

Feasibility of Using Yoga as Problem- and Emotion-Focused Coping For Adults with Intellectual and Developmental Disabilities

A Pilot Study



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Abstract

Individuals with intellectual and developmental disabilities (IDD) are at a greater risk for experiencing stress, particularly stress associated with negative interpersonal relations, in comparison to individuals without disabilities. The purpose of this study was to: (a) explore whether participation in yoga served as a coping strategy for adults with IDD; and (b) determine the feasibility of researching stress and yoga as coping among individuals with IDD. Using a multi-method research design, participants completed a quantitative assessment before and after the seven-and-a-half week yoga intervention, and a semi-structured interview post-intervention. Qualitative findings suggest that yoga can serve as an emotion-focused coping strategy for adults with IDD, as it may increase participants' mood and enhance their perceived social support. Future research should evaluate yoga as a form of coping for adults with IDD, and identify best practices for conducting stress and coping-related research with adults with IDD.

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Keywords

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As of 2016, an estimated 7.37 million individuals in the United States had an intellectual and developmental disability (Larson et al., 2018). Intellectual and developmental disabilities (IDD) is a term used to represent individuals diagnosed with a health condition before age 22 that results in impaired physical, cognitive, and/or adaptive functioning. Deficits in physical functioning may include visual impairment or motor deficits, while limitations in cognitive functioning may include difficulties with learning math or language skills, or challenges with problem solving, decision making, and abstract thinking (American Psychiatric Association [APA], 2013; University of Minnesota Institute on Community Integration, 2018). Impairments in adaptive functioning include deficits in conceptual skills, social skills, and practical skills required for independent self-care (APA, 2013; National Institute of Child Health and Human Development, 2018). Examples of IDD include autism spectrum disorder, Down syndrome, and Fragile X syndrome (APA, 2013; The Arc, 2015).

Stress Among Individuals with IDD

While individuals with IDD have reported experiencing stressors similar to the general population (Bramston et al., 1999; Bramston & Mioche, 2001), research indicates that individuals with IDD may be at risk for experiencing more stress than individuals without a disability (Hartley & MacLean, 2005). Researchers attribute the additional stress of individuals with IDD to negative interpersonal relations (i.e., being teased or bullied), decreased communication and social skills, and a lack of coping skills (Bramston et al., 1999; Hartley & MacLean, 2005). In a study specific to stress and coping processes of individuals with mild IDD (Hartley & MacLean, 2005), participants reported most often using avoidant coping in response to negative interpersonal relations. Avoidant coping strategies can be maladaptive as individuals need to learn to actively resolve stressful situations (Hartley & MacLean, 2005). Increased stress and the use of maladaptive coping strategies can also increase individuals' with IDD risk for experiencing depression symptoms, behavioral issues, and mental health conditions (Hartley & MacLean, 2005; 2009; Lunsy, 2003; Scott & Havercamp, 2014). Thus, it is important to consider how complementary and integrative health approaches, such as yoga, might assist individuals with IDD in managing stress.

Therapeutic Benefits of Yoga

Yoga uses postures, breathing, and meditation to increase physical, cognitive, and emotional health (National Center for Complementary and Integrative Health, 2013; Ross & Thomas, 2010). Yoga has therapeutic benefits for various populations with and without disabilities, including: healthy young adults (Pascoe & Bauer, 2015; Tracy & Hart, 2013); older adults (Schmid et al., 2010); individuals with Parkinson's disease (Hawkins et al., 2018; Sharma et al., 2015; Van Puymbroeck et al., 2018); individuals who have experienced a stroke (Schmid et al., 2014; Van Puymbroeck et al., 2014); and individuals with intellectual disability (Hawkins et al., 2012). Participation in yoga can also improve quality of life and frequency of exercise (Hawkins et al., 2012); mobility (Hawkins et al., 2018; Phillips et al., 2016; Portz et al., 2016); social skills (Ross

& Thomas, 2010); stress levels and mood (Bower et al., 2005; Mackenzie et al., 2013; Pascoe & Bauer, 2015).

