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Examining Construct Validity of the Scale of Native Americans Giving Back

Jameson D. Lopez
University of Arizona

The purpose of this study is to use Indigenous data collection to present construct validity of an instrument designed to test the American Indian/Alaska Native Millennium Falcon Postsecondary Persistence Model (Lopez, 2018). In the following, I describe an alternative sampling technique based on an Indigenous quantitative methodology to examine how to operationalize the AI/AN Millennium Falcon Persistence Model (AMFPM) in social scientific studies. I used an exploratory factor analysis (EFA) on 117 participants from the Quechan and Cocopah Nations who responded to 30 items. The EFA was set to extract 4 hypothesized factors. The interpretation of rotated scales was with variables loadings greater than .30 and loading on a single factor retained. The 4-factor solution accounted for 43% of the total variance in the items. All 4 of the scales had acceptable levels of internal reliability for empirical research (i.e., Cronbach's alpha $>$ .7). The exploratory factor analysis confirmed that all 4 of the original AMFPM factors (family, tribal, academic, institutional) were, in fact, captured by the Scale of Native Americans Giving Back. However, the analysis revealed that 2 of the factors merged (family and tribal support). Furthermore, the desire to give back and tribal identity emerged as separate constructs. The final scale that emerged in this study consists of 4 components of postsecondary persistence.

Keywords: Native American, postsecondary education, validity, exploratory factor analysis

An instrument specifically designed to measure Native American postsecondary persistence does not exist. Due in part to the reality that the majority of postsecondary research with Native Americans lacks quality datasets that lend to quantitative research and lead to constant asterisks indicating the exclusion of Native American students (Shotton, Lowe, & Waterman, 2013). The lack of instruments and appropriate data collection present the need to develop construct validity for an instrument designed to test a model of postsecondary persistence using unique data collection among Native Americans.

The substantial limitations exist in government data due to small samples and lack of culturally relevant variables that further constrain Native American data (Lopez & Marley, 2018). The following sections are solutions to these problems. In the next sections I describe an American Indian/Alaskan Native (AI/AN) postsecondary persistence model, survey instrument, and alternative sampling technique based on an Indigenous quantitative methodology that can remedy limitations found in national and institutional datasets to help Indigenous students and nations. It was essential to appropriately test the AI/AN Millennium Falcon Persistence Model to construct a dataset that addresses small samples with relevant variables (Lopez, 2018). The purpose of this study is to use Indigenous data collection to present construct validity of an instrument designed to test the model. In the proceeding section, I describe the AI/AN Millennium Falcon Persistence Model.

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Correspondence concerning this article should be addressed to Jameson D. Lopez, Center for the Study of Higher Education, College of Education, University of Arizona, 1430 East Second Street, P.O. Box 210069, Tucson, AZ 85721. E-mail: jamesondlopez@email.arizona.edu

AI/AN Millennium Falcon Persistence Model

The development of the AI/AN Millennium Falcon persistence Model (Lopez, 2018) is from five postsecondary persistence theories including the family education model (HeavyRunner & DeCelles, 2002), AI/AN college student retention strategies (Guillory, 2009), AI/AN nation building (Brayboy, Fann, Castagno, & Solyom, 2012), AI/AN home going (Waterman, 2012), and Indigenous claiming of education (Windchief & Joseph, 2015). Each of these theories demonstrates the importance of examining AI/AN postsecondary persistence.

A significant strength of these AI/AN persistence theories is the emphasis on family as a major factor in AI/AN postsecondary persistence. The family provides cultural support (Guillory, 2009; Waterman, 2012) and motivation (Brayboy et al., 2012), and students often need a connection to their family for support (Waterman, 2012). A contribution from Windchief and Joseph (2015) is their theorization that if a college campus were able to create an AI/AN community on campus, AI/AN students would more likely persist. Extending the AI/AN community is extending the family to college campuses, as AI/AN student support services often help integrate AI/AN students into the college community while helping maintain student cultural identity. The use of student support services (Windchief & Joseph, 2015) and AI/AN faculty mentorship (Waterman, 2007) redefine college integration according to Tinto's (1975) original model because now colleges are integrating into the needs of AI/AN students. When you look at implementing the community into college campuses, it is easy to find that the motivation behind many Native

American college students is to contribute to nation building or give back to their communities (Brayboy et al., 2012). However, there is a need to develop and analyze these theories further. In the following section is a description of the operationalization of four constructs from the AI/AN Millennium Falcon Model.

Postsecondary Atmosphere for Native American Students

The review of the literature found that family support, institutional support, community, and academic performance were the predominant factors influencing college persistence for AI/AN students at two- and four-year colleges. Family support appears to be both a positive (Bass & Harrington, 2014; Gloria & Robinson Kurpius, 2001; Guillory, 2009; Pavel & Padilla, 1993) and negative factor (Dodd, Garcia, Meccage, & Nelson, 1995; Jackson & Smith, 2001; Tate & Schwartz, 1993; Waterman, 2012) in college persistence. Some students expressed the encouragement from family to continue through postsecondary challenges, but other students expressed academic interference due to family obligations. Institutional support was found to be a significant factor as well. Some students report that institutions with AI/AN student support services helped them acculturate to the university (Marroquín & McCoach, 2014). On the contrary, students who attended universities without AI/AN student support services reported much more difficulty adjusting to college life. Community impacted the majority of AI/AN students in all the studies. Noteworthy was the desire of AI/AN students to "give back" to their communities (Drywater-Whitekiller, 2010; Guillory, 2009; Guillory & Wolverton, 2008), which served as a motivation for AI/AN students to persist through college. In some cases, (Waterman, 2012) students reported that going home for funerals or ceremonies interfered with academics, but these students were still able to complete college. It is inevitable that most students will face some challenges going through college, but AI/AN students' communities did not seem to be a barrier. Academic readiness and performance were the last major factor influencing AI/AN persistence in college. There were high reports of students indicating they felt unprepared for the academic rigor of university courses. Some evidence (Huffman, 2003) suggests that the location of their K–12 schooling could predict academic unpreparedness.

