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ORIGINAL RESEARCH

Spirituality, Depression, and Anxiety Among Ocean Surfers

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Although research on the psychological correlates of ocean surfing is scarce, substantial anecdotal evidence suggests that the sport offers a uniquely positive experience. Prior research has demonstrated that surfers report fewer symptoms of depression and anxiety than normative groups, but no explanation has been identified. Greater spirituality has been correlated with lower depression and anxiety, and many surfers have described surfing as a spiritual experience, indicating a potential connection. One hundred surfers were recruited from the Hawaiian Islands and the mid-Atlantic region of the United States. Participants reported their surfing habits and levels of their spiritual surfing experiences. Standardized tests were used to measure participants' spirituality, depression, and anxiety levels. Results indicated that surfers reported fewer symptoms of depression and anxiety than most available normative groups. Results also demonstrated that greater spirituality is associated with less depression and more spiritual surfing experiences.

Keywords: anxiety, depression, ocean surfing, spirituality, sport

Ocean surfing, with its long and culturally rich history (Warshaw, 2010), particularly in Hawai'i (Clark, 2011; Walker, 2011), has evolved into a popular competitive sport and lifestyle leisure activity. Although the exact number is not known, estimates from the early 2000s of the total number of surfers worldwide ranged from 5 million to 23 million (Warshaw, 2005). Despite its popularity, however, scientific research on surfing is still extremely sparse.

The available research does, however, identify several psychological correlates of surfing. Farmer (1992) investigated the motivations for surfing. The results of this study showed that 50 male surfers rated vertigo, which refers to the thrill or high accompanying an activity that may include the experience of self-transcendence or loss of self, as the highest motivating factor for surfing. Aesthetic and cathartic motivations consistently received high ratings, while social, health/fitness, and competition motivations were rated the lowest by this sample of surfers. In terms

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of personality characteristics, Diehm and Armatas (2004) found that surfers scored higher on sensation seeking and openness to experience than athletes participating in the lower risk sport of golf. They also found that surfers reported higher levels of intrinsic motivation and similar levels of extrinsic motivation when compared with golfers.

Surfers have described having experiences with and becoming dependent on "flow states" that occur during surfing (Partington, Partington, & Olivier, 2009). Csikszentmihalyi (1975) described flow as an optimal state of experience in which an individual feels a sense of complete control as well as a fusion between self and environment. Flow experiences provide individuals with a sense of growth and intrinsic enjoyment. During a flow state, the individual is said to be living completely in the moment and has a narrowed, intense focus on the activity at hand. Partington and colleagues (2009) investigated the flow experiences of "big wave surfers," who were identified by their inclusion and elite performance in "big wave contests," which are surfing competitions held in large waves. The minimum size limit varies across contest sites, but it is generally accepted in the surfing community that big wave contests are held in extreme and dangerous conditions with wave height typically greater than 30 feet (Partington et al., 2009). For instance, the Quiksilver in Memory of Eddie Aikau contest ("The Quiksilver in Memory of Eddie Aikau," 2015), held in Waimea Bay on the North Shore of O'ahu, only runs when the height of the front of the wave reaches 40 feet or more. Participants in their sample had participated in the Quiksilver in Memory of Eddie Aikau competition and other similar contests. Researchers found that these surfers reported improved mood states, better surfing performance, and higher self-esteem and fulfillment as a result of these experiences. Surfers also reported an "addiction" to these feelings that led to their continued involvement in big wave surfing regardless of family commitments, potential injuries, or even potential death.

Surfing has also been recently linked to mental health benefits in at least three studies. Levin and Taylor (2011) found that a sample of 100 surfers in California reported significantly fewer symptoms of depression and anxiety than normative samples with reported point prevalence rates of 3.03% for depression and 15% for anxiety. In a different study, researchers examined the mental health effects of Sunset Surfers, which is a program that teaches surfing to children in a disadvantaged, urban neighborhood in Australia. The children in this neighborhood are at high risk for child abuse and neglect. Preliminary qualitative evidence from the children, parents, and staff members suggested that the children demonstrated higher self-esteem and a new enthusiasm for overcoming and mastering challenges (Morgan, 2010). One study showed that surfing also may have positive effects for individuals struggling with polytrauma, which refers to concurrent brain and other physical injuries resulting in multiple psychological and behavioral impairments (Fleischmann et al., 2011).

Although the research on surfing is limited, these studies suggest that surfers may experience an intrinsic reward that leads them to continue surfing, despite the inherent risks associated with action sports (i.e., potentially dangerous, individualistic, and alternative sports including activities such as surfing, skateboarding, and snowboarding; see Bennett & Lachowetz, 2004). Many other types of activities provide individuals with similar peak experiences and flow states, as well as

mental health benefits. Art, music, games, and other sports are just a few examples (Csikszentmihalyi, 1975). However, a substantial amount of anecdotal evidence exists to suggest that surfers experience something unique, which cannot be fully described by peak or flow experiences. One literature review linked the unique experience of surfers to spirituality (Parry, Robinson, Watson, & Nesti, 2007).

