Psychometric Properties of the Adolescent and Young Adult Men – Health Indicators Scale (AYAM-HIS)

Michael J. Rovito,* PhD, MA, CHES
Shari Dworkin, PhD, MS
Keri Allen, MS1, BS
Kathy E. Rovito, DrPH, MPH, CHES, CIC
Sydney Martinez, BS

Abstract

The objective of this exploratory study was to evaluate the psychometric properties of the Adolescent and Young Adult Men – Health Indicators Scale (AYAM-HIS) in a sample of AYAMs, a priority population experiencing disparate health outcomes compared to women. These results indicate that AYAM-HIS yielded reliable and valid data, thereby providing a means to measure indicators of health behaviors and possible outcomes in this population. The AYAM-HIS can provide the necessary information to assess current health behaviors to provide a foundation from which interventions can be designed. Future research into reducing survey fatigue related to AYAM-HIS and testing with diverse populations is warranted.

Keywords: adolescent and young adult men, health behaviors, measurement, psychometric properties, methods, program design

* Corresponding author may be reached at michael.rovito@ucf.edu.

Introduction

Health-compromising behaviors among youth are far too common and the implications of such behaviors are long-lasting, not only for the individual, but for future generations and society-at-large. Monroe et al. (2023) indicate that a large percentage of adverse health behaviors engaged in during the adolescent phase of life continues into early adulthood, often at higher levels, before declining at older ages. These behaviors include drug, alcohol, and tobacco use, as well as unprotected sexual activity and general risk-taking activity. These risky behaviors increase the likelihood of adverse health outcomes. As Arnett (2014) candidly states, ". . . the source of most physical health problems in the teens and early 20s is young people's behavior" (p. 40).

Health outcomes vary among adolescent and young adult groups, most significantly between genders and most likely due to the pressures of masculinity upon young adult and adolescent behaviors (Nakagawa & Hart, 2019). One major obstacle to improving gender-based health education and promotion programming is the scarcity of information and public policy regarding health-related attitudes, perceptions, and lived-experiences of adolescent and young adult men (AYAMs) (Richardson & Carroll, 2018). The existing body of literature research indicates that AYAM physiological development, as well as social norms, promotes unhealthy health behavior choices and adverse health outcomes (Hoyt et al., 2012; Lowry et al., 2014; Tucker et al., 2014; Kavanagh & Graham, 2019).

Although men have a higher mortality rate than women at all ages (in nine out of the top ten causes of death), AYAMs are even further disadvantaged (National Center for Health Statistics [NCHS], 2017). Men aged 15-24, for example, have 2-1/2 greater risk of overall mortality than women of the same age, are more prone to injuries and violence, and are nearly three times more likely to die from preventable causes than women (Miniño, 2010; Pharo et al., 2011; NCHS, 2017). Bell, Breland, and Ott (2013) suggest that AYAMs experience poorer sexual and mental health outcomes, as well as lower levels of engagement with health services than women. Rice, Purcell, and McGorry (2018) suggest that AYAMs perform poorly on indicators of mental health (i.e., elevated rates of suicide, conduct disorder, and interpersonal violence) compared to women. Other research indicates that AYAMs binge drink more, use more illicit drugs, perform increased amounts of thrill-seeking activities, are more sexually promiscuous, are more at risk for developing depression, and experience more social isolation than men ages 26 and up (Dariotis et al., 2011; Demissie et al., 2022). Research results suggest that harmful masculinities are causal to the aforementioned adverse behaviors (Leone & Rovito, 2013; Duriesmith, 2020; Hall et al., 2020). Specifically, the public health evidence is clear that adherence to masculine norms is associated with increased drug and alcohol use, sexual risk behavior, violence against women and men, and poor mental health outcomes. In addition, public health research reveals that intervening on constraining masculine norms has reduced numerous health risks among adult men (Authors, 2013, 2015, Casey et al., 20 Ruane-McAteer et al., 2019, 2020; Seidler et al., 2016; Ziekel et al., 2023). Parallel work that rigorously measures masculine norms among adolescents is lacking, highlighting the need for the current study to lay the groundwork for interventions that target these norms to improve young men's health,

Gaps in the Assessment Literature

Barry et al. (2014) question the legitimacy of data stemming from a significant share of health education and behavioral assessment tools due to lack of proper psychometric analyses. For example, they indicate that a distressing percentage of peer-reviewed publications did not report on the reliability and validity of their results, 40%-93% did not report any measures of validity, and 35%-80% did not report any measures of reliability. These flaws draw into question the recommendations made by such studies, as there is no way to be sure that any results have indeed measured what they intended to measure. Based on this problem, a panel of experts deemed roughly 22% of randomly selected articles "unfit for publication" due to their lack of psychometric reporting. Barry et al. (2014) concluded by calling for stricter reliability and validity publication guidelines as these properties greatly impact generalizability of their use.