Purpose of the Study

The purpose of this study is to present construct validity of an instrument designed to test the American Indian/Alaska Native Millennium Falcon Postsecondary Persistence Model (AMFPM). Each of these theories demonstrates the importance of examining AI/AN postsecondary persistence and will likely be independent of one another, leading to the following research question: "How can researchers operationalize AI/AN Millennium Falcon Persistence Model in social scientific studies of AI/AN students?"

Method

Indigenous Quantitative Methodologies and Indigenous Data Collection

In this section I describe an alternative sampling technique based on an Indigenous quantitative methodology that can remedy limitations found in national and institutional datasets to help Indigenous students and nations. There are two main underpinnings of Indigenous quantitative methodology: to create statistical data from an Indigenous lens that (1) privileges Native American voices, rejects dominant mainstream value systems, and refuses deficit approaches as a starting point in research; and (2) challenges statistical practice within Indigenous nations by exposing the view from which traditional quantitative research operates in Indigenous communities (Snowshoe, Crooks, Tremblay, Craig, & Hinson, 2015; Walter & Andersen, 2013). There is a need for external scholars to help Indigenous nations with research to help build the capacity of tribes, but this must be in a respectful manner. Snowshoe et al. (2015) suggests researchers engage in the complex authority structures, recognize the complexity of the traditional elder engagement process, utilize culturally competent partners as mediators of the tribal partnership process, take an Indigenous approach that works in the community for the research design, anticipate a longer timeframe for the community engagement process, select culturally appropriate data collection methods, and commit significant time and resources to scale development. The data for this study utilized Indigenous quantitative methodologies to approach the data collection outlined in the next section.

Approaches to Indigenous Data Collection

Indigenous data collection may be a better service to support their respective communities and students. Researchers and tribes can provide the sampling frame for their data by Indigenous knowledge such as creation stories. This method of data collection would address limitations from small samples from smaller tribes by expanding a sampling frame.

Creation stories are important to Indigenous people for various reasons, but they include answers to many of the questions we have in life. Creation stories can include instructions for proper ways to relate to Creation and all its beings like the Haudenosaunee. Creation stories can be used to reinforce principles of harmony and respect like the Anishinaabe creation story (McGregor, 2004). The Muscogee creation story gives perception to life with plants, animals and other people from the migration aspect of their creation (Fixico, 2003). Additionally, creation stories can help us understand life cycles, death, and mourning, like the Quechan and Cocopah (Alvarez de Williams, 1974; Bryant, 2013). Creation stories contain answers to many facets of the challenges in life, so it is natural to use creation stories to find answers that address the limitations found in Westernized research.

Often neighboring tribes share similar creation stories, which makes it more feasible to collect data to produce large enough samples for statistical analysis. For example, the tribes along the Colorado River belong to the Yuman linguistic family and share similar creation stories, songs, language, and ceremonies. It is beneficial for these tribes to collect data jointly and examine constructs influencing education outcomes for their tribes that would otherwise be impossible because of individual small sample sizes. Furthermore, tribes that collect their data will likely create new ways to support tribal education policies and funding for their respective tribal members. For that reason, data came from two tribes, the Quechan and Cocopah.

The Quechan and Cocopah share a creation story suggesting that they are from the same place. The tribes fought one another

throughout history and maintained their current boundaries despite the efforts of Spain, Mexico and the United States. The tribes existed without formal boundaries until 1774, when the Spanish started to put the Quechan on New Spain maps. In 1821, Mexico won independence from Mexico. However, due to the gold rush, by 1848 most of present-day tribal territory became a part of the United States. The Cocopah and Quechan are located directly across the Colorado River from one another and each bordering the Mexican towns of San Luis and Algodones, respectively.

Quechan tribe. I am an enrolled citizen of the Quechan tribe and descendant of the Cocopah tribe. According to our traditions, we were created and occupied our land base since time immemorial. In English, Quechan (pronounced Kwat'san) means "those who Descended." It is a short version of Xaam Kwat'san, meaning "those who descended by means of water." As our water is a focal point of our life and culture, it is essential to know the reverence that our tribe has for water from the beginning of our creation story. The telling of our creation story is typically over four days, and therefore I refrain from telling the entirety of our story here. However, our creation story is very profoundly rooted in our cremation ceremony, which is one of the cornerstones of our culture today. During this ceremony, a wake is held with traditional songs and ends with the cremation of our deceased relatives. It is a cultural tradition that our tribe has been able to preserve through European colonization.

The Quechan reservation in Fort Yuma, California, resides along both sides of the Colorado River near Yuma, Arizona, stretching for about 44,000 square acres in bordering Arizona, California, and Mexico. Most of our economic development is from two casinos, a hotel that mostly winter visitors patron, and from agricultural lands leased to nontribal farmers. One of the elements that connect us to other tribes is our language. The Quechan language belongs to the Yuman language family, with three major branches: River, Pai, and Delta-California. The Quechan language belongs to the River branch of the Yuman languages. Our language and creation story ties us to several tribes in our surrounding areas, but especially to the Cocopah who live across the Colorado River and speak the Delta California dialect of the Yuman language family.