Spirituality

Spirituality has been shown to be an important component of the human experience. It is an integral part of being human, and it can provide individuals with answers to common existential issues, such as purpose and sense of direction in one's life (D'Souza, 2007). Baker (2003) argued for a number of benefits of spirituality including stronger identity development, higher perceived quality of life, more capable coping abilities, and provision of a tool of empowerment to overcome obstacles. Spirituality can also provide people with a sense of meaning, peace, and connectedness (Tanyi, 2002). Spirituality acts as a vitalizing force in people's lives by making them feel more alive and energized (So, 2009). It has been shown to provide adolescents with a "path to purpose" at a time when many struggle to find their identity and place in the world (Tirri & Quinn, 2010).

In this study, spirituality will be defined in terms of five cognitive and emotional components, derived from several characteristics as defined by Tanyi (2002) following an extensive literature review. First, there is a sense of connectedness within the individual with nature or the environment, all living beings, and a higher power. Second, there is a feeling of heightened self-awareness. Third, there is an awareness of a transcendent reality beyond the normal confines of time and space. Fourth, it provides the individual with feelings of inner peace and harmony and a sense of meaning and purpose in life. Fifth, it includes the belief that consciousness persists after physical death.

Individuals conscious of their own spirituality demonstrate positive mental health outcomes. Increased spirituality has been shown to lead to better psychological well-being in adults who recently experienced a spousal loss (Fry, 2001). McClain and colleagues (2003) found that spirituality is also significantly correlated with less psychological distress in terminally ill cancer patients. Spirituality has also been significantly correlated with lower levels of depression and anxiety, and higher levels of quality of life (Kandasamy et al., 2011). One review of six published outcome studies suggests the effectiveness of spiritually oriented psychotherapies in treating a number of psychological issues, including depression, anxiety, and anger management difficulties (Richards and Worthington, 2010).

Spirituality has been shown to have other psychological benefits. Coward (1996) found that self-transcendence, an aspect of spirituality, is significantly correlated with self-esteem, purpose in life, and sense of coherence. Tuck and colleagues (2006) found a negative significant correlation between stress and spiritual well-being following a spiritual intervention. Higher spiritual well-being has also been associated with less state-trait anxiety (Davis, Kerr, & Kurpius, 2003). Despite its established relationship to well-being and mental health, available research examining the role of spirituality in sports psychology remains sparse (Sarkar, Hill, & Parker, 2014).

Surfing and Spirituality

Substantial anecdotal evidence exists connecting surfing with spirituality. For the ancient Hawaiians, surfing was intricately intertwined with religious practices and spirituality (Warshaw, 2010). The connection surfers feel to a higher power dates back to the ancient Hawaiians. The Hawaiians incorporated surfing into their religious festival celebrating the god Lono (fertility, music, and peace), and an assortment of prayers and rituals was performed throughout the board construction process (Finney, 1959). Taylor (2007) proposed that surfing has become a new religion with its own rites, rituals, and myths. Taylor argues that a certain group of surfers, the "soul surfers," consider surfing and the ocean as sacred with the potential to heal or transform. Levin and Taylor (2011) found that 75% of the surfers they sampled in California reported that riding a wave led to feelings of a connection with God, nature, or the universe. This piece of evidence highlights the multiple domains of connectedness experienced by surfers.

Benjamin and Looby (1998) proposed a theory of spiritual development that states spiritual development occurs through one spiritual experience after another, with these repeated experiences ultimately leading to spiritual transformation. Spiritual transformation is finally achieved when an individual develops a new way of life, in both thought and spirit, characterized by self-acceptance, autonomy, openness in relationships, and freedom to make choices (Benjamin & Looby, 1998). Activities linked to spiritual transformation, such as meditation and yoga, fit the theory of spiritual development in that multiple experiences are required before a transformation can occur (Astin, 1997; Schure, Christopher, & Christopher, 2008). Research has demonstrated that these activities can result in increased self-awareness and self-confidence, changes in how one relates to themselves and others, and higher levels of empathy and compassion (Schure et al., 2008). Surfing may also fall into this category. If the anecdotal evidence for surfing as a spiritual experience is supported objectively, then surfers may display a high sense of spirituality because these repeated experiences could have resulted in a spiritual transformation.

The Purpose of the Study

Five hypotheses were addressed in this study. The first hypothesis was that surfers would report fewer symptoms of depression and anxiety than normative samples. This hypothesis aimed to replicate the finding of Levin and Taylor (2011). The Levin and Taylor study investigated surfers in California, but our replication includes a more geographically diverse sample of surfers who engage in their sport in either the Hawaiian Islands or the mid-Atlantic region of the East Coast of the United States. Consistent results with Levin and Taylor (2011) would indicate that surfers in multiple regions within the United States demonstrate positive mental health characteristics, allowing for greater generalizability.

