



Camp as context for need satisfaction among Native American youth: Examining links to participation quality and quantity



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ABSTRACT

This study examined relations between participation quality and quantity and youth outcomes associated with Basic Psychological Needs Theory (i.e., autonomy, relatedness, and competence) among 116 Native American youth attending a one-week culturally-tailored summer camp. Participants were 60% female, on average 13.14 ($SD = 2.02$) years old and had an average of 2.98 ($SD = 2.08$) years of prior camp experience. Following their camp experience, participants completed measures of participation quality (i.e., the Tiffany-Eckenrode Program Participation Scale) and targeted program outcomes (i.e., the Basic Psychological Need Satisfaction and Frustration scale). The study findings indicated only one dimension of participation quality (personal development) positively predicted levels of autonomy, relatedness, and competence satisfaction. This study provides preliminary support for the potential utility of promoting (personal development) in a residential summer camp for Native American youth.

1. Introduction

From afterschool programs (Durlak, Weissberg, & Pachan, 2010) to formalized sport and recreation experiences (Kwan, Bobko, Faulkner, Donnelly, & Cairney, 2014), youth participation in out-of-school time (OST) programs has been linked to improved academic achievement (Biggart, Kerr, O'Hare, & Connolly, 2013), physical health, socio-emotional development, and psychological well-being (Hermens, Super, Verkooijen, & Koelen, 2017; Hillman et al., 2014). Moreover, many of these same positive outcomes have been identified in an established OST research context, residential summer camp (Bialeschki, Henderson, & James, 2007). Research suggests residential summer camp is a context that enhances socioemotional and physical health (Povilaitis & Tamminen, 2018), responsibility, leadership, and problem-solving skills (Sibthorp, Bialeschki, Morgan, & Browne, 2013), relationship skills (Sendak, Schilstra, Tye, Brotkin, & Maslow, 2018), and autonomy and competence (Gagnon, Garst, & Townsend, 2019).

Despite emerging evidence of camp as a context for positive development across a range of emotional, social, physical, and cognitive domains, research in this area remains scant for specific youth

populations, including ethnic minority youth, those of less affluent socioeconomic status, and those who are at higher risk for negative psychosocial outcomes (Bialeschki & Sibthorp, 2011). The need for additional evidence supporting effective OST programs (such as summer camp) that serve these more specialized and underexamined populations has been identified through national consensus studies (National Academy of Sciences, 2019). Further, it is unknown to what extent repeated and ongoing camp participation may be linked to greater positive outcomes for minority youth (Gagnon et al., 2019; Thurber, Scanlin, Scheuler, & Henderson, 2007). The potential growth in outcomes resulting from repeated camp experiences (e.g., quantity of participation) and camper engagement (e.g., quality of participation) also remains unclear among minority populations, illustrating a lack of clarity regarding how much of an OST experience is necessary to achieve desired outcomes (Hynes & Sanders, 2011; Thurber et al., 2007). Thus, the present study examined associations between quantity of participation, quality of participation, and socioemotional development within a residential summer camp serving Native American youth. Native American youth represent a severely underserved and vulnerable population for which OST programs addressing both individual

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(i.e., demographic characteristics) and contextual factors (e.g., culturally tailored activities and curricula focusing on the development of behaviors associated with self-determinate behaviors) are needed (LaFromboise, 2006; LaFromboise, Medoff, Lee, & Harris, 2007).

1.1. Associations between program participation and outcomes

Whereas evidence points to camp and other OST settings as contexts for positive development across a range of domains, it is unclear “how much” of a program is needed to achieve desired outcomes (Durlak et al., 2010; Simpkins, 2015). Specifically, research supporting that quantity and/or quality of program participation are associated with developmental changes in youth is somewhat mixed (Agans et al., 2014; Simpkins, 2015). For instance, some literature suggests increased participation in OST programs is associated with better outcomes (Simpkins, Little, & Weiss, 2004); that is, a child attending camp for three years should exhibit greater outcomes than a child attending for only one year. Indeed, the prevailing conventional wisdom in camp research suggests camp experiences tend to lead to better outcomes for campers, with some large studies of campers indicating “growth at camp significantly exceeded growth attributable to maturation alone” (Thurber et al., 2007, p. 251).

However, the notion that more is better does not consistently emerge in studies examining the influence of repeated camp participation on outcomes. For example, Gagnon et al. (2019) found no relation between escalating levels of camp attendance (measured in number of years) and changes in autonomy, relatedness, or competence within a medical specialty camp. Similarly, in a review of the relations between afterschool program participation levels and outcomes, Roth, Malone, and Brooks-Gunn (2010) noted little support for an association between greater rates of afterschool program attendance and outcome achievement.

Measuring program participation constructs can also introduce additional complexity into this question (Roth et al., 2010). For example, participation measures often lack the precision necessary to capture potential influence(s) of repeated program participation on outcomes (Fredricks & Simpkins, 2012), specifically when measurement of an activity and/or program involvement is only focused on the quantity of participation. Reflecting on the limits of measures of participation in OST settings, Bohnert, Fredricks, and Randall (2010) recommended that four dimensions should be examined: (1) *breadth*, number of unique activities in which a youth participates, (2) *intensity*, frequency of youth participation in a unique activity over a fixed period of time, (3) *duration*, number of years during which a youth has participated in a particular activity, and (4) *engagement*, level of effort, attention, enjoyment, and interest a youth demonstrates toward a particular activity.

While breadth, intensity, and duration reflect *quantity* of participation, engagement reflects *quality* of participation (Simpkins et al., 2004). Greater levels of participant engagement (e.g., program satisfaction, level of interest, and program-specific knowledge) are associated with improved implementation quality and increasingly positive outcomes (Wanless, Rimm-Kaufmann, Abry, Larsen, & Patton, 2015; Washburn et al., 2011). Thus, an assessment of both quality and quantity of participation may illustrate for whom and to what degree participation matters for the achievement of outcomes.