Cocopah tribe. The Cocopah people called themselves Xawil Kunywavaei, "Those Who Live on the River." The traditional home of the Cocopah is near the Colorado River delta, where many members currently reside, but also traditionally included northwestern Mexico. Their creation story, like ours, involves supernatural beings living under the waters that emerged to create the world. Similar to our Quechan creation story, theirs currently serves as a cornerstone of their culture through their cremation ceremony. Like the Quechans, the Cocopah cremate their dead with their possessions. Relatives often cut off their hair in mourning, a practice rooted in our creation story and life along the Colorado River.

Today the Cocopah reservation is near Somerton, Arizona, located on about 1,700 acres of land in the low-lying desert close to Yuma, Arizona, bounded by the Colorado River. Most of the economic development comes from their casino, conference center, hotel, speedway, family fun center, RV resort, golf courses, and some agriculture similar to Quechans.

The similarities between the tribes' present opportunities are to collect data that can address small samples and include relevant variables. After gaining permission from both tribes, I was able to gather data on the same items to construct a sufficient sample for statistical analyses. The responses to the same items afforded me the opportunity to address the small sample sizes that plague most datasets. Furthermore, working with the cultural departments and higher education directors, I was able to develop a few items to measure cultural identity that are more relevant than in national datasets (i.e., "I participate in cremation ceremonies"). Although there are more finite protocols that could indicate cultural identity in the cremation ceremony, it was important to myself and to the communities to respect the sacredness of the ceremonies by not exposing the intricacies. The samples from these two tribes were gathered to test the Scale of Native Americans Giving Back.

Constructing the Scale of Native Americans Giving Back

To provide validity evidence based on test content (Shadish, Cook, & Campbell, 2002) and utilize Indigenous quantitative methodologies (Walter & Andersen, 2013), the instrument items came from community feedback, higher education directors, my experience working in postsecondary education, conversations with Indigenous scholars, feedback from experts, informal interviews, and from an exhaustive literature review on Native American postsecondary persistence. The instrument used to measure the AI/AN Millennium Falcon Persistence Model (AMFPM) is the Scale of Native Americans Giving Back (SNAG). The instrument was specifically designed for this research, as there is not an instrument constructed that attempts to test the AI/AN Millennium Falcon Persistence Model. After I developed the scale, I piloted the measures to refine the instrument. I disseminated the web-based instrument using surveymonkey.com. One of the strengths of a web-based instrument is that participants are more likely to be truthful than in a face-to-face administered survey. One of the drawbacks is that it limits the respondents to those who have access to computers and other technology, that may cause an unrepresentative sample.

Following Indigenous quantitative methodologies, I emphasize the communities' voices by intentionally asking for guidance from tribal councils and tribal education directors for feedback on the instrument. I included their feedback in the items and aligned the goals of the survey with the goals of each respective higher education department. Relationships were key in this process. I reached out to the higher education department directors before I approached the tribal councils to get an idea about their needs and if they were interested in the study. The purpose of the relationships was to emphasize the communities' voices in the development of the instrument. Once I received their interest, I moved forward with creating a proposal and survey to pilot. I obtained written support from each tribe to conduct the research.

In the spring of 2017, a pilot study was conducted to provide initial tests of reliability, construct validity, and internal validity. The participants for the pilot study included current and previous AI/AN undergraduate students from the past 10 years who completed at least one semester of college. The pilot survey convenience sample excluded Cocopah and Quechan participants and requested information through social media outlets (i.e., Facebook group pages such "American Indian Student Support Services").

There were 147 completed responses to the survey, with an average age of 25.

The pilot factor analysis identified factor loadings for the constructs measured from AI/AN students at local universities (see Table 1.). Participants' responses to 30 items were subjected to an exploratory factor analysis (EFA) using principal axis factoring and a promax rotation. Both Bartlett's test of sphericity and the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy indicated the data were appropriate for EFA with Bartlett's test $\chi^2 = 1632.19$ and $p < .001$ and the KMO = .759. The EFA was set to extract four hypothesized factors. The rotated scales were then interpreted with variables with loadings higher than .30, and loading on a single factor was retained.

The four-factor solution accounted for 45.22% of the variance in the items. The factors all had eigenvalues greater than 1.748, which meets Kaiser's criteria for factor selection. There were two split loadings. Two between family tribal support and identity ("Tribal members [other than family] asked about my academic progress in college"; "I often ate commodity food growing up"). Five of the items did not load or did not load onto the appropriate construct ("My tribal community paid for my college tuition"; "I often went home to get support from my tribal community"; "I know my tribe's creation story"; "I participated in community gatherings before coming to college [i.e., Indian Days]"; "I often ate commodity food growing up"). Three of the four scales had acceptable score reliability for empirical research with Cronbach's $\alpha s \geq .7$. However, one of the scales had Cronbach's $\alpha s \geq .664$ but were still included given the exploratory nature of the analysis.