The second hypothesis of this study was that a geographically diverse group of surfers would report higher levels of spirituality than a normative sample. Although anecdotal evidence exists to suggest that surfers are highly spiritual (Taylor, 2007), this characteristic has yet to be measured objectively. If surfers are found to be more spiritual than a normative sample, this finding could serve as a justification to

explore spirituality as a possible mechanism behind previous research on the mental health of surfers, particularly the connection between surfing and low symptoms of depression and anxiety (Levin & Taylor, 2011).

The third hypothesis of this study was that reported levels of spirituality from a geographically diverse sample of surfers would be negatively related to reported levels of depression and anxiety. The fourth hypothesis was that the surfing experience, as measured by a scale of spiritually-based surfing experiences, would be positively related to reported levels of general spirituality. The fifth and final hypothesis of this study was that the spiritual aspects of the surfing experience would be negatively related to reported levels of depression and anxiety.

Methods

Participants

Surfing is an activity that involves standing on a surfboard while riding waves as they break. Although there are many different forms of recreational wave riding, surfing will be defined in this study as the act of paddling on one's stomach on a surfboard as an ocean wave approaches and pushing oneself into a standing position as the wave begins to break and the momentum of the wave begins to propel the surfboard and surfer. Based on this definition, surfers who ride various surfboard models, such as longboards, shortboards, and fish models, were included as potential participants in the study as all of these boards require the surfer to paddle for a wave and make the transition from lying on one's stomach to standing on one's feet. Conversely, other wave riding enthusiasts, such as boogie boarders, kneeboarders, skimboarders, kiteboarders, windsurfers, and stand-up paddleboarders, were excluded from the study. Surfers were sampled from both the Hawaiian Islands and the mid-Atlantic region of the East Coast in the United States. The sample included 100 participants, the same sample size used by Levin and Taylor (2011). Participants ranged from ages 18 to 62, with the mean age being 29.71 ($SD = 10.69$) years old. The sample was 78% male and 22% female. In terms of ethnicity, 51% of the participants self-identified as being Caucasian, 20% as being mixed ethnicity, 10% as Japanese, 5% as Hawaiian or part-Hawaiian, 3% as Chinese, 3% as Filipino, 2% as Pacific Islander, 2% as Korean, 1% as African American, 1% as Hispanic, and 2% as an ethnicity of "other." This sample represents a more ethnically and culturally diverse group of participants than that used by Levin and Taylor, who reported that 73% of the participants self-identified their ethnicity as Caucasian, 15% as Asian, and 6.1% as "other." Their study also included one Latino and one African American participant.

In our sample, 13% of participants reported that they surf, on average, 20 days or more each month, 11% reported surfing 15–19 days per month, 35% reported surfing 10–14 days per month, 22% reported surfing 5–9 days per month, and 19% reported surfing 0–4 days per month. Regarding location of surfing, 69% of participants reported that they surf most frequently in the Hawaiian Islands, 26% reported that they most frequently surf on the East Coast of the United States, 3% reported that they most frequently surf on the West Coast of the United States, and 2% reported that they most frequently surf in a place other than those mentioned above.

Measures

Demographic Questionnaire. The demographic questionnaire was used to ask participants their age, sex, and ethnicity. It also was used to ask the surfer to identify the number of years he or she has been surfing, how many days in a month he or she surfs on average, the average duration of his or her surf sessions in minutes, the geographic region he or she most frequently surfs, the amount of time since the individual has last surfed, and exercise habits aside from surfing.

Spiritual Surfing Experience Questionnaire. Each participating surfer was asked to identify how frequently he or she experiences the sensation of 16 typical descriptors of surfing experiences, referred to as the Spiritual Surfing Experience Questionnaire (SSEQ). The questionnaire included items such as "Heightened focus," "Time slowing down," "Meditative," and "Fun." This list of items is based on the questionnaire generated by Levin and Taylor (2011), with some modifications (i.e., separating the original item of "Connection with nature/God/the universe" into three different items and rating all items on a five-point Likert scale rather than an implicit dichotomous yes–no format). This scaling change allowed an association to be detected between a greater range of scores on the SSEQ and other scales in this study. Responses to each item ranged from 1 (*very rarely*) to 5 (*very often*). These descriptors were deemed by the present authors to provide content valid surfing-specific indicators of spirituality. Reliability and validity estimates for the original and revised SSEQ items are unknown.

Spirituality. Level of spirituality was assessed through the Spirituality Assessment Scale (SAS; Howden, 1992). The SAS is a self-report measure containing 28 items rated on a scale from 1 (*strongly disagree*) to 6 (*strongly agree*). Recommended cutoff scores were created to identify some of the possible degrees of spirituality, with 140–160 indicating strong, positive spirituality; 84–112 indicating fair or mixed positive and negative spirituality; and 28–56 representing weak or negative spirituality. The mean test score in the initial normative sample of 189 predominantly white/Caucasian (94.7%) adults between the ages of 40 and 60 living in the southwestern United States was 139.18 ($SD = 14.30$; Howden, 1992). The SAS was also chosen because of its relatively short administration and strong psychometric support (Howden, 1992). In addition, the SAS items appear to assess the five cognitive and emotional aspects of our proposed definition of spirituality, suggesting content validity for the purposes of this study. For example, items such as "I feel a connection to all life," "I have a sense of harmony or inner peace," and "My life has meaning and purpose" correspond to the proposed definition of spirituality.