Noting the lack of a participation quality measure within OST contexts, despite multiple conceptualizations of program quality (e.g., Eccles & Gootman, 2002; Roth & Brooks-Gunn, 2016), Tiffany, Exner-Cortens, and Eckenrode (2012) developed a measure to capture both person- and program-centered aspects of participation quality. Tiffany et al. (2012) also noted measures of quality of participation should both go beyond capturing simple quantity of participation, but also exceed mere satisfaction with a program. Rather, the inclusion of dimensions that reflect personal development, voice/influence in programmatic features and choices, feelings of safety and support, and community engagement better reflect participants’ perceived quality of engagement

and better capture youths’ full programmatic experience.

Tiffany, Exner-Cortens, and Eckenrode (2013) also suggested when OST program participants reported greater rates of program participation quality, greater levels of targeted program outcomes also tended to emerge, with complementary literature suggesting that OST program quality exerts a positive effect on participant outcomes (Yohalem & Wilson-Ahlstrom, 2010). Indeed, the link between quality of participation and outcomes is demonstrated by Thurber et al. (2007) as observed camper growth in socioemotional scores was positively associated with camper level of engagement with the camp experience. This link between participation quality and outcomes also goes beyond participant-reported levels of engagement. For instance, research suggests that when OST program participants report greater levels of staff support and warmth, they also report increasingly positive measured outcomes (Akiva, Cortina, & Smith, 2014; Struthers, Tilbury, & Williams, 2017), similar to the findings of Tiffany et al. (2012) linking increased quality of participation with the quality of relationships with OST program staff.

1.2. Out-of-School-Time as context for development in Native American youth

Quality OST programs may be especially important for Native American youth, as this population ranks among the highest on nearly all negative social, health, and emotional markers, including rates of suicide, suicide attempts, substance abuse, risk for violence, and corresponding negative developmental outcomes (Hawkins et al., 2004; LaFromboise, 1996; Rosay, 2016). For example, OST programs have been found to build youth assets including social support (Durlak, Weissberg, & Pachan, 2010) and self-regulation (Mueller et al., 2011), which may be important resources for mitigating negative markers among Native American youth. Whereas potential causes of negative outcomes for Native American youth are numerous, these outcomes are frequently grounded in generational and intergenerational poverty and trauma, and a longstanding sense of hopelessness for the future (Garrett et al., 2014). For instance, reflecting this sense of hopelessness for the future, Chandler, Lalonde, Sokol, Hallett, and Marcia (2003) proposed that a lack of concern about “the well-being of the person they are on route to becoming” (p. 52) was a potential contributor to the high rates Native American youth suicide rates. Given established links in the broader OST literature between well-designed programs, positive youth outcomes, and reductions in maladaptive behaviors, an examination of how and to what degree OST programs may benefit Native American youth offers a compelling opportunity for those interested in best serving these groups (Garbow, Hagen-Jokela, Rudi, & Serido, 2019; Jackson & Hodge, 2010).

Whereas literature points to challenges associated with researching how OST program providers serve Indigenous groups such as Native Americans (Cram, 2018), understanding program-level factors (e.g., cultural relevance) that best foster development among Native American youth remains critical, as improvements in socioemotional development are associated with reductions in maladaptive and/or self-harming behaviors (Hawkins, Cummins, & Marlatt, 2004; Rinderknecht & Smith, 2004). For instance, Wagman-Borwsky, Resnick, Ireland, and Blum (1999) indicated lower rates of suicide attempts were associated with Native American youth reporting positive social supports and emotional well-being. Thus, given the evidence supporting OST programs as a contextual asset for fostering social connectedness (i.e., relatedness) and associated socioemotional skills in youth, OST programs could act as both a growth and prevention resource for Native American youth (Powers, Potthoff, Bearinger, & Resnick, 2003); however, there is a paucity of research in this area (e.g., Durlak et al., 2010; Fredricks & Simpkins, 2012; Hawkins et al., 2004; LaFromboise et al., 2007).

1.3. Basic psychological needs theory and youth development

Although the range of hardships (e.g., rates of self-harm, illicit substance use, severe poverty) facing Native American youth are seemingly well-documented, there are also pathways for addressing these challenges. For instance, programs that promote the satisfaction of basic psychological needs (i.e., autonomy, relatedness, and competence) are closely associated with positive outcomes among youth (Bradley, 2019; Chen et al., 2015; Reis, Sheldon, Gable, Roscoe, & Ryan, 2000) and aligned with the “big three” components of effective youth development programs (i.e., youth-adult connections, skill building activities, and opportunities for leadership) (Roth & Brooks-Gunn, 2016). This framework for understanding the basic psychological needs of youth that contribute to youth thriving, referred to as Basic Psychological Needs Theory (BPNT) (Chen et al., 2015; Ryan & Deci, 2000), has been modeled as having two higher-level components: Basic Psychological Need Satisfaction (BPNS) and Basic Psychological Need Frustration (BPNF) (Chen et al., 2015; Gagnon et al., 2019). BPNS and BPNF reflect either the satisfaction or frustration of an individual’s level of competence (e.g., *I feel confident I can do things well versus I feel insecure about my abilities*), relatedness (e.g., *I feel that the people I care about also care about me versus I feel excluded from the group I want to belong to*), and autonomy (e.g., *I feel my decisions reflect what I really want versus My daily activities feel like a chain of obligations*).

Prior research has linked OST programs and activities which focus towards improving BPNS to a range of positive outcomes in youth (Gagne, Ryan, & Bargmann, 2003; Leversen, Danielsen, Birkeland, & Samdal, 2012). Conversely, studies have associated higher levels of BPNF (i.e., the frustration of autonomy, relatedness, and competence) with negative and/or maladaptive youth outcomes (Bartholomew, Ntoumanis, Ryan, Bosch, & Thogersen-Ntoumani, 2011; Earl, Taylor, Meijen, & Passfield, 2017; Vansteenkiste & Ryan, 2013). Research explicitly focusing on how OST programs may facilitate basic psychological needs and other socioemotional skills in Native American youth is sparse. Correspondingly, little is known about how factors like participation quality and quantity may promote positive outcomes in Native American youth and ameliorating the potential effect of negative conditions Native American youth often experience.