Yoga as Coping

In an effort to explain the psychosocial benefits of yoga, based on Lazarus and Folkman's transactional theory of stress and coping (1984) and Iwasaki and Mannell's (2000) hierarchical dimensions of leisure stress coping, Crowe, Van Puymbroeck, and Schmid (2016) proposed a framework suggesting yoga has the capacity to serve as a problem- or emotion-focused coping strategy. Using yoga as a problem-focused coping strategy, an individual attempts to decrease their stress through active engagement in yoga poses, breathing exercises, and meditation. As an emotion-focused coping strategy, yoga participation can help individuals cognitively reframe how they perceive stressors or their ability to manage stress (Crowe et al., 2016).

Within Crowe and colleagues' framework (2016), yoga as an emotion-focused coping strategy includes three sub-categories: yoga as social companionship, yoga as mood enhancement, and yoga as palliative coping. Participation in group yoga programs can serve as social companionship, facilitating individuals feeling supported as they work through their stress. Yoga as mood enhancement occurs when individuals experience an increase in positive thoughts and a decrease in negativity following yoga participation, resulting in individuals being in a better mindset, and better equipped to navigate stress. As palliative coping, yoga participation can provide individuals an opportunity to take a break from their stressor. As a result of this brief reprieve, individuals exit yoga with a renewed sense of energy and attitude regarding their stressor and/or their ability to manage their stressor.

Yoga as Coping for Individuals with IDD. Crowe et al.'s (2016) framework has not been evaluated with individuals with IDD. However, there is evidence to suggest that yoga has the potential to serve as a problem- or emotion-focused coping strategy for individuals with IDD. For example, individuals with IDD have an increased risk for becoming obese (Li et al., 2018). Obesity and/or the pressure to lose weight to avoid the onset of obesity can be a stressor for individuals with IDD (Burk & Sharaievska, 2017; Heller et al., 2011; Martinez-Zaragoza et al., 2015;). Using yoga as a problem-focused coping strategy, an individual with IDD may learn and continually practice yoga poses and postures as a means to engage in a healthy lifestyle and decrease their risk of obesity (Hawkins et al., 2012), thereby decreasing stress associated with their health and weight.

Individuals with IDD have stressors related to negative interpersonal relations and consider their disability to be a stressor (Bramston et al., 1999; Bramston & Mioche, 2001; Hartley & MacLean, 2005). Using yoga as an emotion-focused coping strategy, individuals with IDD may experience a sense of connectedness and support when engaging with peers with IDD who have likely experienced similar life events and potential stressors. Experiencing a sense of community and support through a group yoga intervention may facilitate individuals with IDD perceiving stress and their ability to manage it more positively (Crowe et al., 2016). The primary purpose of this study was to explore whether yoga participation served as a problem- or emotion-focused coping strategy for adults with IDD. This study also aimed to determine the feasibility of researching stress and yoga as coping among adults with IDD.

Method

Using a multi-method research design, quantitative and qualitative data related to stress and coping were collected from participants. Stress was measured using the Lifestress Inventory (LSI), a standardized quantitative measure intended for use with individuals with IDD (Bramston & Bostock, 1994; Hartley & MacLean, 2005; 2009). The LSI was administered as an interview pre- and post-yoga intervention. However, quantitative data were unreliable and excluded from analysis as several participants seemed to have difficulty understanding and responding to the LSI questions. Results presented in this manuscript are reflective of qualitative data collected from participants.

Participants

Following Institutional Review Board approval, purposive sampling was used to recruit participants who: (a) were age 18+; (b) had an IDD, and (c) participated in a recreation program for individuals with IDD in the southeast region of the U.S. Individuals who met the inclusion criteria, provided verbal assent to participate in the study, and obtained consent from their legally appointed representative (LAR) to participate in the study, were included in the sample.

Screeners

Participants were excluded from the study if it was determined that it was not safe for them to engage in physical activity, as indicated by their score on the Physical Activity Readiness Questionnaire (PAR-Q; Strohle, 2009; Thomas et al., 1992). A “yes” response to any of the eight PAR-Q items suggests that physical activity may be contraindicated. The PAR-Q was completed by the participants’ LAR. Participants with IDD who had one or more “yes” responses to PAR-Q items were excluded from the study, unless they provided documented approval from their physician to take part in the study.