Reliability of the SAS has been estimated by measuring the internal consistency of the scale. The results of this analysis yielded a Cronbach's alpha correlation coefficient of .92, indicating that the items are highly interrelated (Howden, 1992). No other forms of reliability were established. Therefore, the stability of scores over time is unknown. Construct validity was supported through factor loading. The results of this analysis produced six factors with a factor loading criteria of 0.40 and a minimal loading of three items on a single factor (Howden, 1992). The six factors produced were labeled as innerness expressed as harmony and relationship with a supreme being, innerness used for guidance and strength, connectedness to others, connectedness to life and the world, meaning and purpose

in life, and transcendence (Howden, 1992). These six factors correspond to the proposed definition of spirituality in this study, and the items in the measure appear to capture each of the components of the definition as indicated above. Criterion validity was demonstrated through correlations with two measures of behaviors deemed to be weakly positively related or unrelated to spirituality. Scores on the SAS showed a significant, yet weak, positive relationship with religiousness, as measured by a single item designed by Howden, which asked participants to rate themselves on a scale in terms of their overall level of religiousness from 1 (*not at all*) to 4 (*very religious*) ($r = .24$), and religiousness accounted for approximately 6% of the variance in SAS scores ($r^2 = .06$). Scores on the SAS were not significantly correlated with frequency of attendance at religious events, as measured by a single item designed by Howden, which asked participants to rate their frequency of attending religious events on a scale from 1 (*at least once a week*) to 4 (*not at all*) ($r = .06$), and frequency of attendance at religious events accounted for 36% of the variance in SAS scores. These divergent validity estimates indicated that the SAS measured spirituality in a way that was largely independent of religious beliefs or practices.

Depression. The Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996) was used to measure the level of depressive symptoms among participating surfers. Recommended cutoff scores were created to identify varying degrees of depression, with 0–13 indicating minimal depression, 14–19 indicating mild depression, 20–28 indicating moderate depression, and 29–63 indicating severe depression. A predominantly Caucasian sample of 120 college students with a mean age of 19.58 years was administered the test to serve as a comparative normal group. This sample yielded a mean test score of 12.56 ($SD = 9.93$). In a separate sample, the nondepressed group of 127 adults seeking therapy from the University of Pennsylvania yielded a mean score on the BDI-II of 7.65 ($SD = 5.90$; Beck et al., 1996). The BDI-II was selected for this study because of its relatively short administration time, strong psychometric support (Beck, Steer, & Brown, 1996), and availability of norms for comparison with this study's sample of surfers.

Reliability of the BDI-II has been estimated through internal consistency and test–retest analyses. Internal consistency analysis of the scores from a sample of 500 outpatients yielded a Cronbach's alpha correlation coefficient of .92 (Beck et al., 1996). Analysis of the scores from a sample of 120 college students yielded a Cronbach's alpha correlation coefficient of .93 (Beck et al., 1996). These estimates indicate that the items are highly interrelated. Test–retest reliability evaluated in a sample of 26 outpatients over a one-week interval yielded a correlation of .93, suggesting the scores are stable across seven days. Construct validity support was documented through factor analysis of the scores from a sample of 500 outpatients. The analysis yielded the two factors labeled as somatic-affective and cognitive symptoms (Beck et al., 1996). Criterion and construct validity were supported with several other scales. The BDI-II was significantly correlated with the Scale for Suicide Ideation ($r = .37$; Beck, Kovacs, & Weissman, 1979) and the Hamilton Psychiatric Rating Scale for Depression ($r = .71$; Hamilton, 1960), indicating that the BDI-II is similar to other measures of depression and depressive symptoms (Beck et al., 1996). The BDI-II was also significantly correlated with the Hamilton Rating Scale for Anxiety ($r = .47$; Hamilton, 1959) and the Beck Hopelessness Scale

(r = .68; Beck & Steer, 1988), indicating that the BDI-II is related to theoretically similar measures (Beck et al., 1996).

Anxiety. The level of anxiety symptoms among participating surfers was assessed through the Beck Anxiety Inventory (BAI; Beck & Steer, 1993). Recommended cutoff scores were created to identify varying degrees of anxiety, with 0–7 indicating minimal anxiety, 8–15 indicating mild anxiety, 16–25 indicating moderate anxiety, and 26–63 indicating severe anxiety. Three nonclinical samples were administered the BAI to serve as normative comparison groups. Among the normative comparison groups, 65 college students had a mean test score of 11.08 (SD = 9.1), 142 medical students had a mean test score of 8.89 (SD = 7.30), and 36 nonstudent adults had a mean score of 7.78 (SD = 5.65; Beck & Steer, 1993). The BAI was selected for this study because of its relatively short administration time, strong psychometric support (Beck & Steer, 1993), and availability of norms for comparison with this study's sample of surfers.