2. Present study

Utilizing BPNT as a guiding framework, the present study examined how both quantity and quality of program participation in a common OST setting, residential summer camp, may relate to the six sub-dimensions of basic psychological need satisfaction and frustration. We hypothesized that higher levels of participation quantity (i.e., years of attendance) would be associated with higher levels of (H1A) autonomy satisfaction, (H1B) relatedness satisfaction, and (H1C) competence satisfaction. Conversely, we hypothesized greater years of attendance would be associated with lower rates of (H2A) autonomy frustration, (H2B) relatedness frustration, and (H2C) competence frustration. Paralleling these hypotheses, we also hypothesized three dimensions of participation quality, (1) personal development, (2) voice/influence, and (3) safety/support would be associated with higher rates of autonomy, relatedness, and competence satisfaction (H3, H4, H5) and lower rates of autonomy, relatedness, and competence frustration (H6, H7, H8).

3. Method

3.1. Participants

Prior to the present study, the researchers established a 14-month relationship with the study site administrators through ongoing dialogue about the youth they serve, their youth programs, and their potential organizational needs. As suggested in prior literature, such a

collaborative approach is central to successful research partnerships within Native American communities (Welch, Siegele, Smith, & Hardin, 2019). The establishment of trust between the researchers and the study site administrators (and by extension, tribal leaders), was a crucial first step for gaining access to the participants. Following the establishment of this relationship, the program leadership agreed to allow their youth to be recruited into the study. Data were collected after obtaining ethical approval of the study procedures and instrument from the corresponding author’s institution as well as from tribal leadership. Campers were able to opt-out of the study.

Participants were 116 Native American youth enrolled in residential summer camp in the Summer of 2018, from one tribe in a rural community located in the midwestern United States. Most participants were female ($n = 69, 60\%$), an average of 13.14 years old ($SD = 2.02$; Range 10 to 18 years) and had attended the study site as campers for an average of 2.98 years ($SD = 2.08$, Range = 1 to 11 years). All camper expenses were funded by the partner organization, which is located on the tribal reservation. This full scholarship approach is critical considering youth in the present study rank among the highest poverty group in the United States (Black Hills Knowledge Network, 2018). Campers lived on-site for one week under the care and guidance of camp staff who had received one week of pre-camp training in essential summer camp risk management, youth supervision, and program delivery functions.

The camp programs in this study reflect a traditional residential camp model (American Camp Association, 2019). In this case, “camp” is defined as “a sustained experience that provides a creative, recreational, and educational opportunity in group living often occurring in the outdoors” (American Camp Association, 2019, p. 33). Traditional residential camps generally offer a variety of activities from aquatics and archery to the arts and horseback riding (Mainieri & Anderson, 2015; American Camp Association, 2017), while specialized residential camps generally focus on a single activity (e.g., wilderness trips) or the development of one specialized skill (e.g., gymnastics) (Henderson et al., 2007). Beyond the traditional camp framework, the camp programs in this study were guided by the seven values of Lakota life: (1), *Woc’ekiya*, prayer and communication with *Tunkasila* (the Creator), (2), *Wa o’hola*, respect for self, higher power, community, all life, (3) *Wa on’sila*, caring and compassion for others, (4), *Wowijake*, honesty and truth to one’s self and others, (5), *Wawokiye*, generosity without expecting anything in return, (6) *Wah’wala*, humility, we have a spirit, we are equals with others, we are no better or less, and (7) *Woksape*, wisdom with experience comes from learning and practice (see also, White Hawk, 2018). Framed within these 7 values, the study site provides activity opportunities to foster three dimensions of BPNS (1) independence (i.e., autonomy), (2) social skills (i.e. relatedness), and (3) self-efficacy (i.e., competence). These activities include small-group sports; wilderness travel; and natural, cultural, and spiritual programs (e.g., tribal dances and storytelling) designed to meet the unique skill development needs of individual youth alongside opportunities for youth voice and independent decision-making (Wilson, Akiva, Sibthorp, & Browne, 2019). Importantly, the study site reflects the cultural norms and context of the youth being served (Jackson & Hodge, 2010). Specifically, the camp structure and programming reflect the spiritual, tribal, and cultural customs of the study tribe, in addition to the direct and indirect involvement of tribal leadership and elders. When integrated into a camp experience, these program, setting, and structural level characteristics can promote positive youth development outcomes (Garrett et al., 2014; Garst, Browne, & Bialeschki, 2011).

3.2. Procedures

At the end of each of seven one-week camp sessions, a trained member of the camp leadership team administered the paper questionnaire to campers. Specifically, this staff member was certified in ethical standards for conducting research (i.e., human subjects research

ethics and compliance), the purpose of the research study, how to address questions from study participants, and how to properly implement the study. Participants provided basic demographic information and responded to the measures described below. To incentivize participation, youth were entered into a drawing to win one of seven \$100.00 (USD) gift cards. Out of 124 eligible potential respondents, 116 opted to participate in the study, indicating a 93.54% response rate.

3.3. Measures

3.3.1. Youth program participation: Quantity and quality

To assess quantity of participation, respondents reported the total number of years they had attended camp at the study site ($M = 2.98$ years, $SD = 2.08$, Range = 1 to 11 years). In instances where a camper overestimated their level of participation relative to their age (e.g., I attended camp XYZ for 10 years, I am 11 years old) the number of years attending camp was scaled to reflect the maximum possible years of attendance as the study site does not allow campers under 7 years of age. Thus, in the preceding example, the camper's reported level of years would be modified from 10 years to 4 years.

To assess quality of participation, an adapted version of the Tiffany-Eckenrode Program Participation Scale (TEPPS) was utilized (Tiffany et al., 2012). More specifically, the TEPPS allows for assessment of a youth's quality of program participation (e.g., The XYZ activities are challenging and interesting in this case), using language that is not overly program specific (e.g., a once weekly afterschool program versus or five day residential summer camp). This interchangeable approach to measurement allows for comparison of participation quality across differing programs and contexts and/or allows for youth program administrators to examine which programs are best engaging youth through comparison of quality of participation levels included in the TEPPS.