Among the existing validated tools outlined in Barry et al. (2014), few are specifically designed to gather a more multidimensional assessment of the perceptions and attitudes regarding AYAM health behaviors. Many scales intended for AYAM audiences are unidimensional in focus where one specific variable is highlighted instead of a more aggregate measure of well-being. For example, the PMQ-47 (Chesebro & Fuse, 2001), the Male Role Norms Inventory – Revised (Rummell & Levant, 2014), the Subjective Masculinity Experiences scale (Wong et al., 2015), and the Masculine Gender Role Stress scale (Eisler & Skidmore, 1987) are limited by the relatively narrower view of men's health as they focus exclusively on masculinity and/or gender roles. Different scales developed by

Weber, Blais, and Betz (2002) measured perceptions of risk. One study does exist that specifically measures AYAM health needs, but it was created for an Iranian male youth population, thus limiting generalizability to other cultures and audiences (Zare et al., 2016).

Existing scales, it appears, either: (1) measure AYAM health behaviors via a piecemeal approach, not in an aggregate, or more multidimensional fashion, or (2) are limited in their generalizability properties. As indicated by the literature regarding the determinants of health, perceptions and attitudes, and in turn, health behaviors, are influenced by a multitude of risk and protective factors that determine the overall health and well-being of individuals (Henry et al., 2018; Smith et al., 2018). Thus, there is importance in promoting every aspect of health by understanding personal needs through their subjective views. The field needs to be able to capture information regarding such health outcomes indicators to inform more effective and efficient outreach programming. One concern for men is the ever-present influence of masculinity upon health behavior choice.

Therefore, the Adolescent and Young Adult Men-Health Indicators Scale (AYAM-HIS) was created in response to the need for the creation of: (1) a tool to capture the multifactorial nature of the AYAM health behavior decision-making process more effectively, and (2) a tool with increased utility for use in the clinic and the community for health education and promotion efforts. This three-phased study was conducted to design a psychometrically-sound scale to assess indicators of health behaviors among AYAMs. This paper specifically reports the findings from phase two regarding the reliability and validity properties of the AYAM-HIS instrument.

Methods

Participants

A total of 160 AYAMs were recruited via snowball sampling techniques in the Central Florida region to take part in this study. Out of the original sample, 135 provided appropriate informed consent documentation and completed the survey in its entirety. A subsample (n = 40) of the 135-participant pool was randomly selected to complete the survey a second time one-week after completing the first survey. A total of 34 participants completed the assessment in its entirety a second time.

Participants' mean age was 22.25 (SD = 3.35) years. Most participants were white/Caucasian (82.7%), followed by Latino/Hispanic (15.9%), and black/African American (6.7%). Many participants also completed an associate degree as their highest level of education (30.8%). When asked about their sexual orientation, 92.1% indicated heterosexual, 2.6% homosexual, 3.9% bisexual, and 1.3% other. Similar demographics were reflected in the test-retest subsample as was reported in the larger cross-sectional sample indicating a comparable representation.

Procedure

A three-phase mixed-methods study design, which was approved by the host university's institutional review board (IRB), was employed to develop and validate the AYAM-HIS instrument. Grounded in Normative Content Theory (Leone & Rovito, 2013), this three-phase design was necessary to address the need for formative research to guide the development of AYAM health and wellness assessment tools. Phase 1 consisted of applying a structured phenomenological design (e.g., Rovito et al., 2017) to extract salient information on the lived experiences

of participant men. Semi-structured interviews served as the mechanism from which data on prominent AYAM health-related topics were collected. A coding, peer-debriefing, and conferencing technique developed the questions for the AYAM-HIS. Phase 2 consisted of a pilot application of the tool via a cross-sectional design to assess its psychometric properties, of which the resulting data is reported on below. Phase 3 consisted of the application of the validated AYAM-HIS to a larger sample via a cross-sectional design to determine associations between input demographic and situational variables with output health behavior outcomes.