Reliability of the BAI has been estimated through internal consistency and test–retest analyses. Internal consistency analysis of scores on the BAI in adult samples yielded Cronbach's alpha correlation coefficients ranging from .92 to .94, indicating high interrelatedness of the items (Beck & Steer, 1993). Test–retest reliability during a one-week interval was 0.75, indicating stability of scores over a seven-day period (Beck & Steer, 1993). Criterion validity was supported through correlations with two other scales designed to measure some aspect of anxiety. The BAI was significantly correlated with the Hamilton Anxiety Rating Scale (r = .51; Hamilton, 1959), the mean anxiety ratings over a seven-day period in the Weekly Record of Anxiety and Depression (r = .54; Barlow & Cerny, 1988), and both the Trait (r = .47) and State (r = .58) subscales of the State-Trait Anxiety Inventory (Spielberger, Gorsuch, & Lushene, 1970).

Procedure

Recruiting methods were multifaceted in both geographic regions. The first author recruited surfers by approaching anyone near the oceanfront with a surfboard and offering the opportunity to volunteer to participate in a study on surfing and mental health that involved completing a survey. A second recruiting technique used in this study was conducted in two large universities, where undergraduate surfers were recruited through their courses and surf clubs. Finally, employees were recruited in surf shops in these regions. All participants, regardless of where they were recruited, were offered surf wax, wax combs, or surf stickers in return for completing the survey.

The study was approved by the University of Hawai'i at Mānoa Committee on Human Studies Institutional Review Board before data collection. Potential participants were asked to complete a brief survey that was estimated to take approximately 15–20 minutes to finish. Participants then received the survey packet that included an informed consent form followed by a demographic questionnaire, and the following instruments in a counterbalanced order: the Spiritual Surfing Experience Questionnaire (modified and adapted from Levin & Taylor, 2011), the Spirituality Assessment Scale (Howden, 1992), the Beck Depression Inventory-II (Beck, Steer, & Brown, 1996), and the Beck Anxiety Inventory (Beck & Steer, 1993). To maintain anonymity, no identifying information was placed on the questionnaires.

Results

Summary Statistics

The internal consistency reliabilities of the SSEQ, SAS, BDI-II, and BAI were estimated using coefficient alphas. Estimates obtained were .72 for the SSEQ, .92 for the SAS, .82 for the BDI-II, and .90 for the BAI. There were no significant differences found between geographic groups on the SSEQ, $F(3, 96) = 0.63$, $p = .596$; the SAS, $F(3, 96) = 0.63$, $p = .595$; the BDI-II, $F(3, 96) = 0.96$, $p = .417$; or the BAI, $F(3, 96) = 0.17$, $p = .920$. Therefore, geographic groups were combined for further analyses.

Surfers' Levels of Depression and Anxiety

The first hypothesis of this study was that surfers would report fewer symptoms of depression and anxiety than reported in normative samples, which would replicate the findings of Levin and Taylor (2011). To address this hypothesis, comparisons between obtained scores and normative scores were performed on the BDI-II and BAI in two ways.

The first method was comparing the scores from our sample of surfers to the recommended cutoff scores available for each scale by computing the total mean scores of each scale and identifying within which range these means fall. For the BDI-II, the total score mean of the sample was 4.43, which falls within the cutoff range of minimal depressive symptoms (Beck et al., 1996). The total score mean of the sample on the BAI was 5.61, which falls within the cutoff range of minimal anxiety symptoms (Beck & Steer, 1993).

The second method was comparing our sample's mean scores on the BDI-II and BAI with normative sample means through independent samples t tests. The total mean score for the sample of surfers on the BDI-II ($M = 4.43$, $SD = 4.34$; $n = 100$; obtained range = 0–19; possible scale range = 0–63) was compared both to the mean score in the normative sample of 120 college students ($M = 12.56$, $SD = 9.93$) and the mean score in a separate normative sample of the nondepressed group of 127 adults ($M = 7.65$, $SD = 5.90$) seeking therapy (Beck et al., 1996). The total mean score from the sample of surfers was significantly lower than the total mean score of the normative sample of 120 college students, $t(218) = -8.09$, $p < .01$, and the total mean score of the normative sample of 127 nondepressed adults seeking therapy, $t(225) = -4.73$, $p < .01$. Total scores on the BDI-II were also used to compare the percentage of participants who endorsed clinically significant levels of depressive symptoms with the point prevalence in the United States (8.7%) as reported from a survey of 217,379 individuals by Strine et al. (2008). In our sample, 4% of participants endorsed scores of 14 or above on the BDI-II, which indicates a clinically significant level of depression. Using a z-test to compare the proportions, the sample of surfers was found to have a significantly lower proportion of participants ($z = 2.39$; $p < .05$) who endorsed a clinically significant level of depression than the point prevalence as reported by Strine and colleagues.