Participants were also excluded from the study if it was determined they did not comprehend the concept of stress based on their three-step cognitive screener results (Hartley & MacLean, 2005; 2008; 2009). After providing participants a definition of stress, the first step of the screener asked participants to provide an example of a stressful event to confirm their understanding the meaning of stress. Participants able to provide an appropriate example of a stressor proceeded to step two of the screener. Participants unable to verbalize an appropriate example on their own were provided a communication card with written words and matching visual images reflective of positive and negative events (e.g., scoring a touchdown in football, being in a crowded place). Using the communication card as a prompt, participants were asked to select an example of stressful event. Participants unable to select a stressor using the communication card did not proceed to step two, and were excluded from participation in the LSI and semi-structured interview. Participants who correctly selected a negative stressor proceeded to step two of the screener.

For step two, participants were provided pictures of water glasses with varying amounts of water in each. The first glass was empty and represented “no water,” the fourth glass was full and represented “a lot” of water. Participants were asked to identify which water glass was representative of each amount of water (i.e., which glass has “no water” or “a little” water in it?), to determine whether participants understood

the LSI Likert scale answer options (i.e., “none,” “a little,” “a lot”) (Hartley & MacLean, 2005). The third step required participants match the terms “no stress,” “a little stress,” “a medium amount stress,” and “a lot of stress” to the corresponding water glass (“no water,” “a little”) to further confirm participants’ understanding of LSI Likert scale answer options. Participants who passed only the first step of the screener were eligible to participate in the semi-structured interview, but not the LSI. Participants who passed all three steps of the screener completed the LSI and the semi-structured interview.

Thirteen participants enrolled in the multi-method study; nine of 13 participants passed step one of the cognitive screener and completed the semi-structured interview. However, three of nine participants’ interview data were excluded from qualitative analysis due to participants having difficulty understanding the meaning of interview questions asked. Qualitative data presented in this manuscript are reflective of six participants’ data.

Intervention

Twelve, 60-minute yoga sessions were offered over a period of seven-and-a-half weeks. Each yoga session was planned and facilitated by a yoga teacher or a certified yoga therapist who were also members of the research team. A second research team member demonstrated modified postures for participants; a third research team member demonstrated postures from a seated position; a fourth research team member provided participants 1:1 hands-on or verbal assistance throughout each yoga session as needed. The primary researcher also attended the yoga sessions and provided assistance to participants or yoga instructors as needed. The Hatha yoga curriculum included postures, breathing exercises, and guided meditation (see Table 1).

Table 1

Yoga Curriculum

<p>Postures Completed Seated or Lying Down</p>	<ul style="list-style-type: none"> • Boat pose (feet on the floor leaning back; alternate R/L knee to chest; extend R/L leg out) • Bridge pose • Cat/cow pose • Caterpillar pose • Child pose • Cobra pose • Corpse pose • Extend R leg back, cross R leg over L, look L (same with L leg) 	<ul style="list-style-type: none"> • Hamstring stretch with strap R/L sides • Knees to chest (hug in; R knee to chest w/ twist; L knee to chest w/ twist) • Puppy pose • Staff pose • Supine butterfly pose • Table top pose • Windshield wiper R/L sides
<p>Postures Completed Standing</p>	<ul style="list-style-type: none"> • Awkward chair; Awkward chair with twist (hands in Anjali mudra) • Cactus pose • Dolphin pose • Downward dog / Downward dog at the wall • Extended side angle • Forward fold • Half lift • Half-moon R/L sides • Lotus arms • Low lunge R/L sides 	<ul style="list-style-type: none"> • Mountain pose • Mountain pose, raise R leg and look down (same with L leg) • Plank on the wall • Reverse warrior • Runners lung R/L sides • Shooting star • Side plank R/L sides • Swing R arm back, look R, then center (same with L side) • Warrior I • Warrior II

Table 1 (cont.)

Breathing Exercises & Meditation	<ul style="list-style-type: none"> • Guided meditation: Cloud rest • Final relaxation: Long Time Sun • Pranayama (breathing) in savasana (corpse pose)
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Data Collection

After completing the yoga intervention, participants who successfully passed the cognitive screener were invited to participate in a 1:1 semi-structured interview with the primary researcher at the participants' recreation program facility. The focus of the interview was to understand the potential influence of yoga on stress and coping processes among adults with IDD. There were five primary interview questions; each question had two to three follow-up questions or semi-structured probes (see Table 2). Communication cards with generic photos or clip art with corresponding phrases at the bottom were used as needed to help clarify interview questions and provide