The present study (i.e., Phase 2) was conducted in two stages to determine the psychometric properties of the AYAM-HIS. Convenience sampling techniques were employed in the first stage to recruit 18-27-year-old self-identifying men (i.e., AYAMs) through various online and social media networks (e.g., Twitter, LinkedIn, and Facebook), as well as email and face-to-face solicitation. Stage one was specifically conducted to assess the internal consistency and construct validity of a possible structural matrix among the behavioral indicator measures. For the second stage, the AYAM-HIS instrument was distributed a second time to a randomly selected sub-sample of those who completed the survey during the first stage. This test-retest design took place over the course of one week and was implemented to determine stability coefficients of the behavioral indicator measures. All surveys were completed online via Qualtrics online survey software.

Assessment

The AYAM-HIS is a 144-item questionnaire categorized into six major sections based on the findings from Phase 1. Of the 144 items, nine demographic questions generally assessed age, gender, race/ethnicity, education, and socioeconomic status. A total of 113 questions across the six major sections were assessed on an 11-point Likert scale in which participants indicated their level of agreement from 0-10, where 0 = strongly disagree and 10 = strongly agree. An 11-point Likert scale was chosen over a more traditional 5- or 7-point scale to increase participant response precision. The remaining 22 questions were a mixture of alphanumeric, dichotomous, or open-ended questions.

The six dimensions consist of: (1) 15 items measuring masculinity – focusing on how the participants described manhood and its sociocultural manifestations, (2) 34 items measuring health and wellness – including alcohol and drug use as well as diet and exercise habits, (3) 14 items measuring competition, risk, and violence – focusing on benefits and downfalls of competition, risk-taking behaviors, and violence, (4) 23 items measuring familial and romantic relationships – containing questions on family and fatherhood, as well as dating and courtship, (5) 17 items measuring friendship and success –including questions on companionship, fellowship, success, and values, and (6) 31 items measuring communication – covering comfortability of communicating with individuals of varying familiarity and authority. One item was a wrap-up question that asked for participant feedback.

Data Analysis

Data were analyzed using SPSS statistical software (Version 21; SPSS, Inc., Chicago, IL). Face and content validity of the original tool was provided by a panel of three experts via the coding, peer-debriefing, and conferencing technique in Phase 1 (Rovito et al., 2017). Internal consistency and construct validity was assessed via an exploratory

factor analysis (EFA) and calculation of Cronbach's alpha of identified factors within the survey matrix. An EFA was chosen instead of a principal component analysis due to this study's purpose to identify a possible factor structure, not to test one. Test-retest reliability properties were assessed via Spearman rho analyses. Similar steps in other psychometric studies set a precedent for our methods (Bohman et al., 2014).

Results

Validity and Reliability

Construct Validity

An exploratory factor analysis with varimax rotation was conducted to identify a possible underlying factor matrix within the data. Sampling adequacy and favorability to identify a factor structure were respectively confirmed with a Kaiser-Meyer-Olkin (KMO) statistic (0.68) and a Bartlett's test for sphericity ($p < .001$). Cutoff scores for factor loadings and eigenvalues were designated as 0.30 and 1.0, respectively. Brown (2009) and Kline (2014) were consulted to identify 0.30 as the cutoff point for factor loadings. The authors suggest that salient loadings can be identified at said level with a sample size of at least 100.

Five underlying factors were reported that represented a preliminary structural matrix among participant responses (Table 1). These five factors accounted for ~ 50% of the variance in survey responses, with Factors 1 and 2 accounted for approximately 30% of the total. Each of the five factors had high factor loadings on the variables designated to each respective factor, thus indicating elements of unidimensionality within each factor. There were, however, some cross-loading concerns on some of the factors.

Internal Consistency and Test-retest Reliability

Cronbach's alpha values ranged from 0.554 to 0.617 among the five exploratory factors indicating acceptable consistency scores. These scores indicate that there are acceptable levels of internal consistency within each factor.

Spearman rho analyses calculated stability coefficients of ≥ 0.5 for 125 out of the 131 scale data items, indicating acceptable reliability properties (Table 2). Approximately 60% of those items (75 out of 125 items) had a stability coefficient of ≥ 0.7, indicating good reliability properties of the AYAM-HIS tool.

Distribution of Scores

Skewness and kurtosis were assessed for each indicator in the original six questions categories (Sections A-F). Questions that revolved around masculinity, competition, risk, violence, health behaviors, romantic relationships, and sexual activity were more or less normally distributed with kurtosis and skewness score ranging from 1.02 to -1.30, although we acknowledge that some of the values were greater than the arbitrary threshold of 1 and -1. However, questions about health behaviors as it applies to achieving wellbeing, trust, friendships, respect, and both verbal and nonverbal communication with friends and authority figures were more or less non-normally distributed with kurtosis and skewness scores ranging well above the 1 to -1 threshold.