The total mean score on the BAI ($M = 5.63$, $SD = 6.87$; $n = 100$; obtained range = 0–39; possible scale range = 0–63) was compared with the total mean score in a normative sample of 65 college students ($M = 11.08$, $SD = 9.1$), the total mean score in a normative sample of 142 medical students ($M = 8.89$, $SD = 7.30$), and the total

mean score in a normative sample of 36 nonstudents ($M = 7.78$, $SD = 5.65$) (Beck & Steer, 1993). The total mean score of the sample of surfers was significantly lower than the total mean score of the normative sample of 65 college students, $t(163) = -4.14$, $p < .01$, and the total mean score of the normative sample of 142 medical students, $t(240) = -3.56$, $p < .01$. However, the total mean score on the BAI from the sample of surfers was not significantly different than the normative sample of 36 nonstudent adults, $t(134) = -1.86$, $p = .06$.

Surfers' Level of Spirituality

The second hypothesis of this study was that a geographically diverse group of surfers would report higher levels of spirituality than a normative sample. In addressing this hypothesis, the total mean score from the sample of surfers on the SAS was compared with the recommended cutoff scores available for this scale to identify within which range this mean score falls. On the SAS, the total score mean of the sample was 137.27, which falls between the cutoff ranges of fair or mixed positive and negative spirituality (range = 84–112) and strong positive spirituality (range = 140–160) (Howden, 1992). In addition, the total mean score of the sample on the SAS (M =137.27, SD = 16.13; n = 100; obtained range = 99–168; possible scale range = 28–168) was compared with the mean score in the normative sample of 189 adults (M = 139.18, SD = 14.30) through the use of an independent samples t test (Howden, 1992). The total mean score of the sample of surfers was not significantly different than the normative sample of 189 adults, $t(287) = -0.99$, $p = .32$.

Relations Between Spirituality, Depression, Anxiety, and the Spiritual Surfing Experience

The third hypothesis of this study was that reported levels of spirituality from a geographically diverse sample of surfers would be negatively related to reported levels of depression and anxiety. The analyses yielded a significant, negative correlation between scores on the SAS and scores on the BDI-II ($r = -.31$, $p < .01$), indicating higher levels of spirituality are associated with lower levels of depression. No significant correlation was found between scores on the SAS and scores on the BAI ($r = -.12$, $p = .242$). These variables were also tested for a possible curvilinear relationship, but the results remained nonsignificant.

The fourth hypothesis of this study was that a positive relationship would exist between the spiritual aspects of the surfing experience and reported levels of general spirituality. A significant positive relationship was found between scores on the SSEQ (M = 60.78, SD = 7.21; n = 100; obtained range = 45–76; possible scale range = 16–80) and SAS ($r = .55$; $p < .01$), indicating that having spiritual experiences when surfing is related to reporting a greater sense of general spirituality. However, the value of the correlation also indicates that the SSEQ and SAS are not measuring the same construct.

In addition, the data suggest that the frequency an individual surfs is related to his or her reported experience of the spiritual aspects of surfing. Independent sample t tests indicate that surfers who reported surfing 20 or more days each month scored higher on the SSEQ than any other participants. They scored significantly

higher on the SSEQ than surfers who surf 0–4 days per month, $t(30) = 3.52$, $p < .01$; 5–9 days per month, $t(33) = 4.19$, $p < .01$; 10–14 days per month, $t(46) = 2.56$, $p < .05$; and 15–19 days per month, $t(22) = 2.72$, $p < .05$.

The fifth and final hypothesis of this study was that the spiritual aspects of the surfing experience would be negatively related to reported levels of depression and anxiety. A significant relationship was not found between scores on the SSEQ and BDI-II ($r = -.002$, $p = .987$) or scores on the SSEQ and the BAI ($r = -.07$, $p = .504$). These variables were also tested for possible curvilinear relationships, but the results remained nonsignificant.

Discussion

The results support three of the five hypotheses of this study. Overall, the results demonstrated that surfers are less depressed and anxious than normative samples, greater spirituality is associated with less depression (but not anxiety) among surfers, and spiritual surfing experiences are related to a general sense of being spiritual. Contrary to expectations, surfers reported the same level of spirituality as a normative sample, and spiritual surfing experiences were not related to levels of depression or anxiety.

The findings of Levin and Taylor (2011) that surfers in California reported a lower level of depression and anxiety than normative samples were mostly replicated in this sample of surfers from the Hawaiian Islands and the East Coast of the United States. The total mean of reported levels of depressive symptoms in this sample fell within the range for minimal depression and was significantly lower than the reported levels of two normative comparison groups (Beck et al., 1996). In addition, the proportion of individuals within the sample who reported clinically significant levels of depression was significantly lower than the point prevalence rate as reported by Strine et al. (2008). Similarly, the total mean of reported levels of anxiety symptoms in this sample fell within the range for minimal anxiety and was significantly lower than the reported levels of two (65 college students and 142 medical students) out of three normative comparison groups (Beck & Steer, 1993). The total mean of our sample was not significantly different than a sample of 36 nonstudents in terms of reported levels of anxiety (Beck & Steer, 1993). This inconsistent result could be due to the small sample size in the third comparison group.