Table 2

1:1 Semi-structured Interview Questions

1. What did you enjoy most about participating in yoga this semester?

2. What did you least enjoy about participating in yoga this semester?

Interviewer will now read aloud the definition of stress: "Stress is feeling uncomfortable or worried when you feel like you can't handle a problem" (Hartley & Maclean, 2005, pg. 289; Kids Health, 2015, para. 2)

3. Can you give me an example of something that has caused you stress in the last two weeks? (If unable to provide a stressor, based off of LSI Stress Inventory top three answers from results of the day prior, interviewer will give examples of stressors as probe and ask them to identify with one)

a. Can you tell me about what you did to handle or work through that stressor (name/refer to stressor that participant shares)

i. What makes you feel better (less worried or concerned) when you are stressed?

1. Can you give me an example of something that makes you happy, that helps you feel less stressed?

a. Why does (refer to the thing that makes them happy) make you feel happy and less stressed?

ii. Do friends or family help you work through stress?

1. Thinking about the friends you have in yoga (such as participants from [name of local program or research team members]), do they help you work through the stress? If yes, why/how?

4. Would yoga be an activity you would do to feel less stressed (refer to their named stressor as an example if needed)?

a. Why would yoga be an activity you would do to feel less stressed?

b. Why would yoga not be an activity you would do to feel less stressed?

5. I am going to give you scenarios to identify with, please identify which response you identify with.

a. During yoga I feel...happy, sad, mad, excited, worried, relaxed/calm, tired

i. Looking at your feelings chart over the last seven weeks your mood has been (identify positive or negative trend based on preliminary analysis) after the yoga sessions, would you agree?

b. During yoga what do you think about?

i. During yoga do you think about...the stressor you just named (refer to earlier answer from LSI), yoga, friends/family, nothing, other, or you're not sure?

example answer options for participants. For example, when asked to comment on why yoga would “be an activity you would do to feel less stressed,” a picture of a smiley face with “I enjoyed it” written underneath was presented as an answer option on the communication card. Other answer options included a picture of a group of people with “I got to hang out with my friends,” a picture of an individual completing a yoga pose with “I got to learn yoga,” and so forth. Interviews, averaging 13 minutes and eight seconds in duration, were audio- and video-recorded to capture participants’ verbal and nonverbal responses to questions asked.

Data Analysis

Using a deductive approach, the primary researcher completed directed content analysis (Hsieh & Shannon, 2005) using a priori categories based on Crowe et al.’s (2016) framework to analyze qualitative data. Four a priori categories were used to code interview data: yoga as problem-focused coping, and the three subcomponents of emotion-focused coping: yoga as mood enhancement, yoga as social companionship, and yoga as palliative coping (see Table 3).

Table 3

Definitions of A Priori Categories Used for Directed Content Analysis

Category	Category Definitions Based on Crowe et al.’s (2016) Framework
Problem-focused coping	A behavioral action (e.g., complete yoga pose/posture, or breathing exercise) used during, or as a result of yoga participation to decrease stress.
Emotion-focused coping	An individual’s (positive) change of attitude or perspective regarding their stressor and/or their ability to manage that occurs during, or as a result of yoga participation.
Mood enhancement	A type of emotion-focused coping, in which an individual experiences an increase in positive emotion and/or a decrease in negative emotion during, or as a result of yoga participation.
Social companionship	A type of emotion-focused coping, in which an individual experiences a sense of support and/or community as a result of their interaction with peers during yoga participation.
Palliative coping	A type of emotion-focused coping, in which an individual experiences an emotional/mental break from their stressor during, or as a result of yoga participation.

After reading and reviewing the transcribed interviews to increase familiarity with qualitative content, the primary researcher coded participants’ interview data, based on the four a priori categories. To increase the credibility and trustworthiness of data analysis and interpretation, a second researcher also completed directed content analysis of the data independent of the primary researcher to establish intercoder agreement (Creswell & Creswell, 2018). After completing their independent analyses, both researchers met twice to cross-check one another’s codes based on the a priori categories, and reach agreement regarding qualitative findings. The primary researcher initially coded data in support of three of four categories; the second researcher initially coded data in support of all four categories. After discussing participant data in relation to the a priori categories, the researchers agreed that data supported two of the four categories. Researchers agreed that data coded in the remaining two categories were not prevalent across the sample majority (i.e., three or less participants data fit the category); thus they were not reported in qualitative findings.