Discussion

Psychometric Properties of the AYAM-HIS Instrument

The objective of this study was to evaluate the psychometric properties of the AYAM-

Table 1
Exploratory factor analysis

	Ideals & Beliefs	**Success & Respect**	**Men & Masculinity**	**Sex & Violence**	**Physical Health & Competition**
It is important to be faithful in a romantic relationship	0.873				
I think it is important to always be mindful of my health	0.801				
A "hookup" is a purely physical encounter	0.789				
I feel that having friends is important to my health and wellness	0.72				
A young man is a male who is still in the process of maturing	0.672				
The term "healthy" means being physically, mentally, and emotionally balanced	0.662				
I feel happy throughout much of the day	0.617				
When I drink alcohol, I drink to be sociable	0.604				
Mental health is important to achieving overall wellness	0.592				
I consider myself a man	0.548				
I consider myself to be a passionate person	0.462				
I feel tired throughout much of the day	0.453				
I respect successful people		0.632			
Generally, I feel excited about life		0.581			
Generally, I feel satisfied with myself		0.564			
I consider myself to be a healthy person		0.562			
Spiritual health is important to achieving overall wellness		0.544			
I consider myself to be a successful person		0.533			
I respect my elders, including my parents or guardians		0.521			
I respect other authority figures such as my boss/supervisor		0.521			
I believe that a person is successful if he/she accomplishes some of his/her life goals		0.507			
I respect the police and other law enforcement agents		0.5			
My opinions of what a man is are similar to what society thinks a man is			0.49		
I feel that I have the ability to achieve the level of success I want to achieve			0.489		
I respect my family			0.479		
Having a family (i.e., partner/spouse, children) makes someone a man			0.475		
Being financially successful makes me a man			0.444		
I respect my teachers/professors			0.409		
Trust is an important factor in friendship			0.403		
Being able to take care of my family makes me a man			0.402		
My opinions of what a man is are similar to what my family thinks a man is			0.396		

Having a career makes someone a man			0.396		
Men take more risks than women			0.393		
I am influenced by my hormones to have sex or engage in sexual relations				0.521	
I am influenced by the media to have sex or engage in sexual relations				0.485	
I am influenced by society to have sex or engage in sexual relations				0.485	
I feel that violence in sports is acceptable				0.465	
Being more violent makes me manlier				0.449	
Engaging in sexual relations during late teenage years (16-19 years old) is acceptable				0.442	
I feel that if a person does not have friends, there is something wrong with him/her				0.44	
A young man is A male who is not yet financially successful				0.433	
I feel that violence on TV and in movies is acceptable				0.422	
I feel that sex revolves around money and other material possessions				0.406	
For someone my age, drinking alcohol daily is an okay thing to do				0.388	
I am influenced by my peers to have sex or engage in sexual relations				0.381	
I feel that violence in video games is acceptable				0.38	
I consider myself to be a person who takes risks				0.379	
Males are more violent than females				0.361	
I think I can be a healthier person					0.47
Physical health is important to achieving overall wellness					0.453
Competition is generally a good thing to have in society					0.435
Exercising is important for me to achieve wellness					0.425
I consider myself to be a competitive person					0.396
Having a healthy diet is important for me to achieve wellness					0.377