I kept three of the five items ("My tribal community paid for my college tuition"; "I often went home to get support from my tribal community"; "I participated in community gatherings before coming to college [i.e., Indian Days]") that loaded onto the incorrect construct because I felt that the literature and instrument feedback

Table 1
Exploratory Factor Analysis Pilot Study

Items	Factor			
	Giving back	Tribal family support	Identity	Institutional support
1. I currently volunteer with an American Indian community other than my own.	.603			
2. I help organize community events (i.e. Indian Days, Pow Wows, Community dinners, etc.).	.503			
3. I notice positive change in the tribal members that I encourage.	.646			
4. I pray for my tribal community.	.565			
5. I participated in community gatherings before coming to college (i.e. Indian Days).		.527		
6. If possible, I always try to buy from tribal businesses.	.622			
7. I planned on using my education to help my tribe.	.581			
8. I strongly wanted to "give back" to the tribal community I am an enrolled member of.	.470			
9. I try to go back to my tribal homeland as much as I can.	.397			
10. I often ate commodity food growing up.		−.323	.370	
11. My family supported my decision to attend college.		.607		
12. My family talked about college homework with me.		.381		
13. My family checked up on me while at college.		.582		
14. My family does not have high expectations for me.		.489		
15. My tribal community paid for my college tuition.			.376	
16. I often went home to get support from my tribal community.		.479	.343	
17. Tribal members (other than family) asked about my academic progress in college.		.479		
18. My tribal community is proud of me for enrolling into college.		.574		
19. Before coming to college, I had knowledge of my tribal language.			.676	
20. I can speak my tribe's language.			.637	
21. I have a close relationship with my tribal relatives.			.635	
22. I participated in tribal ceremonies prior to attending college (e.g. cremation ceremony).			.564	
23. I know my tribe's creation story.				
24. I spent most of my life on the reservation.			.834	
25. My instructors were respectful of students.				.839
26. My professors respected my views as an American Indian in course discussions.				.789
27. My professors supported me if I needed to attend a cultural event (e.g. ceremony, funeral) during class time.				.628
28. My interactions with faculty outside of the classroom were negative.				.671
29. My academic advisor ensured I took all required courses for my degree.				.383
30. College interferes with my traditional values.				.327
Cronbach's Alpha	.782	.664	.788	.761

was strong enough to keep the items in the analysis. I changed "I know my tribe's creation story" to "I know my tribe's history," to broaden the item. I changed "I often ate commodity food growing up" to "One time the tribe canceled our Easter egg hunt, because all the powdered eggs blew away," to use inside Native humor as a measure of tribal connection.

The SNAG

The final instrument begins with a short introduction and statement that indicates by completing the survey the participant agrees to the terms of the study but may opt from the study at any time. On average, the final instrument took 15 min to complete. To establish trust with the respondent (Dillman, 2007), I identified myself as a member of Quechan Tribe, included university letterhead, and identified the partnership between the Cocopah and Quechan tribes. Additionally, the introduction explains the importance of the respondents' answers on the questionnaire to improve universities and colleges working with Cocopah and Quechan students. After the introduction, the survey contains three major sections. In the first section are qualifying questions to ensure that participants are Quechan or Cocopah students. The second section asks questions measuring constructs related to family tribal support, institutional support, cultural identity, and academic achievement. In the second section, the items use a Likert scale from *strongly agree* to *disagree strongly*. Finally, the third section asks fundamental demographic questions.

Institutional Review Board

The institutional review board (IRB) is an important process when working with Indigenous communities, and approval is dependent on healthy relationships. The following is a description of the IRB process with the Quechan and Cocopah nations. On November 22, 2016, I requested to be on the Quechan tribe's work session on December 1, 2016. I presented my research before the Quechan council on December 1, 2016, and received verbal support. However, due to unforeseen circumstances with the tribal election the following week, my request was tabled. After a few months of contact, and waiting, I was informed that I could request a letter of support from the higher education department. On February 15, 2017, I requested a letter of support and received the letter of support on February 27, 2017.

I was originally denied my research project by the Cocopah tribe, but on February 6, 2017, I was able to talk with a tribal official. After further explanation of my research and his understanding of my family and relationships, he verbally gave support of my research. He directed the Cocopah education director to write a letter of support, which I promptly received on February 16, 2017.

After I received both tribes' letters of support, the university's IRB examined my research proposal and approved this study. Participants were informed that there were no obligations to fill out the survey and that they could opt out of the study at any time. The information on the study was given on the online link before the survey, which also describes the purpose of this study. Participants were given contact information to ask any questions about the study and given an opportunity to provide an e-mail address if they wanted to see the outcomes of the study. The IRB was approved on March 3, 2017.

Data Collection

I collected data from Cocopah and Quechan college students to validate the Scale of Native Americans Giving Back. The web-based instrument used surveymonkey.com and was developed from the reviewed theory and literature, and expert feedback. The population for this study included current and previous Cocopah and Quechan college students who had completed at least one semester of college. There were 400 possible participants, according to the tribal higher education departments. However, addresses were only available for 200 participants, to whom I sent an introduction letter, a postcard with a link to the survey, a third follow-up using e-mail, and a final e-mail requesting participation. Nineteen of the addresses were undeliverable. To maximize Cocopah and Quechan student participation, I utilized social media outlets (i.e., Facebook group pages such "Let's Stay Kwanected.") and gave participants an option to provide their e-mail address to enter a raffle for a chance to win one of four 50-dollar Amazon gift cards (Dillman, 2007). There were 145 responses to the survey, giving a response rate of 73%.

The research incorporates Indigenous quantitative methodologies through creating statistical data that privileges Quechan and Cocopah voices and challenges traditional sampling among Native Americans by using creation stories to provide a sampling frame. Furthermore, the incorporation of constructs such as "giving back" and "cultural identity" allow researchers to challenge dominant mainstream value systems, such as persistence and college GPA. GPA and persistence are consistently used as measures of Native American success, but having scales of student desire to give back, and their identity, allows researchers to examine how college factors predict different success factors among tribal nations. Nonetheless, this research still somewhat operates in dominant mainstream value systems because it uses GPA and college persistence as measures of success.