The results of this study also indicated a relationship between spirituality and depression. A significant negative correlation was found between scores on the SAS and the BDI-II, indicating that participants who reported a higher level of overall spirituality also reported a lower level of depressive symptoms. However, no significant relationship was found between mean scores on the SAS and BAI, failing to identify an association between spirituality and anxiety among surfers. This result is inconsistent with previous findings with cancer patients and at-risk youth (Kandasamy et al., 2011; Davis et al., 2003) and warrants future study regarding the conditions under which spiritual beliefs and emotions serve as resilience factors for anxiety among surfers. One possibility is that surfers may perceive risk and anxiety differently than the norm, given their frequent engagement in the risky sport of surfing. Research has indicated that prior involvement in anxiety-provoking situations

influences perception of future risks, and surfers may have unique exposures to such environments, for example surfing in big waves (Weber, Shafir, & Blais 2004).

Another finding of this study is that spiritual surfing experiences were found to be related to levels of general spirituality. A significant positive correlation ($r = .55$; $p < 0.01$) was found between scores on the SSEQ and SAS, indicating that participants who reported a higher level of surfing-specific spiritual experiences also reported a higher level of overall spirituality. Given that the SSEQ previously had only content validity support, its significant correlation with the SAS provides some construct validity evidence (in addition to internal consistency reliability evidence in terms of a Cronbach's alpha of 0.72). In addition, the results indicated that the frequency that an individual engaged in surfing was related to the individual's level of spiritual surfing experiences. This result raises the possibility that more time spent surfing leads to a greater spiritual experience when engaged in the activity. This finding is consistent with Benjamin and Looby's (1998) hypothesis that spiritual development occurs after repeated spiritual experiences. However, it is also possible that individuals who perceive the activity as a spiritual experience are more likely to spend time engaging in the sport.

Two of the five hypotheses of this study were not supported. This sample of surfers did not report a significantly higher overall level of spiritualty than the available normative sample for the SAS (Howden, 1992). In addition, the sample mean of 137.27 ($SD = 16.13$) fell between fair (range = 84–112) and strong (range = 140–160) levels of spirituality. Although specific interpretations are not available for scores falling in between these cutoff ranges, previous research has reported the above interpretation (Briggs & Shoffner, 2006). However, given the finding that the spiritual surfing experience was significantly related to overall levels of spirituality, there appears to be an association between reporting a high level of spiritual-specific surfing experiences and overall levels of spirituality. Finally, the results failed to identify an association between spiritual-specific surfing experiences and depressive or anxious symptoms. Therefore, although general spirituality was found to be associated with less depression, the spiritual nature of the surfing experience was not. One possible explanation for the nonsignificant relationships could be a truncated range of responses on the BDI-II and BAI. While there was reasonable variation in responses on the SSEQ, the overall sample mean on the BDI-II was 4.43 out of a possible 63 points, and the overall sample mean on the BAI was 5.63 out of a possible 63 points. The limited range in responses on these instruments possibly contributed to the nonsignificant findings in this study.

Clinical Implications

The findings of our study along with those of Levin and Taylor (2011) hold important implications for potential mental health promoting aspects of surfing that deserve further study. This study partially replicated the findings reported by Levin and Taylor (2011) involving surfers in California by showing lower than normative levels of depression and anxiety among surfers in the Hawaiian Islands and the mid-Atlantic region of the United States. The replicated findings strengthen the rationale for testing the hypothesis that surfing may be an experience that leads to these mental health benefits. As the sample in this study includes surfers from

different geographic regions and more culturally diverse backgrounds than the sample in the study by Levin and Taylor, these findings demonstrate that surfers from a wide range of geographic regions share these common mental health characteristics. Geographic and cultural robustness of these results possibly indicates that the shared common characteristic of surfing may serve as the underlying causal factor for the mental health benefits observed. However, other possibilities exist, and the results should still be generalized with caution, as these samples all come from regions within the United States and may not be fully representative of the worldwide surfing population in terms of culture, age, ethnicity, or gender.

It would be reasonable to evaluate whether surfing constitutes effective treatment and prevention programing for depression and anxiety for individuals who find surfing conducive. However, it is important to note that treatment implications of our results should be interpreted with caution as no causal relations among variables were evaluated. Individuals who participate in surfing may be less depressed and anxious than normative samples regardless of whether they engage in surfing. In addition, the recruiting methods used in this study may have led to biased results such that less depressed or anxious surfers may have been more likely to agree to participate. Further research should explore the possible causal link between surfing and mental health status before considering surfing as a possible treatment or prevention program.

In addition, higher levels of spirituality were associated with lower levels of depression in this study, indicating that spirituality could be a possible causal mechanism for the findings that surfers reported a lower level of depressive symptoms than normative comparison samples in both Levin and Taylor (2011) and our study. This potential mechanism could be based upon the definition of spirituality including factors such as a sense of connectedness and feelings of inner peace and harmony. Possession of these characteristics may preclude some depressive symptoms, such as feeling like a failure, anhedonia, and discouragement about the future.