Table 2

Test-retest reliability output

Section A: Masculinity				Section B: Health and Wellness				Sect. B Health and Wellness cont.				Sect. C: Competition/ Risk/Violence			
Q	**r_s**	**N**	**Sig.**	**Q**	**r_s**	**N**	**Sig.**	**Q**	**r_s**	**N**	**Sig.**	**Q**	**r_s**	**N**	**Sig.**
1	0.611	41	<0.05	1	0.624	37	<0.05	17	0.703	38	<0.05	1	0.717	38	<0.05
2	0.813	39	<0.05	2	0.808	38	<0.05	18	0.791	38	<0.05	2	0.810	38	<0.05
3	0.751	38	<0.05	3	0.720	37	<0.05	19	0.785	37	<0.05	3	0.829	38	<0.05
4	0.718	38	<0.05	4	0.528	37	<0.01	20	0.821	38	<0.05	4	0.624	38	<0.05
5	0.658	38	<0.05	5	0.707	37	<0.05	21	0.819	38	<0.05	5	0.503	38	<0.01
6	0.556	38	<0.05	6	0.521	37	<0.01	22	0.764	38	<0.05	6	0.700	37	<0.05
7	0.683	38	<0.05	7	0.773	37	<0.05	23	0.708	38	<0.05	7	0.702	37	<0.05
8	0.807	38	<0.05	8	0.668	37	<0.05	24	0.454	38	<0.01	8	0.813	37	<0.05
9	0.504	38	<0.01	9	0.621	37	<0.05	25	0.748	37	<0.05	9	0.686	37	<0.05
10	0.830	38	<0.05	10	0.744	36	<0.05	26	0.613	38	<0.05	10	0.573	37	<0.05
11	0.663	39	<0.05	11	0.905	36	<0.05	27	0.911	38	<0.05	11	0.781	38	<0.05
12	0.633	39	<0.05	12	0.629	36	<0.05	28	0.697	38	<0.05	12	0.517	38	<0.01
13	0.706	39	<0.05	13	0.716	37	<0.05	29	0.785	38	<0.05	13	0.298	38	NS
14	0.782	39	<0.05	14	0.449	37	<0.01	30	0.818	37	<0.05	14	0.268	38	NS
				15	0.715	37	<0.05								
				16	0.748	37	<0.05								

Sect. D: Relationships				Sect. E: Friendship				Sect. F: Communication				Sect. F: Communication cont.			
Question	r_s	N	Sig.	**Question**	**r_s**	**N**	**Sig.**	**Question**	**r_s**	**N**	**Sig.**	**Question**	**r_s**	**N**	**Sig.**
1	0.712	38	<0.05	1	0.887	35	<0.05	1	0.805	35	<0.05	17	0.815	35	<0.05
2	0.735	38	<0.05	2	0.810	35	<0.05	2	0.651	35	<0.05	18	0.764	35	<0.05
3	0.747	38	<0.05	3	0.880	35	<0.05	3	0.789	35	<0.05	19	0.696	35	<0.05
4	0.613	38	<0.05	4	0.917	35	<0.05	4	0.518	35	<0.01	20	0.738	34	<0.05
5	0.710	38	<0.05	5	0.686	35	<0.05	5	0.638	35	<0.05	21	0.666	34	<0.05
6	0.841	38	<0.05	6	0.713	34	<0.05	6	0.838	35	<0.05	22	0.697	34	<0.05
7	0.784	38	<0.05	7	0.635	34	<0.05	7	0.693	35	<0.05	23	0.560	34	<0.01
8	0.743	38	<0.05	8	0.866	34	<0.05	8	0.919	35	<0.05	24	0.838	35	<0.05
9	0.935	38	<0.05	9	0.682	34	<0.05	9	0.801	34	<0.05	25	0.716	35	<0.05
10	0.743	38	<0.05	10	0.666	35	<0.05	10	0.732	35	<0.05	26	0.789	35	<0.05
11	0.584	38	<0.05	11	0.654	35	<0.05	11	0.701	35	<0.05	27	0.785	35	<0.05
12	0.710	38	<0.05	12	0.638	35	<0.05	12	0.689	35	<0.05	28	0.772	35	<0.05
13	1.000	38	.NS	13	0.753	35	<0.05	13	0.670	35	<0.05	29	0.671	35	<0.05
14	1.000	36	.NS	14	0.846	35	<0.05	14	0.600	35	<0.05	30	0.730	35	<0.05
15	0.946	36	<0.05	15	0.645	35	<0.05	15	0.671	35	<0.05	31	0.668	35	<0.05
16	1.000	36	NS.	16	0.798	35	<0.05	16	0.718	35	<0.05				
17	0.438	36	<0.01												
18	1.000	36	NS.												
19	0.461	34	<0.01												

HIS in a sample of AYAMs, a priority population experiencing disparate health outcomes compared to young women. These results indicate that AYAM-HIS yielded reliable and valid data, thereby providing a means to measure indicators of health behaviors and possible outcomes in this population. The six items with insufficient reliability properties (i.e., B14, B24, C13, C14, D18, D22), as seen in Table 2's Spearman rho results, were analyzed by the panel of experts and determined to need rephrasing in future AYAM-HIS distributions. The majority of AYAM-HIS questions proved to be stable measures to assess health outcome indicators in this population. However, we do acknowledge the non-normality of some sections' questions, which does call into question, at least partially, the validity of the indicators themselves. Either the men did not understand the question as the topic itself is a nebulous concept to them (i.e., they were never asked, at least on any deep level, about the given topic) or they felt a certain level of unease with the topic. This unease could have possibly produced varying levels of acquiescence response set bias in their responses.