Results

For the EFA, I deleted all cases missing critical information (28 cases) or those participants missing more than 20% of their responses (Schlomer, Bauman, & Card, 2010). With a total sample of 117, the EFA met the suggested criteria for exploratory factor analysis according to Field's (2013) and Worthington and Whittaker's (2006) suggestion of four participants per one item. Of the complete responses, the average age is 36, and 74% are females and 26% are males. Seventy-two percent of the sample is Quechan, 15% are Cocopah, and 13% are from both tribes. The average high school GPA is between 2.6 and 3.0. The average college GPA is between 3.1 and 3.5. Seventy-seven percent of the participants went to a two-year college, and 23% went to a four-year college (see Table 2.).

There are few limitations to the sample. The first limitation is the increased likelihood of nonresponse because of the delivery of a web-based instrument to a census sample. The sample of Quechan and Cocopah was a census, to ensure a large enough sample for analysis. The limitation may also create nonresponse bias for users who are more inclined to take surveys and have access to a computer or refuse to take the survey. The second limitation is the substantial overrepresentation of women in the sample. While 74% of survey respondents in this study are female, nationally 61% of AI/AN undergraduate students are female (Na-

Table 2
Tribal Demographics (Factor Analysis)

Items	Quechan	Cocopah	Quechan and Cocopah	Total
Female	58%	14%	2%	74%
Male	12%	3%	11%	26%
2-year college	58%	12%	7%	77%
4-year college	12%	5%	6%	23%
	Minimum	Maximum	*M*	*SD*
Age	18	68	36	11.43
High school GPA	2.0 or below	4.1 or above	2.6–3.0	1.16
College GPA	2.1–2.5	4.1 or above	3.1–3.5	1.03

tional Center for Education Statistics, 2016). Females are also more likely to respond to survey research than males (Dillman, 2007). Nonetheless, the data in this study are from a severely underrepresented group that often is overlooked by other Native American nations. Given the difficult collection of this data, the uniqueness of the data, and the historical mistrust of researchers in Indigenous communities; the data that were created to analyze Quechan and Cocopah postsecondary persistence is extremely valuable. From this sample, I conducted the exploratory factor analysis.

Exploratory Factor Analysis

I used an EFA on the 117 participants who responded to 30 items. The EFA was set to extract four hypothesized factors. Due to the convergence of the scree plot, Kaiser's criterion on eigenvalues, and the recommended sample size for an EFA, I retained these four factors. The interpretation of rotated scales was with variables loadings greater than .30 and loading on a single factor retained. The four-factor solution accounted for 43% of the total variance (the spread of data) in the items. The eigenvalues represent the variance explained by each particular factor, and all the factors had eigenvalues greater than 1.973, which meets Kaiser's criteria for factor selection. The proportion of common variance, or communalities (see Table 3), was assessed, and all individual variables except one ("One time the tribe cancelled our Easter egg hunt, because all the powdered eggs blew away") explained more than 20% of the common variance with recommended values of .2 and above (Child, 2006). The item with a communality of less than .2 may likely not be an appropriate item for future analysis, and therefore was deleted in the final solution. Examining the collinearity diagnostics, there were no indications of multicollinearity in the data. The scree plot showed inflections that would justify retaining either four or five factors. When running the EFA to extract five factors, the model split the giving back construct, while all the other factors loaded onto their appropriate construct and did not significantly alter reliability. Therefore, a four-factors solution was retained. Table 4 shows the factor loadings after rotation.

The items that cluster on the first factor suggest that factor 1 represents giving back, factor 2 represents family tribal support, factor 3 represents identity, and factor 4 represents institutional support. There were two split loadings ("I have a close relationship with my tribal relatives" and "Tribal members (other than family) asked about my academic progress in college") that loaded onto more than one construct. I removed the items, due to the cross loadings. Furthermore, the literature and expert feedback led to the retention of the item with a split loading. Additional examination of Table 5 indicates that one item could be removed ("One time the tribe cancelled our Easter egg hunt, because all the powdered eggs blew away") due to a factor loading below conventional standards for item retention ($<.3$). The communality evidence and factor loading for the item ("One time the tribe cancelled our Easter egg hunt, because all the powdered eggs blew away") indicates future research should exclude the item. Additionally, the item "I have a close relationship with my tribal relatives" could be specified to load only on the identity factor for future research. The final factor solution included 27 items, loaded onto the appropriate factor (see Table 4), and accounted for 45% of the explained variance in the final factor solution. All four of the scales had acceptable levels of internal reliability for empirical research (i.e., Cronbach's alpha $>$ .7), and the Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analysis, KMO = .659 (see Table 4).

The correlational analysis indicated two statistically significant correlations between the giving back and identity scales and the institutional support and family/tribal support scales (see Table 5). The correlations between subscale scores of the SNAG and college GPA indicate initial evidence of convergent and discriminant validity. The small, nonsignificant correlations between subscales of the SNAG and college GPA provide initial evidence of discriminant validity (see American Educational Research Association, American Psychological Association, & National Council on Measurement in Education, 2014). There are nonsignificant correlations between family/tribal support with identity, giving back, and college GPA; identity with institutional support and college GPA; institutional support with giving back and college GPA; and giving back with institutional support and college GPA. The discriminant validity provides evidence that when measuring different constructs in the SNAG, the scores are not correlated and therefore different constructs. Furthermore, college GPA may also not be a measure that is a factor in Quechan and Cocopah student college persistence. A measure, such as giving back, may aim to provide information that contrasts performance data like GPA. Giving back as an outcome variable may be a better indicator of Quechan and Cocopah community values as an indicator of academic achievement or performance as opposed to GPA. The discriminant evidence suggests that college GPA and giving back may come from two different value systems: One is from a colonized settler perspective (GPA) and the other rooted in Indigenous knowledge systems (giving back). Future research should consider examining both GPA and giving back as possible outcome variables.