The TEPPS has demonstrated acceptable measurement properties in past iterations (see Tiffany et al., 2013) and is comprised of four subscales: *personal development* (e.g., The camp activities are challenging and interesting; 7-items; $\alpha = 0.82$), *voice/influence* (e.g., I have a lot of voice/power to influence decisions about camp; 4-items; $\alpha = 0.66$), *safety/support* (e.g., I usually feel safe when I am involved in camp activities; 4-items; $\alpha = 0.73$), and *community engagement* (e.g., The program has had a positive influence on how people in my community treat me; $\alpha = 0.68$; 5-items). We did not utilize the community engagement factor in the current study as it was not aligned with the study site's goals. To mitigate potential ceiling effects frequently associated with camp research (e.g., Gagnon & Garst, 2019), we adapted the measure from a 1 to 5 format to a 1 (not at all true) to 7 (very true for me) version. As indicated in Table 1, the measures demonstrated acceptable levels of internal consistency within the present study (i.e., personal development, $\alpha = 0.815$; voice/influence, $\alpha = 0.689$; safety/support, $\alpha = 0.766$).

3.3.2. Basic psychological need satisfaction and frustration (BPNSF).

Reflecting the study site's focus on the development of basic psychological needs as programmatic outcomes (i.e., autonomy, relatedness, and competence). The 24-item BPNSF scale (Chen et al., 2015) assessed outcomes associated with the program site's mission. Specifically, the six-factor, 24-item BPNSF scale was based upon prior camp research utilizing a 1 (Completely untrue) to 7 (Completely true) Likert-style scale (Gagnon et al., 2019). The BPNSF scale has two different dimensions, one that represents "need satisfaction" (BPNS) and the other that represents "need frustration" (BPNF). Need satisfaction was represented by three dimensions: *autonomy satisfaction* (e.g., I feel I have been doing what really interests me; 4-items; $\sigma = 0.791$), *relatedness satisfaction* (e.g., I experience a warm feeling with the people I spend time with; 4-items; $\sigma = 0.881$), and *competence satisfaction* (e.g., I feel I can successfully complete difficult tasks; 4-items; $\sigma = 0.896$), with higher scores indicating greater levels of satisfaction.

Need frustration was also represented by three dimensions: *autonomy frustration* (e.g., I feel forced to do many things I wouldn't choose to do; 4-items; $\sigma = 0.835$), *relatedness frustration* (e.g., I have the impression that people I spend time with dislike me; 4-items; $\sigma = 0.868$), and *competence frustration* (e.g., I have serious doubts about whether I can do things well; 4-items; $\sigma = 0.932$). To the research team's knowledge, the BPNSF scale has not been previously utilized in studies of specifically Indigenous or Native American youth; however, the scale was designed as a cross-cultural measure and demonstrated measurement equivalence across four cultural backgrounds (see Chen et al., 2015) and psychometric validity within residential camp settings (see Gagnon et al., 2019). As indicated in table 1, the scales exhibited acceptable levels of internal consistency across the six measured constructs.

3.4. Data preparation and analyses

Prior to analyses, the data were screened for normality and missingness in RStudio. Specifically, the MVN package (version 5.8) was utilized to determine the level of multivariate kurtosis in the data set (Korkmaz, Goksuluk, & Zararsiz, 2014). The results of this analysis indicated the data were not multivariate normal (Mardia kurtosis = 4.10, $p < .001$). In prior studies utilizing the BPNSFS or the TEPPS, descriptive statistics illustrated similar evidence of non-normality (Gagnon et al., 2019; Tiffany et al., 2012). Thus, to mitigate this non-normality, a robust estimation technique was applied (i.e., Maximum Likelihood Robust; MLR) for hypothesis testing (Bentler, 2006; Rosseel, 2012). The data were then screened for missingness to determine if they were missing completely at random (MCAR) utilizing the Baylor-EdPsych package (version 0.5). The results of this analysis indicate the data were MCAR: $\chi^2(134) = 125.899$, $p = .678$. As such, a full information maximum likelihood (FIML) technique was utilized to simulate missing data for hypotheses testing utilizing a path analytic approach. A path analysis approach was selected as it allows for the error terms between exogenous (i.e., predictor) variables to be covaried; thus controlling for the shared variance between predictors and facilitating interpretations of the unique effects of predictors beyond associations with other exogenous variables in the model. This covariance of predictor variable errors also provides a more precise assessment of the magnitude and significance of the relation between a predictor and a dependent variable than one available with a purely correlational approach (Loehlin & Beaujean, 2017; Menard, 2010).

Next the measures were modified into a composites (i.e., sum of items/total items in subscale) for path analyses to test the eight study hypotheses. As part of this process, the Cronbach alphas were examined to determine if each of the nine subscales exhibited acceptable levels of internal consistency (e.g., Cronbach's Alpha; α), which is demonstrated in Table 1 across all variables. To examine the data for potential collinearity issues in the path model, the between-variable correlations were assessed (see Table 2), which indicated no predictor variables (e.g., quantity of participation and the TEPPS) shared excessively high rates of covariance (i.e., $r > 0.800$) (Vatcheva, Lee, McCormick, & Rahbar, 2016).

4. Results

As demonstrated in Table 3, after controlling for other predictors in the path model, there was no significant ($p < .05$) predictive effect of quantity of participation (i.e., years of attendance) on autonomy satisfaction (H1A, $\beta = -0.103$, $SE = 0.046$), relatedness satisfaction (H1B, $\beta = -0.001$, $SE = 0.044$), or competence satisfaction (H1C, $\beta = 0.040$, $SE = 0.044$), indicating a rejection of the hypothesized positive predictive effect of years of attendance on the three measured dimensions of need satisfaction (i.e., H1). Similarly, there was no significant ($p < .05$) negative predictive effect of years of attendance (i.e., H2) on autonomy frustration ($\beta = -0.004$, $SE = 0.046$), relatedness frustration

Table 1
Variable/Item Level Descriptive Statistics.