Results

Results represent six participants' perspectives. Participants were between the ages of 21 and 66; the average age of participants was 37.5. The sample included four females and two males, who were all single at the time of the study. Five of six participants attended 100% of the yoga sessions. One participant was absent from one of the 12 yoga sessions; the reason for their absence is unknown. Qualitative findings supported two of the four a priori categories used for analysis: (a) yoga as mood enhancement; and (b) yoga as social companionship. Pseudonyms are used to maintain participants' confidentiality and anonymity.

Yoga as Mood Enhancement

According to Crowe et al.'s (2016) framework, mood enhancement is a type of emotion-focused coping, in which yoga participation has the potential to increase participants' positive emotion and/or decrease negative emotions. All six participants reported mood enhancement as an outcome of their yoga participation. For example, when asked how yoga made them feel, Caroline stated, "I feel relaxed...I can say I'm calm, happy...and excited too...when I'm calm it help me feel like not to worry about it anymore...it [yoga] give me motivation...make me feel good...cause when I do good things, it makes me feel good." Similarly, Louise shared feeling "...happy...cause I'm around all my friends," during yoga. John shared, "I feel relaxed and calm to rest my head [in yoga]...I like doing that...I...want everything out of my head," and Denise said "It's [yoga] fun...makes me happy..."

Yoga as Social Companionship

According to Crowe et al.'s (2016) framework, social companionship is a type of emotion-focused coping, in which yoga participation has the potential to facilitate an individual experiencing a sense of support as a result of interactions with others during yoga. Five of six participants shared experiences that aligned with social companionship during their interview. For example, when asked whether friends or research team members helped them feel less stressed during yoga, Bob said, "...[friends and research team members at yoga] make me feel confident...that I can do yoga." John shared, "...[research team member] inspires me, she inspired me a lot...every time I get mad or whatever, she calmed me down." In addition to their discussing the role of peers in decreasing their stress during yoga, participant data indicated that they enjoyed yoga because it allowed them to engage in a shared activity with friends or family. For example, when asked to comment on what about yoga made them happy, Denise stated that "[yoga] makes me happy cause I got [participant name] and [participant name]." When asked why yoga would be an activity they would do to feel less stressed, Louise indicated it was because yoga was something she could do "with my mama...she would like to do it with me."

Discussion

The primary purpose of the study was to explore whether participation in yoga served as a problem- or emotion-focused coping strategy for adults with IDD. Participants' interview responses suggest that yoga has the potential to serve as an emotion-focused coping strategy, but only in two of the three subcategories proposed by Crowe

and colleagues (2016). Specifically, participants expressed that yoga enhanced their mood, and provided them a sense of social companionship. These findings suggest that participants enjoyed yoga, and that the social interactions that occurred during yoga were meaningful to participants. Previous literature indicates individuals with IDD experience stress associated with interpersonal relations, social skills, and lack of coping (Bramston et al., 1999; Hartley & MacLean, 2005). Group-based yoga serving as an emotion-focused coping strategy through mood enhancement and social companionship could decrease adults with IDD's stress by facilitating opportunities for improved social skills and interpersonal relations. Improved mood could also assist participants in perceiving their stress or their ability to manage stress more positively. However, if the intervention had not occurred in a group setting, it is possible that participants would not have found yoga to facilitate coping through mood enhancement or social companionship. Mood may have improved because of the group, and the opportunity to engage in an activity with others. Participant data did not support yoga serving as an emotion-focused palliative coping strategy, as suggested in Crowe et al.'s (2016) model. Study findings also indicated that yoga did not facilitate problem-focused coping among participants with IDD. While it is possible that yoga does not serve as emotion-focused palliative coping or problem-focused coping strategies for adults with IDD, it is also conceivable that the measures used for data collection did not adequately reflect participants' stress and coping processes. Future research is needed to determine if yoga can serve as a problem-focused coping strategy for adults with IDD.

The secondary purpose of the study was to determine the feasibility of researching stress and yoga as coping among adults with IDD. Researchers encountered several challenges in collecting data that accurately reflected participants' perspectives and experiences regarding stress and yoga as coping. These challenges contributed to study limitations, and have implications for future research focused on yoga, stress, and coping among adults with IDD. Related to feasibility, authors would like to share lessons learned related to the study's sampling procedures, screeners and assessments, yoga curriculum, and data collection methods.