Discussion

The purpose of this study was to develop a psychometric instrument that measures factors that influence AI/AN postsecondary persistence according to the AI/AN Millennium Falcon Persistence Model. The study provides construct validity, reliability, and an empirically based future model of Native American postsecondary persistence. The exploratory factor analysis confirmed that all four of the original AI/AN Millennium Falcon Persistence

Table 3
SNAG Exploratory Factor Analysis

Items	Factor				Communalities
	Giving back	Tribal family support	Identity	Institutional support	
1. I notice positive change in the tribal members that I encourage.	.423				.377
2. I help organize community events (i.e. Indian Days, Pow Wows, Community dinners, etc.).	.422				.218
3. I currently volunteer with an American Indian community other than my own.	.497				.234
4. If possible, I always try to buy from tribal businesses.	.763				.458
5. I pray for my tribal community.	.562				.276
6. I try to visit my tribal homeland as much as possible.	.534				.328
7. I participated in community gatherings before coming to college (i.e. Indian Days).	.454				.277
8. I planned on using my education to help my tribe.	.494				.375
9. I strongly wanted to "give back" to the tribal community I am an enrolled member of.	.458				.363
10. One time the tribe cancelled our Easter egg hunt, because all the powdered eggs blew away.	.314				.101
11. My family supported my decision to attend college.		.465			.228
12. My family checked up on me while at college.		.602			.360
13. My family talked about college with me.		.556			.314
14. My family does not have high expectations for me.		.541			.337
15. My tribal community paid for the majority of my college tuition.		.510			.247
16. I often went home to get support from my tribal community.		.537			.377
17. Tribal members (other than family) asked about my academic progress in college.		.519			.333
18. My tribal community is proud of me for enrolling into college.		.485			.393
19. I have a close relationship with my tribal relatives.		.315	.523		.443
20. Before coming to college, I had knowledge of my tribal language.			.739		.525
21. I can speak my tribe's language.			.762		.512
22. I participated in tribal ceremonies prior to attending college (e.g. cremation ceremony)			.449		.340
23. I know my tribe's history.			.470		.361
24. I spent most of my life of my tribal homelands			.543		.233
25. My instructors were respectful of students.				.794	.621
26. My academic advisor ensured I took all required courses for my degree.				.365	.252
27. My professors respected my views as an American Indian in course discussions.				.756	.575
28. My professors supported me if I needed to attend a cultural event (e.g. ceremony, funeral) during class time.				.585	.375
29. My interactions with faculty outside of the classroom were negative.				.723	.477
30. College interferes with my traditional values.				.418	.223
Cronbach's Alpha	.744	.751	.753	.748	

Note. SNAG = Scale of Native Americans Giving Back. Exploratory factor analysis. Principal axis factoring. Promax rotation. Three of the items were reverse coded: "My family does not have high expectations for me" (Fam4), "My interactions with faculty outside of the classroom were negative" (Faculty4), and "College interferes with my traditional values" (Institution1). Bartlett's test $\chi^2 = 1407.49$ and $p < .001$, KMO = .668.

Model factors (family, tribal, academic, institutional) were, in fact, factor scores captured by the SNAG. However, the analysis revealed that two of the factors merged (family and tribal support). Due to the sample being from smaller tribes, one possible reason for the blended factors is that Native Americans from smaller tribes tend to be distant relatives to everyone in the tribe, blurring lines between family and tribe. Furthermore, the desire to give back and tribal identity emerged as separate constructs. The final scale that emerged in this study consists of four components of postsecondary persistence, as opposed to only four.

Implications for Theory

The validity and reliability of the SNAG scale scores indicate that it can accurately and consistently yield reliable scales for the constructs giving back, tribal cultural identity, and forms of support among Native American college students. The results of the exploratory factor analysis and the revised model from that analysis reveal factors of postsecondary persistence that otherwise may have remained unexamined. The evidence provides a multifaceted understanding of postsecondary persistence for AI/AN students compared to mainstream models. The two most significant findings that emerged from developing an instrument to test the model is that giving back and cultural identity are separate constructs from tribal community support.

The factor loadings of the giving-back scale items show that giving back is a construct that researchers should measure separately from tribal community support. Brayboy et al. (2012) posit that persistence rates increase for AI/AN students when the pursuit

Table 4
Final SNAG Exploratory Factor Analysis

Items	Factor				Communalities
	Giving back	Tribal family support	Identity	Institutional support	
1. I notice positive change in the tribal members that I encourage.	.484				.573
2. I help organize community events (i.e. Indian Days, Pow Wows, Community dinners, etc.).	.512				.590
3. I currently volunteer with an American Indian community other than my own.	.559				.522
4. If possible, I always try to buy from tribal businesses.	.670				.458
5. I pray for my tribal community.	.514				.426
6. I try to visit my tribal homeland as much as possible.	.568				.391
7. I participated in community gatherings before coming to college (i.e. Indian Days).	.447				.514
8. I planned on using my education to help my tribe.	.487				.805
9. I strongly wanted to "give back" to the tribal community I am an enrolled member of.	.447				.806
10. My family supported my decision to attend college.		.582			.451
11. My family checked up on me while at college.		.686			.533
12. My family talked about college with me.		.662			.472
13. My family does not have high expectations for me.		.507			.503
14. My tribal community paid for the majority of my college tuition.		.365			.385
15. I often went home to get support from my tribal community.		.445			.513
16. My tribal community is proud of me for enrolling into college.		.322			.508
17. Before coming to college, I had knowledge of my tribal language.			.775		.579
18. I can speak my tribe's language.			.816		.600
19. I participated in tribal ceremonies prior to attending college (e.g. cremation ceremony)			.422		.491
20. I know my tribe's history.			.468		.483
21. I spent most of my life of my tribal homelands			.405		.312
22. My instructors were respectful of students.				.825	.622
23. My academic advisor ensured I took all required courses for my degree.				.396	.457
24. My professors respected my views as an American Indian in course discussions.				.702	.645
25. My professors supported me if I needed to attend a cultural event (e.g. ceremony, funeral) during class time.				.544	.509
26. My interactions with faculty outside of the classroom were negative.				.759	.559
27. College interferes with my traditional values.				.406	.374
Cronbach's Alpha	.766	.724	.715	.748	