Variable/Item	Mean	SD	α
Personal Development			0.815
Camp ##### activities are challenging and interesting	4.88	1.47	
I think that participating in Camp ##### will help me to continue my education	4.31	1.50	
I learn a lot from participating in Camp #####	4.97	1.50	
Staff at Camp ##### pay attention to what's going on in my life	4.78	1.59	
I think that participating in Camp ##### will help me to get a job	4.56	1.67	
Adults at Camp ##### respect me	5.24	1.60	
Adults at Camp ##### listen to what I have to say	5.35	1.48	
Voice/Influence			0.689
I help decide things like Camp ##### activities or rules	3.81	1.70	
I have a lot of voice/power to influence decisions about Camp #####	4.03	1.65	
It was easy for me to get involved in Camp #####	5.13	1.49	
I am very involved in Camp ##### activities	4.90	1.44	
Safety/Support			0.766
I have friends who also take part in Camp #####	5.42	1.43	
I usually feel safe when I am involved in Camp ##### activities	5.15	1.56	
There's at least one staff member that I can go to for support or help with a problem.	5.41	1.60	
I feel close to at least one staff member at Camp #####	5.09	1.79	
Autonomy Satisfaction			0.719
I feel a sense of choice and freedom in the things I undertake	4.57	1.56	
I feel that my decisions reflect what I really want	4.77	1.45	
I feel I have been doing what really interests me	5.11	1.58	
I feel my choices express who I really am	5.24	1.48	
Relatedness Satisfaction			0.847
I feel that the people I care about also care about me	5.24	1.60	
I feel connected with people who care for me, and for whom I care	5.31	1.38	
I feel close and connected with other people who are important to me.	5.53	1.39	
I experience a warm feeling with the people I spend time with	5.28	1.58	
Competence Satisfaction			0.803
I feel confident that I can do things well	5.15	1.56	
I feel capable at what I do	5.13	1.42	
I feel competent to achieve my goals	5.35	1.42	
I feel I can successfully complete difficult tasks	4.86	1.49	

Note: Values are based upon Expectation Maximization Likelihoods; α : Cronbach's alpha; ##### is camp site name, deidentified for confidentiality.

Item/Factor Level Descriptive Statistics

Factor/Item	Mean	SD	α
Autonomy Frustration			0.699
Most of the things I do feel like "I have to"	4.24	1.76	
I feel forced to do many things I wouldn't choose to do	3.41	1.82	
I feel pressured to do too many things	3.12	1.84	
My daily activities feel like a chain of obligations	3.46	1.66	
Relatedness Frustration			0.744
I feel excluded from the group I want to belong to	3.65	1.84	
I feel that people who are important to me are cold and distant towards me	3.05	1.60	
I have the impression that people I spend time with dislike me	3.25	1.73	
I feel the relationships I have are just superficial	3.48	1.77	
Competence Frustration			0.711
I have serious doubts about whether I can do things well	3.65	1.75	
I feel disappointed with many of my performance	3.41	1.81	
I feel insecure about my abilities	3.32	1.64	
I feel like a failure because of the mistakes I make	3.58	1.89	

Note: Values are based upon Expectation Maximization Likelihoods; α : Cronbach's alpha; ##### is camp site name, deidentified for site confidentiality.

($\beta = 0.034$, $SE = 0.048$), or competence frustration ($\beta = 0.122$, $SE = 0.051$).

Although the results indicated no support for H1 or H2, there was mixed support for the hypothesized positive predictive effects of the

three dimensions of participation quality (i.e., personal development, voice/influence, safety/support) on the three dimensions of need satisfaction. Paralleling the rejections of H1 and H2, there was no significant ($p < .05$) predictive effect of voice/influence (H4) or safety/

Table 2
Between Variable Pearson Correlations.

Variable	1	2	3	4	5	6	7	8	9	10
1. Years of Attendance	-									
2. Personal Development	-0.108 (0.199)	-								
3. Voice/Influence	0.115 (0.340)	0.326 < 0.001	-							
4. Safety/Support	0.153 (0.126)	0.476 < 0.001	0.477 < 0.001	-						
5. Autonomy Satisfaction	-0.131 (0.201)	0.561 < 0.001	0.180 (0.090)	0.382 < 0.001	-					
6. Relatedness Satisfaction	-0.060 (0.465)	0.622 < 0.001	0.155 (0.168)	0.353 < 0.001	0.773 < 0.001	-				
7. Competence Satisfaction	-0.001 (0.989)	0.582 < 0.001	0.155 (0.168)	0.380 < 0.001	0.794 < 0.001	0.841 < 0.001	-			
8. Autonomy Frustration	-0.032 (0.713)	-0.134 (0.161)	-0.089 (0.357)	-0.236 (0.014)	-0.274 (0.002)	-0.187 (0.020)	-0.239 (0.004)	-		
9. Relatedness Frustration	-0.010 (0.919)	-0.164 (0.097)	-0.066 (0.510)	-0.331 < 0.001	-0.289 (0.002)	-0.288 < 0.001	-0.273 (0.002)	0.721 < 0.001	-	
10. Competence Frustration	0.073 (0.450)	-0.059 (0.524)	-0.132 (0.156)	-0.188 (0.038)	-0.240 (0.007)	-0.213 (0.008)	-0.276 < 0.001	0.748 < 0.001	0.721 < 0.001	-

Note: Correlations indicated by bold text; < 0.001 indicates p-value is < 0.001, all other p-values provided within parentheses below correlations

support (H5) on autonomy satisfaction, relatedness satisfaction, or competence satisfaction. However, there was a significant ($p < .05$) predictive effect of personal development on autonomy satisfaction, relatedness satisfaction, and competence satisfaction. Thus, the results indicate after controlling for all other predictors, for each one unit increase in personal development, the average change in autonomy satisfaction is about 0.474 units (H3A, $SE = 0.110$), the average change in relatedness satisfaction was about 0.598 units (H3B, $SE = 0.092$), and the average change in competence satisfaction was about 0.532 units (H3C, $SE = 0.043$).

The results were less mixed for hypotheses H6, H7, and H8, where with one exception, there was no significant ($p < .05$) predictive effect of the three dimensions of the TEPPS on autonomy frustration, relatedness frustration, or competence frustration. Specifically, as indicated in Table 3, safety/support was a significant predictor of relatedness frustration (H8B), suggesting for each one unit increase in safety/support, the average decline in relatedness frustration is -0.391 units ($SE = 0.108$).