In addition to partially replicating the earlier findings of lower reported levels of depression and anxiety (Levin & Taylor, 2011), a relationship was found between the spiritual surfing experience and overall levels of spirituality. These findings indicate that surfers who report a high level of surfing-specific spiritual experiences also report a high level of spirituality. This relationship supports anecdotal accounts that describe surfing as a spiritual experience for some individuals. However, this study does not address the issue of whether surfing-specific spiritual experiences lead to a higher sense of spirituality or whether highly spiritual people consider surfing to be a spiritual experience. It is possible that individuals who already possess a greater sense of spirituality interpret the experience of surfing in a spiritual manner.

Although the hypothesis that surfers would report a higher overall level of spirituality than the normative sample was not supported, spirituality's relationship with the surfing experience and levels of depressive symptoms support the notion that spirituality is a relevant variable for this population. Future research is warranted to determine if other factors are contributing to the positive mental health qualities reported by surfers, such as the benefits of exercise or engaging in physical leisure activities. However, spirituality should also be considered in future research, particularly in terms of establishing causal relationships between the spiritual surfing experience and overall levels of spirituality (Parry et al., 2007).

Limitations

There are several limitations to this study that need to be addressed. First, psychometric and normative comparison samples were used which did not match the sample in this study in terms of age, gender, culture, ethnicity, or geographic location. The lack of a control group, such as a sample of nonsurfers or other athletes who do not also surf, that was better matched to this sample on these characteristics hinders the generalizability of the results. In addition, the psychometric properties of the SSEQ are unknown other than the Cronbach's alpha of 0.72 and the significant construct validity correlation between the SAS and SSEQ found in the current study. Without knowledge of stability, reliability, and other validity estimates of the scale, results should be interpreted with caution. A third limitation is that convenience sampling was used in that the geographic regions that were studied were of the easiest accessibility for the first author. A fourth limitation is that specific interpretations are not available for scores that fall in between the proposed cutoff ranges on the SAS, making relative levels of spirituality difficult to discern. A fifth limitation is the small sample size used in comparing the surfers from Hawai'i and those from the East Coast. No significant differences were found on the SAS, BDI-II, BAI, or SSEQ, and these two groups were combined for all future analyses. However, it is possible that the nonsignificant findings could be attributed to the small sample sizes in each group. In addition, there may be differences between individuals who agreed to participate in the study and those who did not, as some potential participants chose not to complete the survey when asked. Although the refusal rate was not systematically noted, it is the impression of the researcher that approximately 20% of the surfers who were invited refused to participate. As noted earlier, it is possible that individuals who were less depressed or anxious were more likely to participate, which potentially influenced the results. Finally, it also was noted earlier that causal relationships were not established in this study, as the relationships between variables are based on correlational rather than longitudinal analyses.

Conclusions

Surfing continues to grow as a sport of interest within the spirituality of sports literature, although, until now, this work to our knowledge has been exclusively theoretical and anecdotal (Parry et al., 2007). Due to this increasing interest, research should continue to focus on the spiritual aspect of surfing, as well as the mental health implications of the sport. Future research should seek to replicate these results with surfers in other geographic regions of the world, particularly in areas outside of the United States. These replications could lend further support to the notion that the unique experience of surfing may hold a causal mechanism behind the mental health benefits seen in this sample of surfers and in a previous study (Levin & Taylor, 2011). Furthermore, future research should seek to determine causation between the correlations found in this study, possibly through studying outcomes of a learning-to-surf intervention. Studies should address the relationship between the spiritual surfing experience and overall levels of spirituality to see which variable precedes the other or if other variables, such as an individual's risk perception, could better explain the relationships found in this study (Weber et al.,

2004). This research could focus on measuring spirituality in individuals before a learn-to-surf intervention and examining how differences in pretest spirituality levels influence or predict an individual's subjective surfing experience. Similarly, research should focus on the findings of the negative correlation between overall levels of spirituality and symptoms of depression, to determine if this is a causal relationship, such as a treatment study that focuses on reducing depressive symptomology by increasing overall levels of spirituality, possibly through an ocean surfing intervention. As surfing has been shown to be a dangerous and potentially addictive sport (Partington et al., 2009), it may not be an appropriate activity for everyone. For example, surfing may serve to increase spirituality for high sensation seekers but not for low sensation seekers who may find this sport to be terrifying. Research should focus on understanding these individual differences and how they impact an individual's response to a surfing-based intervention. As there is evidence for the connection between spirituality and nature-based leisure activities (Parry et al., 2007), future research should also try to illuminate the role of being immersed in nature, in particular the ocean, upon the spiritual surfing experience. For example, surfing in an artificial wave machine versus the ocean could be compared in terms of effects on depression, anxiety, the spiritual surfing experience, and general spirituality. Finally, future studies should strive to determine the differences between individuals who report a high level of surfing-specific spiritual experiences and those who do not, as well as the differences between surfers who report a high level of spirituality and those who do not.

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