Note. SNAG = Scale of Native Americans Giving Back. Final exploratory factor analysis. Principal axis factoring. Promax rotation. Three of the items were reverse coded: "My family does not have high expectations for me" (Fam4), "My interactions with faculty outside of the classroom were negative" (Faculty4), and "College interferes with my traditional values" (Institution1). Bartlett's test $\chi^2 = 1217.16$ and $p < .001$, KMO = .659.

of education is with a determination to serve a broader community as opposed to oneself. Giving back or serving ones' tribal community is often an expectation and goal after graduation for Native American students (Brayboy, Solyom, & Castagno, 2014). Guillory and Wolverton (2008) and Guillory (2009) measured giving back by describing giving back as a student's desire to help the community. Drywater-Whitekiller (2010) provided further evidence by defining giving back according to Native American student statements on helping their tribes through their fields of education (i.e., health care, rehabilitation, environmental pollution, a museum to ensure the correct tribal history, and so forth). The factor loadings for items such as "I planned on using my education

Table 5
Correlation Matrix

Items	Family/tribal support	Identity	Institutional support	Giving back	College GPA
Family/tribal support	1	.004	.288**	.096	−.063
Identity	.004	1	.144	.365**	.054
Institutional support	.288**	.144	1	.135	.112
Giving back	.096	.365**	.135	1	.123
College GPA	−.063	.054	.112	.123	1

** $p < .01$ using a two-tailed test.

to help my tribe" and "I help organize community events" support giving back according to Brayboy et al. (2012).

The second factor that separated from the original model tribal community construct is cultural identity. Waterman's (2012) home-going theory reaffirms that cultural factors can predict persistence. Furthermore, HeavyRunner and DeCelles' (2002) and Windchief and Joseph's (2015) theories reiterate the need for Native American students to maintain cultural connections. Special activities and AI/AN student organizations can help students maintain their identities as they begin their educational careers in a new location (Dodd et al., 1995; Drywater-Whitekiller, 2010; Waterman, 2007). The activities and student organizations are imperative because they reinforce culture and help maintain cultural identity tied to one's community, which factors into college persistence (Huffman, 2001; Jackson & Smith, 2001; Ness, 2002; Reyes, 2000; Waterman & Lindley, 2013). In essence, the degree to which Native American college students maintain their cultural identity, the more likely they are to persist. The items generated to measure cultural identity adapted from Robert K. Thomas' peoplehood paradigm on language, kinship, history, and land include items such as "I participated in tribal ceremonies prior to attending college" and "I have a close relationship with my tribal relatives." The cultural identity items support the definition of cultural identity from Robert K. Thomas that argues tribal identity is the extent to which one relates to their tribe's language, kinship, history, and land.

The emergence of these two factor scores are consistent with research that finds the desire to give back and cultural identity affect postsecondary persistence for Native American students. Future theory and studies on postsecondary persistence must consider including variables to measure giving back and cultural identity to enhance the internal validity of studies through statistical controls (Lopez & Marley, 2018; Shadish et al., 2002). The emergence of these two factors, and the associated theories and empirical evidence, further exemplify that the validity and reliability of the SNAG scale scores can accurately and consistently measure factors related to persistence among Native American college students.

Implications for Current Practice

Although Indigenous data collection by Indigenous researchers and tribes would improve the understanding of Indigenous communities, the problem remains that a burden is put on the tribe or Indigenous researcher that other ethnicities do not have. Governments will then be less likely to collect the data essential to Indigenous communities, as they do for other people groups. The lack of data is problematic, but the suggestion for oversampling has been made since the early 1990s but has yet to come to fruition (Pavel & Padilla, 1993). Indigenous people have been waiting for culturally relevant variables and measures of educational achievement since the Meriam Report in 1928 (Meriam, 1928). Meaning that Native Americans have been waiting to have mediocre government-collected data for the past 90 years and the chances of the data becoming available within the next decade are unlikely. Given the need for tribes to make data-driven decisions that inform nation building, tribes must collect data while continually putting pressure on the governments to collect data. At the very least, governments should give resources to build that capacity of tribes to collect data. Although those in power and dominant perspectives will likely question the legitimacy or validity of tribal datasets, tribes will have statistically sound data to inform their decisions.

As a result of limitations found in governmental and institutional data (see Lopez & Marley, 2018), a few tribal nations started data initiatives for data sovereignty. Data sovereignty is the right and capacity of tribes to develop data collection processes and analysis to influence the collection of data by external entities (Rodriguez-Lonebear, 2016). Nonetheless, tribal nations are entitled to self-determination because they are sovereign nations. Self-determination and sovereignty relate to the right of tribes and their citizens to self-govern and maintain the trust relationship between federal government and Native nations (Brayboy et al., 2012; Cornell & Kalt, 2010). By exerting data sovereignty, tribes are building the capacity of their tribe for nation building. Tribal nation building refers to building the capacity and community of one's tribe (Brayboy et al., 2014; Salis Reyes, 2019), and the data in government and institutional datasets have too many limitations to help with nation building.