Sampling Procedures

A purposive criterion-based sampling strategy was used in this study. While this strategy worked well, it is recommended that alternative criterion be used for future studies. Specifically, study eligibility should require participants provide formal documentation from their physician indicating what type of disability or health condition they have, and whether they have mild, moderate, severe or profound IDD. By obtaining this information, more appropriate standardized assessments that account for participants' cognitive abilities can be selected for evaluating change in participants' stress and coping processes. Researchers might also consider using observational techniques and field notes related to participants' functional abilities, communication styles, and interactions with others to inform sampling selection, and the selection of data collection measures.

Screeners and Assessments

Prior to collecting data, a three-step cognitive screener was used to assess individuals' understanding of stress, and the LSI answer options. While two of the three screener steps had been validated for use with individuals with mild IDD (Hartley & MacLean 2005; 2008), researchers in the current study did not find that the screener

accurately evaluated participants' cognitive understanding of stress and LSI answer options. For example, while researchers did not know participants' formal health diagnoses or IDD severity level, researchers had observed and interacted with several participants during two seven-week yoga interventions prior to the current study. Based on participants' observed functioning, there were participants who seemed to have mild IDD who were excluded from data collection due to their inability to pass the screener. In contrast, there were participants who did not seem to understand complex concepts during conversations suggesting they may have moderate or severe IDD, who passed the screener.

Researchers concluded that the cognitive screener was not adequately sensitive to assess the cognitive capacity of individuals with varying levels of IDD (i.e., mild, moderate, severe, or profound). Future researchers should select a screening tool to globally assess participants' cognitive abilities rather than selecting a screener that is assessment-specific (i.e., the screener used in this study only inquired about stress, and participants' understanding of LSI answer options). For example, researchers might consider using the Woodcock-Johnson Tests of Cognitive Abilities (Woodcock et al., 2001). The Woodcock-Johnson Tests of Cognitive Abilities, part of the Woodcock-Johnson Test III, is intended for use with individuals ages 2 and up, and assesses participants' global cognitive functioning based on participants' comprehension, memory, reading-writing ability, and processing speed (Woodcock et al., 2001). Screening results could be cross-checked with participants' formally documented diagnoses to determine the accuracy of the screener. It is recommended that researchers pilot the Woodcock-Johnson Tests of Cognitive Abilities (Woodcock et al., 2001), or other screening tools used to determine cognitive abilities of participants.

Based on screening results and participants' cognitive abilities, researchers could select a standardized assessment of stress and coping for use with individuals with mild or moderate IDD, while a different standardized assessment or proxy data could be used to evaluate stress and coping among individuals with severe or profound IDD. The use of different standardized assessments to collect participants' stress and coping data should be piloted to confirm the feasibility and appropriateness of the measure(s). For example, the LSI had only been validated for use with individuals with mild and moderate IDD. While the screener may not have been appropriate, it is also possible that the LSI was not an appropriate measure of stress for the study sample, as it was not piloted or validated with individuals with mild, moderate, severe, and profound IDD prior to the study.

Yoga Curriculum

The yoga curriculum used in the study did not include content related to stress and coping, and did not assist participants in understanding the association between their using yoga postures or breathing exercises to decrease stress. Instead, the curriculum was reflective of a traditional yoga class that included postures, breathing exercises, and guided meditation. As a result, data collected specific to stress and coping needed to have better aligned with the content of the intervention as participants were not purposefully exposed to any knowledge or skill development related to stress management and coping processes. For example, participants were asked whether yoga served as a coping strategy for them without having been introduced to coping, or yoga as coping during the intervention. Future studies involving yoga as a potential coping strategy for

adults with IDD should modify traditional yoga curriculum to ensure stress and coping concepts are directly addressed. Incorporating stress and coping concepts into the curriculum could increase participants' understanding of stress and coping concepts, and aid their understanding of how skills learned during yoga (e.g., breathing exercises, guided meditation) might serve as a coping strategy for stress in day-to-day life.

Data Collection Methods

Researchers should consider participants' abilities to recall information over time. Based on cognitive ability, it is possible that participants are able to think more clearly about life circumstances that occur in the present moment, versus being asked to reflect on what has occurred within the last few weeks. Thus, researchers should consider obtaining data reflective of participants' current stressors (i.e., what has been a stressor today) rather than asking participants about global life stressors. For example, researchers could have a card with written and visual cues that ask participants to rate their stress at the start and conclusion of each yoga session.

