meanings given to, and preferences for, the natural environment. *Leisure Sciences, 21*(3), 219–239.

Wagar, J. A. (1964). The carrying capacity of wild lands for recreation. *Forest Science, 10*(suppl_2), a0001–a0024.

Walker, G. J., & Virden, R. J. (2005). Constraints on outdoor recreation. In E. L. Jackson (Ed.), *Constraints to leisure* (pp. 201–219). State College, PA: Venture.

Wang, P., Chen, X., Gong, J., & Jacques-Tiura, A. J. (2014). Reliability and validity of the personal social capital scale 16 and personal social capital scale 8: Two short instruments for survey studies. *Social Indicators Research, 119*, 1133–1148.

Washburne, R. F. (1978). Black under-participation in wildland recreation: Alternative explanations. *Leisure Sciences, 1*(2), 175–189.

White, D. D. (2008). A structural model of leisure constraints negotiation in outdoor recreation. *Leisure Sciences, 30*(4), 342–359.

Winter, P. L., Crano, W. D., Basáñez, T., & Lamb, C. S. (2019). Equity in access to outdoor recreation—informing a sustainable future. *Sustainability, 12*(1), 124.

Wood, R., & Bandura, A. (1989). Social cognitive theory of organizational management. *Academy of Management Review, 14*(3), 361–384.

U.S. Census Bureau. (2020). Annual Estimates of the Resident Population: April 1, 2010 to July 1, 2020. Retrieved from https://www.census.gov/library/visualizations/interactive/race-and-ethnicity-in-the-united-state-2010-and-2020-census.html.

Watson, L., & Spence, M.T. (2007). Causes and consequences of emotions on consumer behaviour: A review and integrative cognitive appraisal theory. European Journal of Marketing, 41(5/6), 487–511.