Through collecting data by creation stories, researchers have an opportunity to work with a more comprehensive dataset that will increase the power of a study and allow researchers to obtain a larger sample from an identified population. The larger identifiable sample will increase both external validity and statistical-conclusion validity (ability to draw appropriate conclusions). The continued use and misuse of federal data to examine Indigenous populations without regard for Indigenous quantitative methodology exemplify the need for researchers to reexamine the collection of data. Current practice should consider collecting data from Indigenous data collection that acknowledges tribal culture, such as creation stories, in survey samples and subsequently gives credibility to Indigenous knowledge and Indigenous voices.

Furthermore, universities should support Native American student desires to give back. In the early 1800s, the Marshall trilogy (three supreme court decisions influencing Indian law) partly upheld the doctrine of discovery that expressed when Europeans "discovered" America, their claim superseded any claims of tribal nations (Spruhan, 2006). Supreme Court Chief Justice Marshall ruled the Cherokees were not a foreign nation, but a domestic dependent nation. Or in other terms, the relationship between tribal nations and the United States was similar to the relationship between a ward to a guardian. The decision led the way for inherent tribal sovereignty (authority to govern) limited by existence between the boundaries of the United States. Due to the status of tribes as a ward to their guardian, the responsibility that the federal government has to tribes came through the doctrine of federal trust responsibility. The concept expressed that in exchange for the taking of land from the tribal nations, the federal government would protect tribal land that Native folks had maintained and compensate Tribal Nations by providing basic necessities such as food, shelter, and basic services to the tribes, including education. In essence, anyone receiving federal dollars to educate Native Americans should be concerned with improving Tribal Nations. Marshall also made the decision that the Cherokee Nation is a distinct community, residing in its own territory, and is outside the laws of Georgia. The decision established that the federal government, not individual states, have authority over Tribal

Nation affairs and that Tribal Nations have inherent sovereignty, the authority to make and enforce their own laws within their land.

Tribal sovereignty is integral to nation building. Nation building is a tribe's hunt to expand their capacity to self-govern sustainable communities and increase economic development (Hosmer & Nesper, 2013). Nation building is giving back. Guillory and Wolverton (2008) and Guillory (2009) measured giving back by describing giving back as a student's desire to help the community. The factors loadings for the items such as "I planned on using my education to help my tribe" and "I help organize community events" support giving back according to Brayboy et al. (2012), and indicate the importance of nation building or giving back to the educational attainment of tribal nations. The factor loadings for the giving-back scale items show that giving back influences students' pursuit of higher education in order to serve their broader community. Therefore, universities should consider supporting tribal sovereignty, or right to govern, as an aspect of nation building that influences the persistence of Native American students. Giving back is often an expectation and goal after graduation for Native American students (Brayboy et al., 2014). Without supporting a student's desire to give back, universities are not supporting nation building and not upholding federal government trust responsibilities to provide education.

Implications for Future Research

The scale examined in this study provides several opportunities for researchers to investigate Native American postsecondary persistence and its related concepts. First, future research could examine the AMFPM and the influence on postsecondary persistence among diverse groups of Native American students, especially among smaller tribal nations. Before using the Indigenous Data Collection outlined in this paper, most smaller nations have been severely underrepresented in Native American postsecondary research. The scale and data collection allow researchers to explore the intricacies of smaller tribes while providing appropriate validity evidence. Although this study found that postsecondary persistence is measured comparably in students from two different tribes along the Colorado River, further examination among other tribes would indicate if students have similar factors that will strengthen the validity of the presented scale. Researchers could use the scale to explore the similarities and differences in various Native American populations to understand the AMFPM and how Native American postsecondary persistence operates in Native students' lives. Some questions researchers could consider are the following: Are there any significant differences between Native American tribes and the construct validity on the SNAG? Are there any significant differences between students' place of birth or childhood upbringing (i.e., reservation vs. urban) in postsecondary persistence using the SNAG? Can other variables be predicted by Native American postsecondary persistence?

Second, using the scale, future research could examine Native American students' desire to give back and the influence on postsecondary persistence. Additionally, researchers could examine specific questions exploring any significant differences among tribes and reservation or urban locations. While some students may be less committed to their community, it may not necessarily mean that they persist at higher rates. Furthermore, the desire to give back is an emergent theme of qualitative literature, but never a factor in quantitative persistence studies, mostly due to the lack of examination. Future research should also seek to test giving back when examining postsecondary persistence, as the construct has only emerged in this quantitative study.

There are a few other recommendations researchers should take into consideration. Researchers should consider attempts to develop additional items to measure the cultural identity subscale according to criteria of each respective tribal nation, and subsequently provide construct validity through factor analyses. Not to mention, this is the first operationalization of the AMFPM using the SNAG. This exploratory factor analysis creates the foundation for confirmatory factor analysis with a larger sample of tribes that live along the Colorado River. Using college student participants to test the AMFPM is the next step for research on postsecondary persistence. The literature, item development, and analysis in this study justify a confirmatory factor analysis for future research.

Conclusion

As institutions increasingly question their approach to retention and the value of diverse student populations, it is critical that higher education faculty and administrators examine AI/AN postsecondary persistence through alternative models grounded in empirically sound research such as the AMFPM and SNAG. The model introduces two new constructs (the desire to give back and tribal identity) not examined in mainstream theories, such as Tinto (1975) or Bean (1980). In the end, the development of a reliable and valid instrument (the SNAG) to examine AI/AN postsecondary persistence within both two-year and four-year institutions builds the capacity for scholars and practitioners to re-examine AI/AN postsecondary persistence and provide effective interventions that increase student persistence in higher education.

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