A further objective of this study was to identify a basic structuring of variables to determine any theoretically meaningful dimensions, which is why an EFA was chosen instead of a principal components analysis. The authors understood that the extracted factors would not necessarily parallel *a priori* conceptual definitions of original composite variables embedded in any AYAM health theory. For example, the EFA partitioning of survey questions does not match to the original survey sections. We expected this, however. The AYAM-HIS was not designed with a strict underlying conceptual matrix serving as a foundation. In contrast, each section was to represent more of a general topical guide than a representation of a formal model's construct. We found it compelling, however, to determine if there were any underlying conceptual frameworks that could inform the editing of future iterations of the AYAM-HIS instrument.

The first factor (12 items) represented participants' ideals and beliefs. These responses appeared to identify some core values of the individual in terms of general stances on healthy living standards and behavioral beliefs. The second factor (10 items) represented participant notions of success, satisfaction, and respect. These responses indicated core values around being satisfied with oneself, how the individual defines success, how they define respect, and an interplay between those three concepts. The third factor (11 items) represented how participants defined men and masculinity. These responses indicated which core concepts were used to define what a man was and what attributes were connected with masculinity. The fourth factor (15 items) represented participant notions of sex and violence. The responses represented how each participant conceptualized sexual activity, acceptable sexual practices, as well as attitudes on violence and when and perceptions of when violence was acceptable. The fifth factor (6 items) represented participant attitudes on physical health and competition. The responses represented physical activity and competition as it relates to physical health and wellness.

Because adherence to constraining norms of masculinity has been found previously to influence adult men's health and mental health outcomes negatively, and because intervening on these masculine norms has significantly reduced men's health risks (Authors, 2013; Casey et al., 2018; Courtenay, 2000; Levy et al., 2019; Ruane-McAteer et al., 2019, 2020), it is urgent that

health programming focuses on masculinity and gender-focused measures relevant to young men. Such measures will help to lay the groundwork for future randomized trials to improve upon the positive elements of masculinity while challenging harmful gender norms to improve young men's health outcomes.

Limitations

The EFA indicated some cross-loading on extracted factors. This communality is partially explained by the nature of the methodological framework, which aims to capture the varied lived experiences of participants, not to test conventional models with set constructs. In other words, due to the variance in perceptions of a singular concept in the participant pool, it is likely that certain concepts defined by one individual would be operationally defined by another participant from a completely different perspective. Therefore, we would assume some level of communality between factors.

One other limitation to this design is the relatively small sample size and the use of a convenience sample; therefore, it has limited representativeness pertaining to the target population, particularly regarding international populations. This sample was solicited from a large university in the United States. Although this university has a sizable international student population it is unknown how many of them were included in this sample. These issues could possibly open the study up to confounding or moderating variables acting upon the data. Further, analyses would be served with a larger sample size, particularly in running a confirmatory factor analysis on a select subsample's EFA. Also, some of the non-normally distributed indicators may have their skewed and/or kurtotic distributions allayed with a larger study population.

However, the nature of this design was to assess the psychometric properties of the AYAM-HIS. Our sample size was informed by similar studies (Bohman et al., 2014; Eskandari et al., 2018). Finally, survey fatigue was a possibility, as the AYAM-HIS has 141 questions.

Implications for Health Behavior Research

It is critical for health education and behavior practitioners and researchers to use instruments that provide reliable, valid data to maximize the utility and applicability of their findings. Not ensuring that the instruments used in a given study are able to produce consistent and accurate data wastes resources, including time and attention. Furthermore, the multifactorial nature of today's AYAM health behavior decision-making process demands an instrument that multidimensionally measures perceptions and attitudes related to risk and protective factors. Only through this multidimensional approach will health practitioners be able to help improve the whole of AYAM's health and well-being. Most importantly, the AYAM-HIS can provide the necessary information to assess current health behaviors so as to provide a foundation from which interventions can be designed.

To the best of our knowledge, there is no other tool in use that measures AYAM health behavioral indicators as multidimensionally as the AYAM-HIS. This tool was designed to be used in its entirety but can also be modified to use individual themes or in any combination to fit the goals and objectives of the given health education and behavioral intervention study. The aforementioned qualities demonstrate both convergent validity within, and discriminant validity between, factors, as well as a limited presence of method bias. Although the scale was not created to be conducive to factor

analysis, construct validity results are of interest, nonetheless. Future research for reducing survey fatigue related to AYAM-HIS and testing with diverse populations are warranted.