5. Discussion

This study examined the potential associations (measured as predictive effects; i.e., regressions) of quantity and quality of OST program participation with targeted program outcomes among a sample of Native American youth. As illustrated in prior studies exploring the relation between years of participation and program outcomes, there was no statistical association between these variables in the present study. This lack of association with the six dimensions of Basic Psychological Needs is consistent with the literature related to OST youth program participation outcomes. For instance, [Simpkins \(2015\)](#) suggested that although a growth effect is preferred, if a program demonstrates stability of youth outcomes over time, then such stability may point to programmatic success rather than linear growth. In other words, for some youth a decline in outcomes might be the expected trend given a lack of social support and enrichment opportunities or the number of risk factors in their lives ([Kann et al., 2018](#)), and therefore outcome stability (i.e., no decline in outcomes) may suggest a successful program outcome. However, given the cross-sectional format of the current study, inferring the lack of significant associations as reflecting the durability and sustainment of outcomes across years of participation is a difficult conclusion to accept without additional longitudinal evidence or follow up.

Mixed support was found for the direct influence of participation quality on the targeted outcomes. As hypothesized, *personal development* had a significant positive direct effect on autonomy satisfaction, relatedness satisfaction, and competence satisfaction; however, counter to our hypotheses, there were no links between *personal development* and autonomy frustration, relatedness frustration, or competence frustration. That is, youth who reported that camp activities were challenging and helpful and that camp staff were interested in them were also more likely to report higher levels of the targeted program outcomes of autonomy, relatedness, and competence. This finding is consistent with literature associating dimensions of quality OST programming such as those featuring experiential learning and challenging activities ([Thurber et al., 2007](#); [Wilson et al., 2019](#)) and social support from caring adult staff ([Povilaitis & Tamminen, 2018](#)) with growth in characteristics and behaviors such as independence and social skills. The support for H3 also mirrors that of other research with Native American and/or Indigenous populations. For instance, prior research exploring the relation between teacher autonomy support (i.e., “My...teacher treats me with respect”) and outcomes closely associated with autonomy, relatedness, and competence satisfaction (i.e., belongingness and motivation; [Hill, 2006](#)) has also demonstrated a positive relation within Native American youth samples ([Froiland, Davison, & Worrell, 2016](#)).

Conversely, with one exception (i.e., safety/support → relatedness frustration), the other dimensions of participation quality, *voice/*

Table 3
Strength and Significance of Hypothesized Results.

Hypothesis/Parameter	B	β	SE	z-value	p-value
H1A. YOA → Autonomy Satisfaction	-0.056	-0.103	0.046	-1.207	0.227
H1B. YOA → Relatedness Satisfaction	-0.001	-0.001	0.044	-0.020	0.984
H1C. YOA → Competence Satisfaction	0.023	0.040	0.044	0.520	0.603
H2A. YOA → Autonomy Frustration	-0.002	-0.004	0.046	-0.052	0.958
H2B. YOA → Relatedness Frustration	0.020	0.034	0.048	0.425	0.671
H2C. YOA → Competence Frustration	0.077	0.122	0.051	1.504	0.133
H3A. P.Dev. → Autonomy Satisfaction	0.502	0.474	0.110	4.555	< 0.001
H3B. P.Dev. → Relatedness Satisfaction	0.697	0.598	0.092	7.535	< 0.001
H3C. P.Dev. → Competence Satisfaction	0.597	0.532	0.043	6.420	< 0.001
H4A. Voice/Inf. → Autonomy Satisfaction	-0.057	-0.057	0.117	-0.485	0.627
H4B. Voice/Inf. → Relatedness Satisfaction	-0.101	-0.093	0.144	-0.706	0.480
H4C. Voice/Inf. → Competence Satisfaction	-0.040	-0.038	0.129	-0.309	0.758
H5A. Safe/Sup. → Autonomy Satisfaction	0.183	0.199	0.103	1.779	0.075
H5B. Safe/Sup. → Relatedness Satisfaction	0.113	0.113	0.119	0.950	0.342
H5C. Safe/Sup. → Competence Satisfaction	0.134	0.138	0.110	1.222	0.222
H6A. P.Dev. → Autonomy Frustration	-0.039	-0.033	0.142	-0.278	0.781
H6B. P.Dev. → Relatedness Frustration	-0.019	-0.016	0.129	-0.144	0.886
H6C. P.Dev. → Competence Frustration	0.095	0.077	0.134	0.711	0.477
H7A. Voice/Inf. → Autonomy Frustration	0.039	0.035	0.125	0.316	0.752
H7B. Voice/Inf. → Relatedness Frustration	0.131	0.119	0.116	1.122	0.262
H7C. Voice/Inf. → Competence Frustration	-0.082	-0.071	0.124	-0.661	0.509
H8A. Safe/Sup. → Autonomy Frustration	-0.246	-0.237	0.134	-1.844	0.065
H8B. Safe/Sup. → Relatedness Frustration	-0.391	-0.386	0.108	-3.630	< 0.001
H8C. Safe/Sup. → Competence Frustration	-0.224	-0.209	0.130	-1.727	0.084

Note: B is the unstandardized regression coefficient; β is the standardized regression coefficient; SE = standard error; < 0.001 indicates p-value is < 0.001, all greater p-values provided; YOA = Years of Attendance; P.Dev = Personal Development; Voice/Inf. = Voice/Influence; Safe/Sup. = Safety/Support

influence (e.g., I have a lot of voice/power to influence decisions about camp) and *safety/support* (e.g., I usually feel safe when I am involved in camp activities) had no predictive effect on satisfaction or frustration of autonomy, relatedness, or competence. These findings are surprising and counter to OST literature suggesting that providing participants with opportunities for involvement, decision-making, and voice are central to program quality and outcome achievement (Durlak & Dupre, 2008; Wanless et al., 2015). Further, we would expect a lack of poorer levels of participation would result in lower rates of positive outcomes (and correspondingly greater frustration) scores among youth (Fredricks & Eccles, 2006). Together, the lack of associations between the measured dimensions of program participation quality and autonomy may suggest a need to facilitate programming where participants feel more involved in the programming process (i.e., voice/influence) and supported and safe in their experiences, as suggested in the broader youth development literature (Lerner et al., 2011; Roth & Brooks-Gunn, 2016). Alternatively, it may be the case that the camper perceptions about the program are contextually dependent. That is, campers perceive they have a voice in the process and may feel safe while at camp, but these feelings do not extend beyond the camp program. Thus, future considerations of the greater ecology around the camp (e.g., other in-school and out-of-school programs, family life, community supports and resources) could uncover who is (and is not) best served by the camp programs.