Communication cards with verbal and corresponding visual cues were intended to support participants who were nonverbal in responding to questions asked during data collection. They were also used when verbal participants had difficulty understanding what was being asked. However, the use of communication cards limited the answer options available for participants and may not have been representative of participants' true perspectives. It was also unclear if participants interpreted the visual and verbal cues as they were intended in relation to the questions being asked. Social desirability bias in which participants selected a positive answer regardless of whether it accurately reflected their experience may have occurred (Evans & Rooney, 2014). Acquiescence, or participants providing an answer even if they did not understand the question or communication card answer option(s), may have also occurred among participants who wanted to fulfill the expectations of an interview (i.e., the interviewee should respond to questions asked) (Sigstad, 2014). In the future, using communication cards that are individualized to each participant (i.e., use personal pictures that have meaning to participants) rather than using generic photos or clipart is suggested (Cambridge & Forrester-Jones, 2003). Photovoice has also been suggested for use in research with individuals with IDD (Jurkowski, 2008). It is also recommended that researchers collect proxy data (Balboni et al., 2013; Emerson et al., 2013) from participants' parents/guardians, teachers or day program staff to better understand what specific to stress and coping participants are experiencing outside of the yoga intervention. Collecting participant data, proxy data (Emerson et al., 2013) and physiological data (e.g., blood pressure, heart rate) (Pascoe et al., 2017) would also allow researchers to triangulate data related to participants' stress and coping processes.

Finally, assessments administered via interview were audio- and video-recorded. Researchers video-recorded interviews to ensure gestures and behaviors of participants who were nonverbal were captured. While this effectively captured responses, participants were distracted by seeing themselves being video-recorded, which resulted in discussions that were off-topic during data collection (e.g., participants would make movements or make faces in the camera). Future studies should only video-record interviews if the camera can be placed out-of-sight of participants.

Limitations

Due to the small sample size and limited participant data, results of the study are not generalizable. Researchers did not obtain participants' formal diagnoses or information related to their IDD severity level. Having this information would have facilitated more appropriate selection of data collection methods. It is also possible that social desirability impacted participants' responses, as it is generally known that stress is "bad" and yoga is "good." Thus, the qualitative results presented in this study are exploratory. Also, data specific to stress was eliminated from analysis, and data specific to coping was only collected post-intervention. Thus, it is difficult to know how or why participants' perceptions of stress or coping may have changed as a result of yoga, and/or as individual's stress levels changed.

Implications for Recreational Therapy

When working with adults with IDD, recreational therapists should use screeners to determine clients' levels of cognitive ability so that standardized assessments that have been validated with individuals with clients' levels of IDD (e.g., mild, moderate, severe, or profound) can be selected. In doing so, recreational therapists will increase the likelihood of accurately assessing clients' strengths and needs, and measuring functional outcomes that result from participation in recreational therapy interventions. Recreational therapists should also collect proxy data from clients' LAR(s) to better understand the context of clients' everyday life experiences and routines outside of the recreational therapy treatment setting (e.g., what time of day does the client tend to become most agitated or restless; what strategies do they currently use for managing stress). Study findings indicated that yoga participation in a group setting has the potential to assist adults with IDD with stress management by improving their mood and increasing social companionship. Thus, when using yoga to help clients with IDD cope with stress it is recommended that content related to stress and coping intentionally be incorporated into the yoga curriculum, and that sessions occur in a group setting.

Conclusion

The primary purpose of the study was to explore whether participation in yoga served as a problem- or emotion-focused coping strategy for adults with IDD. Findings suggest that yoga can act as an emotion-focused strategy for adults with IDD, through mood enhancement and social companionship. Further research is needed to understand the potential for yoga to serve as problem- or emotion-focused coping strategies for adults with IDD. The second purpose of the study was to determine the feasibility of researching stress and yoga as coping among adults with IDD. Challenges specific to capturing accurate data from participants suggest that additional research is needed to identify what standardized cognitive screeners could be used to assess participants' cognitive abilities. Researchers should also identify which standardized assessments could be used to assess stress and coping among individuals with IDD, based on their cognitive functioning and level of IDD (e.g., mild, moderate, severe, or profound).

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