Discussion Questions

Considering the fluid nature of health and well-being concepts in a specific population (in this case, AYAMs), how often would this scale need to be amended to be able to "keep up with" salient concerns and issues related to AYAM health?

How applicable are these questions across a demographically diverse group of AYAMs?

Ethical Approval Statement

The protocol for this was reviewed and approved by the institutional review board at the University of Central Florida.

Conflict of Interest

The authors have no conflicts of interest to declare.

References

Arnett, J. J. (2014). Presidential address: The emergence of emerging adulthood: A personal history. *Emerging Adulthood, 2*(3), 155-162.

Barry, A. E., Chaney, B., Piazza-Gardner, A. K., & Chavarria, E. A. (2014). Validity and reliability reporting practices in the field of health education and behavior: A review of seven journals. *Health Education & Behavior, 41*(1), 12-18.

Bell, D. L., Breland, D. J., & Ott, M. A. (2013). Adolescent and young adult male health: A review. *Pediatrics, 132*(3), 535-546.

Bohman, B., Nyberg, G., Sundblom, E., & Elinder, L. S. (2014). Validity and reliability of a parental self-efficacy instrument in the healthy school start prevention trial of childhood obesity. *Health Education & Behavior, 41*(4), 392-396.

Brown, J. (2009). Choosing the right number of components or factors in PCA and EFA. *JALT Testing & Evaluation SIG Newsletter, 13*(2).

Casey, E., Carlson, J., Two Bulls, S., & Yager, A. (2018). Gender transformative approaches to engaging men in gender-based violence prevention: A review and conceptual model. *Trauma, Violence, & Abuse, 19*(2), 231-246.

Chesebro, J. W., & Fuse, K. (2001). The development of a perceived masculinity scale. *Communication Quarterly, 49*(3), 203-278.

Courtenay, W. H. (2000). Constructions of masculinity and their influence on men's well-being: A theory of gender and health. *Social Science & Medicine, 16*(50), 1385-1401.

Dariotis, J. K., Sifakis, F., Pleck, J. H., Astone, N. M., & Sonenstein, F. L. (2011). Racial and ethnic disparities in sexual risk behaviors and STDs during young men's transition to adulthood. *Perspectives on Sexual and Reproductive Health, 43*(1), 51-59.

Demissie, Z., Ethier, K., Williams, K., Dunville, R., Cavalier, Y., Payne, R., & Underwood, J. M. (2022). Racial-ethnic disparities in adolescent sexual behaviours: The cross-sectional Youth Risk Behavior Survey, 2009-19. *Sexual Health, 19*(5), 456-463.

Eisler, R. M., & Skidmore, J. R. (1987). Masculine gender role stress: Scale development and component factors in the appraisal of stressful situations. *Behavior Modification, 11*(2), 123-136.

Eskandari, N., Simbar, M., Vadadhir, A., & Baghestani, A. R. (2018). Design and evaluation of the psychometric properties of a paternal adaptation questionnaire. *American Journal of Men's Health, 12*(6): 2018-2028.

Henry, J. L., Trude, A. C., Surkan, P. J., Steeves, E. A., Hopkins, L. C., & Gittelsohn, J. (2018). Psychosocial determinants of food acquisition and preparation in low-income, urban African American households. *Health Education & Behavior*, *45*(6), 898-907.

Hill, A. L., Miller, E., Switzer, G. E., Yu, L., Heilman, B., Levtov, R. G., ... & Coulter, R. W. (2020). Harmful masculinities among younger men in three countries: Psychometric study of the Man Box Scale. *Preventive Medicine, 139*, 106-185.

Hoyt, L. T., Chase-Lansdale, P. L., McDade, T. W., & Adam, E. K. (2012). Positive youth, healthy adults: Does positive well-being in adolescence predict better perceived health and fewer risky health behaviors in young adulthood? *Journal of Adolescent Health*, *50*(1), 66-73.

Kavanagh, S., & Graham, M. (2019). How gender inequity impacts on men's health: An exploration of theoretical pathways. *International Journal of Mens Social and Community Health*, *2*(1), e11-e21.

Kline, P. (2014). *An easy guide to factor analysis*. *Routledge*.

Leone, J. E., & Rovito, M. J. (2013). "Normative content" and health inequity enculturation: A logic model of men's health advocacy. *American Journal of Men's Health*, *7*(3), 243-254.