As noted earlier, there was a significant effect of one dimension (participation quality) on relatedness frustration; when participants reported higher levels of safety/support they reported declining levels of relatedness frustration. This association is similar to findings in the broader youth development literature, where when youth felt safe and supported they also tended to have greater rates of positive relationships with their peers as well as non-parental adults (Anderson, McDermott, Elliot, Donlan, Aasland, & Zaff, 2018; Gambone, Cao, Lewis-Charp, Sipe, & Laco, 2006). Thus, as perceptions of safety/increased perceptions of relatedness frustration decreased (i.e., safety/support → relatedness frustration). For example, a program staff member's attempt to involve a camper in an activity social group may have helped them initially feel physically or emotionally safe, yet did not lead them to perceive that they belonged to that activity or social

group in an authentic way. The findings provide some evidence that program providers and program staff may need additional strategies to determine if/how Native American youth are engaged in activity and social groups in ways that meet their needs for belonging; and may to continue to dialogue with youth to better understand their perceptions of safety and belonging. For instance, the establishment of one-on-one relationships may be a strength of the camp (thus contributing to perceptions of safety/support), while the establishment of group belonging may be an area of needed program improvement (thus contributing to perceptions of relatedness frustration).

Alternatively, the lack of support for many of the study hypotheses may point to a limitation of the TEPPS measure. That is, in this sample of Native American youth, the TEPPS measure may not fully capture voice/influence and safety/support as these dimensions of participation may have unique cultural dimensions among this group. The use of culturally sensitive and relevant questions (Hawkins et al., 2004) targeted toward youths' needs and interests (Garrett et al., 2014) offer a blueprint for program and measurement improvement in future investigations. As prior research supports the provision of opportunities for youth to participate in program related decision-making (Akiva, Cortina, & Smith, 2014), strengthening decision-making opportunities for youth within the context of OST experiences is an important opportunity for future program development, improvement, and research.

As noted earlier, years of experience did not have a statistical relation with the six study outcomes. While beyond the scope of the present study, one additional explanation may be due to participant age (i.e., maturation; see also Akiva et al., 2014; Thurber et al., 2007). To explore the potential of participant age to influence program outcomes for future research examining associations between participation and outcomes, a post-hoc analysis was conducted. Paralleling the majority of the study findings, this analysis indicated participant age was not a significant predictor of relatedness satisfaction ($\beta = 0.130, p = .116$), autonomy frustration ($\beta = -0.037, p = .740$), relatedness frustration ($\beta = -0.074, p = .505$), or competence frustration ($\beta = -0.145, p = .175$). However, participant age did significantly predict autonomy satisfaction ($\beta = 0.265, p < .001$) and competence satisfaction ($\beta = 0.187, p = .035$), suggesting for each one unit increase in participant age, the average change was about 0.265 units in autonomy

satisfaction and about 0.187 units in competence satisfaction.

Critically, these analyses were conducted to explore the data further after the primary hypotheses were tested, rather than test a specific model/theory, thus the findings should be considered in this exploratory context and are identified as post-hoc analyses to make clear that the research team intentionally avoided HARKing (i.e., Hypothesizing After the Results are Known; see Kerr, 1998). However, given the demonstrated positive association between age and some of the outcomes in the present study, the addition of participant age as a potential moderator and/or mediator in models examining the relation between OST program participation and outcomes in future research may yield differing results.

5.1. Implications for research and practice

The study findings suggest one measured dimension of quality of residential summer camp participation, personal development, positively predicted basic psychological need satisfaction among Native American youth. If supported in future studies, these findings could position OST experiences, like summer camp, as possible settings for both promoting positive development and to address maladaptive behaviors through the provision of programs that boost autonomy, relatedness, and competence. As such, OST programs that foster personal development and basic psychological need satisfaction could play a crucial role in preventing negative long-term outcomes. For example, autonomy, relatedness, and competence have been found to buffer the effects of negative life events on suicidal behavior (Rowe, Walker, Britton, & Hirsch, 2013). Future investigations of participation quality can build on this study's findings. For instance, studies of participation quality are often weakened by self-report and social desirability biases (Christens, Speer, & Peterson, 2016), and therefore recommendations have included the use of multiple forms of data collection and program raters (Durlak & Dupre, 2008; Yohalem & Wilson-Ahstrom, 2010). Furthermore, future participation quality and quantity studies should also consider observation-based approaches where camp staff and outside research teams observe participation engagement, to better triangulate study findings. Together, these approaches may help OST researchers move toward a deeper understanding of contextual factors impacting OST program participation (Mainieri & Anderson, 2015).

The current study can also inform how outcomes and program components of camp experiences serving Native American youth are measured. For example, studies of Native American youth engagement within camp settings (in culturally situated one-on-one contact as well as within group contexts) may inform modifications to the BPNSF measure (i.e., the earlier discussion about the safety/support → relatedness frustration relation). In addition, measures can be designed to evaluate program frameworks specific to camps serving Native American youth (e.g., the seven values of Lakota life). While not assessed in this study, the seven values of Lakota life may represent a more culturally relevant approach for understanding outcomes and impact of camp experiences on Native American youth.

This study's cross-sectional design can inform future longitudinal approaches. Assessing the influence of programs on positive youth outcomes requires a broader view than what is typically provided in "one-off" studies of program effectiveness. Such a holistic, longitudinal view is appropriate when viewed through a relational developmental systems lens in which the influence of multiple ecologies of a young person's life (e.g., family, community) are acknowledged (Overton, 2010). The need for such longitudinal studies has been recognized within the literature on programs serving Native American youth (Hawkins et al., 2004). Future studies incorporating designs including multiple measurement occasions (i.e., pre-program, mid-program, post-program, several months post-program), random assignment to intervention and comparison groups, and data collection across a young person's life settings will better guide both research and practice towards more effective programs which produce positive outcomes for

Native American youth.