Levy, J. K., Darmstadt, G. L., Ashby, C., Quandt, M., Halsey, E., Nagar, A., & Greene, M. E. (2020). Characteristics of successful programmes targeting gender inequality and restrictive gender norms for the health and wellbeing of children, adolescents and young adults: a systematic review. *Lancet Global Health, 2*(8), e225-e236.

Lowry, R., Crosby, A. E., Brener, N. D., & Kann, L. (2014). Suicidal thoughts and attempts among US high school students: Trends and associated health-risk behaviors, 1991-2011. *Journal of Adolescent Health, 54*(1), 100-108.

Miniño, A. (2010).Mortality among teenagers aged 12-19 years: United States, 1999-2006. *NCHS Data Brief, May* (37), 1-8.

Monroe, P., Campbell, J. A., Harris, M., & Egede, L. E. (2023). Racial/ethnic differences in social determinants of health and health outcomes among adolescents and youth ages 10–24 years old: a scoping review. *BMC Public Health*, *23*(1), 1-14.

Nakagawa, S., & Hart, C. (2019). Where's the beef? How masculinity exacerbates gender disparities in health behaviors. *Socius, 5*, 2378023119831801.

National Center for Health Statistics. (2017). *Health, United States, 2016, with chartbook on long-term trends in health*. U.S. Government Printing Office.

Pharo, H., Sim, C., Graham, M., Gross, J., & Hayne, H. (2011). Risky business: Executive function, personality, and reckless behavior during adolescence and emerging adulthood. *Behavioral Neuroscience*, *125*(6), 970.

Rice, S. M., Purcell, R., & McGorry, P. D. (2018). Adolescent and young adult male mental health: Transforming system failures into proactive models of engagement. *Journal of Adolescent Health*, *62*(3), S9-S17.

Richardson, N., & Carroll, P. (2018). It's not rocket science: The case from Ireland for a policy focus on men's health. *International Journal of Mens Social and Community Health*, 1(SP1), e23-e35.

Rovito, M. J., Rivers, K. O., Rovito, K. E., & Goss, T. (2017). A 'structured'

phenomenological approach to promoting health among young adult and adolescent males. *Journal of Integrated Design and Process Science*, *21*(3), 23-32.

Rummell, C. M., & Levant, R. F. (2014). Masculine gender role discrepancy strain and self-esteem. *Psychology of Men & Masculinity*, *15*(4), 419.

Ruane-McAteer, E., Amin, A., Hanratty, J., Lynn, F., Corbijn van Willenswaard, K., Reid, E., Khosla, R., & Lohan, M. (2019). Interventions addressing men, masculinities and gender equality in sexual and reproductive health and rights: an evidence and gap map and systematic review of reviews. *BMJ Global Health*, *4*(5), e001634.

Ruane-McAteer, E., Gillespie, K., Amin, A., Aventin, A., Robinson, M., Hanratty, J., Khosia, R., & Lohan, M. (2020). Gender-transformative programming with men and boys to improve sexual and reproductive health and rights: a systematic review of intervention studies. *BMJ Global Health, 5*, 1-17.

Seidler, Z. E., Dawes, S. J., Rice, S. M. Oliffe, J. M. & Dhillon, H. M. (2016). The role of masculinity in men's health seeking for depression: A systematic review. *Psychological Review*, *11*(49),106-118.

Smith, B. J., Cheung, N. W., Najnin, N., Bauman, A., Razee, H., Blignault, I., van der Ploeg, H. P. (2018). Reliability and validity of measures for investigating the determinants of health behaviors among women with a history of gestational diabetes. *Health Education & Behavior*, *45*(1), 43-51.

Tucker, J. S., De La Haye, K., Kennedy, D. P., Green Jr, H. D., & Pollard, M. S. (2014). Peer influence on marijuana use in different types of friendships. *Journal of Adolescent Health*, *54*(1): 67-73.

Weber, E. U., Blais, A. R., & Betz, N. E. (2002). A domain-specific risk-attitude scale: Measuring risk perceptions and risk behaviors. *Journal of Behavioral Decision Making*, *15*(4), 263-290.

Wong, Y. J., Levant, R. F., Welsh, M. M., Zaitsoff, A., Garvin, M., King, D., & Aguilar, M. (2015). Masculinity priming: Testing the causal effect of activating subjective masculinity experiences on self-esteem. *Journal of Men's Studies*, *23*(1), 98-106.

Zare, E., Simbar, M., Shahhosseini, Z., & Majd, H. A. (2016). Design and psychometric properties of male adolescent health needs-assessment scale. *International Journal of Community Based Nursing and Midwifery*, *4*(4): 297.