The study findings can also inform the implementation of residential camp programs serving Native American youth. For example, the significant positive direct effect of personal development on the satisfaction of basic psychological needs serves as an important reminder to practitioners that camp activities need to be designed with attention toward the developmental level of youth to ensure they are experiencing an appropriate level of challenge and engagement (Bialeschki, Henderson, & James, 2007). Indeed, the opportunity to build skills through participation in relevant experiential activities that are both engaging and challenging is a foundational tenet of positive youth development programs (Roth & Brooks-Gunn, 2016). Such skill building programming could also include behavioral coping strategies to help youth develop resilience to negative life events while also building on their existing strengths and resources (Garrett et al., 2014; Reivich, Gillham, Chaplin & Seligman, 2013). Programming based on youth age, developmental characteristics, and ability levels, and training staff to target these critical areas of program development and implementation, are strategies for keeping youth continually engaged and challenged as they mature and matriculate through multiple years of a residential camp program.

Additionally, this study is relevant for the broader community of camp practitioners and scholars, as it represents a model for the implementation and assessment of a culturally-tailored residential camp program. Researchers have critiqued the institution of camp as historically insensitive to the misappropriation of Native American culture and practitioners have been encouraged to be more intentional with regard to how Native American populations are represented and served (Browne, Gillard, & Garst, 2019). The current study is a resource for practitioners as it broadens the available literature regarding residential camp programs that were intentional in acknowledging the importance of a culturally-tailored model from beginning to end.

5.2. Limitations

While some study limitations were suggested earlier, four warrant additional explanation. First, the study sample was relatively small (although studies of Native American youth are generally so; e.g., Froiland et al., 2016; Garbow et al., 2019), limiting the power to detect effects (Agans et al., 2014; Westland, 2010). However, the sample size was comparable to other OST studies examining residential camp outcomes among youth typically underrepresented in the literature (Allsop, Negley, & Sibthorp, 2013; Gagnon & Garst, 2019), as well as those with Native American samples (Froiland et al., 2016; Garbow et al., 2019). Second, the study's cross-sectional design limited conclusions which can be drawn regarding development associated with ongoing program participation. Further, the lack of a baseline assessment due to the cross-sectional design further limits the ability to infer if/how changes were or were not associated with camp participation or a combination of other confounding factors. Whereas experimental or quasi-experimental designs may have been more effective for measuring change over time, the cross-sectional design was less intrusive on the participants and program providers and therefore viewed as an appropriate approach to facilitate the research partnership with the program site (Garrett et al., 2014).

A third limitation is indicated by the coarseness of the measure of participation quantity. While number of years of participation is a component of how quantity should be measured, it does not reflect two other dimensions of equal importance, (1) *breadth*: the total number of unique activities in which a youth participates (2) *depth*: how deeply youth engage with activities (Bohnert et al., 2010; Simpkins et al., 2004). The addition of these participation quantity dimensions in future research may highlight how these three components intersect and/or are linked to "better" outcome achievement. Specifically, participation in camps and other OST programs not affiliated with the study site organization may have confounded the study findings, where the

influence(s) of these additional programs may harm or facilitate the development of autonomy, competence, and/or relatedness. Although the very limited OST opportunities available to the targeted sample in this study makes this less likely, the inclusion of breadth and depth measures would have allowed for additional dimensions of program participation to be considered (Bohnert et al., 2010).

A fourth limitation was reflected in the use of the TEPP measure to assess program quality. Instead of examining program quality only using the TEPPS measure, another and/or additional approach would have been to examine program participation quality using direct observation of youth and staff during the camp programs (Bennett, 2018; Mainieri & Anderson, 2015). Observation-based assessments have been identified as effective for allowing program providers and researchers to assess the quality of interactions and engagement at the “point of service” within youth OST settings (Smith, Akiva, Arrieux, & Jones, 2006, p. 94; see also Smith, Akiva, Lo, Sugar, & Frank, 2012). Furthermore, as suggested by Garrett et al. (2014), the use of observations to understand Native American experiences is a more culturally appropriate interaction style that acknowledges nonverbal as well as verbal communications. Therefore, the inclusion of an observation-based assessment of program quality would have provided more information about the nature of youth-youth, youth-staff, and youth-activity interaction and engagement.

An additional limitation within the broader literature relevant for this study is the lack of literature examining the complex processes that influence what outcomes for what youth in what contexts benefit from repeated out-of-school-time experiences. However, this need for information should be balanced with the need for brevity in data collection, ensuring that the data collection process is not so lengthy or burdensome that it harms the experience of the program participants and/or the administrators charged with facilitating assessments. Indeed, as noted by Henderson, Bialeschki, and James (2007) “...camp directors and staff are busy people who invest great energy in planning and implementing quality camp programs, leaving little time for conducting rigorous research and evaluation” (p. 757). Thus, wherever possible, attempts should be made by the research teams to reduce the participant and administrator burden by collecting and utilizing data from secondary sources and materials.

6. Conclusion

This study was one of the first empirical examinations of the links between quantity and quality of camp participation and autonomy, relatedness and competence among Native American youth. Although the findings were mixed, the study advanced what is known about OST experiences in this underserved population. Our findings suggest that short-term OST programs that focus on the personal development as a component of program participation quality including challenge and experiential learning may be linked to enhanced autonomy, competence, and relatedness satisfaction. This link is important because autonomy, relatedness, and competence are associated with a wide array of adaptive outcomes in youth. Examining the influence of OST settings like residential summer camp to foster the development of these behaviors and possible corresponding links to reduction in maladaptive behaviors may provide evidence for OST experiences to mitigate or prevent the occurrence of negative short- and long-term outcomes. Given the preponderance of evidence that Native American youth are among the most vulnerable populations for potential engagement in risky behaviors, identifying interventions which mitigate these behaviors remains an important area of research for those concerned with serving and understanding these groups.

CRedit authorship contribution statement

Ryan J. Gagnon: Conceptualization, Methodology, Formal analysis, Investigation, Writing - original draft, Writing - review & editing,

Project administration. **Barry A. Garst:** Conceptualization, Methodology, Investigation, Writing - original draft, Writing - review & editing, Project administration. **Edmond P. Bowers:** Conceptualization, Writing - original draft, Writing - review & editing. **Heidi M. Zinzow:** Writing - original draft, Writing - review & editing. **Martie P. Thompson:** Writing - original draft, Writing - review & editing.

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.

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